

PINK

**Safety Assessment of
Alkyl Esters
as Used in Cosmetics**

CIR EXPERT PANEL MEETING
DECEMBER 10-11, 2012



Memorandum

To: CIR Expert Panel Members and Liaisons
From: Monice M. Fiume *MMF*
Senior Scientific Analyst/Writer
Date: November 16, 2012
Subject: Amended Safety Assessment of Alkyl Esters as Used in Cosmetics

Enclosed in the Amended Safety Assessment of Alkyl Esters as Used in Cosmetics. The status of this document is draft tentative amended report for CIR Expert Panel Review.

This report was tabled at the September meeting so that historical use data from reports on ingredients previously reviewed by CIR could be added to the safety assessment. You will find these data incorporated into Table 8. Incorporation of the historical data into the table allows the Panel a side-by-side comparison of the concentration reported when determining safety in the original safety assessments compared to the use data submitted with the current re-review. Increases in reported concentrations are highlighted.

Also at the September meeting, the Panel deleted 16 alkyl ethylhexanoates from the report. Concern about the possible fetotoxicity of 2-ethylhexanoic acid, a possible metabolite of the ethylhexanoates, led to a determination that these ingredients are not “no brainers” and therefore, the ethylhexanoates should not be included in this review.

The following unpublished data have been received since the last review. These data, which are included under the data tab of this submission, have been incorporated.

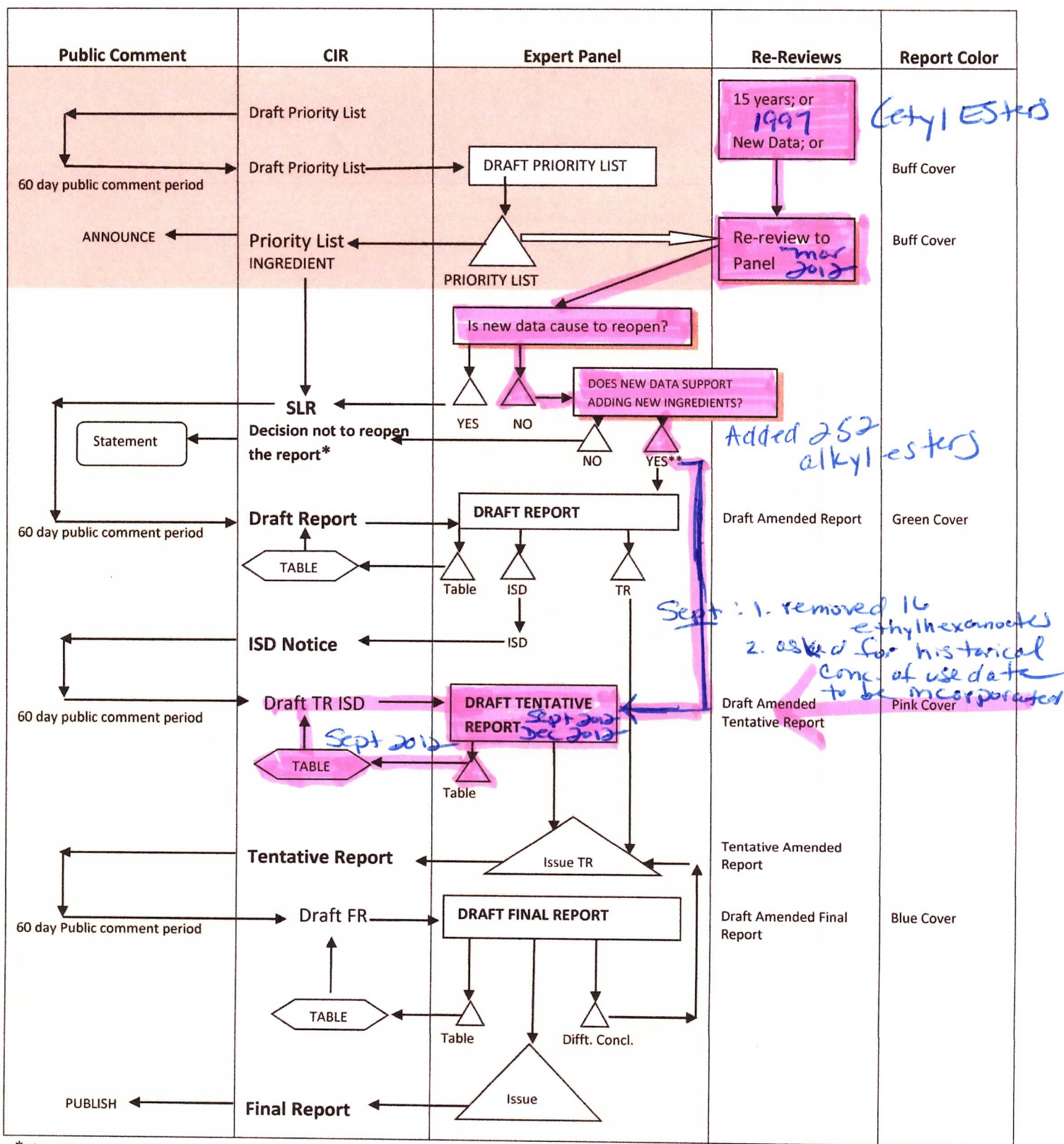
1. Personal Care Products Council. 2012. Updated concentration of use by FDA product category: alkyl esters and ethylhexanoates;
2. Personal Care Products Council. 2012. Updated concentration of use by FDA product category: cetyl esters;
3. Product Investigations, Inc. 2008. Determination of the irritating and sensitizing propensities of a product on human skin (body oil containing 77.9% Ethylhexyl Palmitate);
4. Clinical Research Laboratories. 2009. Repeated insult patch test of eyebrow pencil containing 38.8% Ethylhexyl Stearate;
5. Product Investigations, Inc. 2008. Determination of the irritating and sensitizing propensities of a product on human skin (lip gloss containing 25.9% Ethylhexyl Stearate);
6. Consumer Product Testing Co. 2005. Repeated insult patch test of a concealer containing 29.5% Isocetyl Myristate;
7. Clinical Research Laboratories. 2011. Repeated insult patch test of lipstick containing 15.2% Cetyl Ricinoleate.

Again, the data profile is being provided in order by chain length and chemical structure and by alphabetical order. The data profile on the component alcohol and acids is included between the two.

As a final note, please be aware that the Supplemental books from the March meeting that provided the original CIR safety assessments will be available on the CIR website.

It is expected the Panel will issue a Tentative Amended Report at this meeting.

Alkyl Esters Dec 2012
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SAFETY ASSESSMENT FLOW CHART



*The CIR Staff notifies of the public of the decision not to re-open the report and prepares a draft statement for review by the Panel. After Panel review, the statement is issued to the Public.

**If Draft Amended Report (DAR) is available, the Panel may choose to review; if not, CIR staff prepares DAR for Panel Review.



Alkyl Esters Re-Review History

March 5-6, 2012: original consideration of re-review

The re-review of Cetyl Esters was presented for consideration to re-open. An additional 200 alkyl esters were presented as potential add-on ingredients.

The Panel stated that 52 ingredients (that were included for supporting data but not included for review in the safety assessment) that have been reviewed or re-reviewed previously should also be included in the safety assessment.

The Panel considered an additional 6 ingredients that might have been included, but determined that it was not appropriate. The ingredients that will not be included (for the following reasons) are: decyl hempseedate (hempseedate has not been reviewed); hexyldecyl ester of hydrolyzed collagen (lack of chemical similarity); lauryl Carpotroche brasiliensis seedate; lauryl Theobroma grandiflorum seedate; myristyl Carpotroche brasiliensis seedate; and myristyl Theobroma grandiflorum seedate (these four ingredients have reported function as skin bleaching agents).

A concern was expressed regarding the lack of data on biotransformation of branched fatty acids and branched alcohols in the skin.

September 10-11, 2012: Tentative Amended Report

The safety assessment was revised since the March meeting to include the additional 52 ingredients. Additionally, another unreviewed alkyl ester (Cetyl Myristoleate) was identified and added. The additions resulted in a family of 254 ingredients being evaluated in this safety assessment.

Concentration of use data were received from industry and incorporated. Frequency of use data were updated using the May 2012 VCRP submission.

The Panel deleted the 16 ethylhexanoates from the report; a discussion of the fact that cetearyl ethylhexanoate is now used at higher concentrations than previously reported and the fetotoxicity of 2-ethylhexanoic acid, a possible metabolite, led to the determination that these ingredients are not “no brainers.” These ingredients will be reviewed separately.

The report was tabled for a more direct comparison of historic vs. current use for some of the previously reviewed ingredients, and to determine whether existing data support that higher concentration.

December 10-11, 2012: Tentative Amended Report

The ethylhexanoates have been removed and the historic use data have been added to the report.

The following unpublished data have been received and added to the report:

1. Personal Care Products Council. 2012. Updated concentration of use by FDA product category: alkyl esters and ethylhexanoates;
2. Personal Care Products Council. 2012. Updated concentration of use by FDA product category: cetyl esters;
3. Product Investigations, Inc. 2008. Determination of the irritating and sensitizing propensities of a product on human skin (body oil containing 77.9% Ethylhexyl Palmitate);
4. Clinical Research Laboratories. 2009. Repeated insult patch test of eyebrow pencil containing 38.8% Ethylhexyl Stearate;
5. Product Investigations, Inc. 2008. Determination of the irritating and sensitizing propensities of a product on human skin (lip gloss containing 25.9% Ethylhexyl Stearate);
6. Consumer Product Testing Co. 2005. Repeated insult patch test of a concealer containing 29.5% Isocetyl Myristate;
7. Clinical Research Laboratories. 2011. Repeated insult patch test of lipstick containing 15.2% Cetyl Ricinoleate.

Alkyl Esters Data Profile –presented by chain length and structure – Dec 2012 – Writer, Monice Fiume

	Year Reviewed	Composition/Constituents/Impurities	Methods of Mfg	Toxicokinetics	Dermal Penetration	Acute Tox-Derm	Acute Tox-Oral	Acute Tox-Inhal	Rptd Dose-Derm	Rptd Dose-Oral	Rptd Dose-Inhal	Repro/Dev Tox	Genotoxicity	Carcinogenicity	Derm Irritation-Non-Human	Derm Sensitization Non-Human	Phototox-Non-Animal	Derm Irritation-Human	Derm Sensitization Human	Phototox - Human	Ocular Irritation
<i>Straight chain alkyl ingredients by total length</i>																					
Cetyl Esters	1997	X					X								X						X
Caprylyl Butyrate																					
Caprylyl Caprylate																					
Hexyl Laurate																					
Butyl Myristate	2010		X	X		X	X		X						X	X					X
Decyl Laurate																					
Butyl Stearate	1985*	X					X			X		X			X	X		X	X	X	X
Arachidyl Propionate	1990*		X			X	X			X					X	X		X	X	X	X
Stearyl Caprylate	2010																				
Decyl Myristate	2010																				
Lauryl Laurate																					
Cetyl Caprylate																					
Tridecyl Laurate																					
Cetyl Caprate																					
Decyl Palmitate																					
Lauryl Myristate	2010																				
Myristyl Laurate			X																		
Tridecyl Myristate	2010																				
Myristyl Myristate	2010	X				X	X								X	X					X
Cetyl Laurate																					
Lauryl Palmitate			X																		
Lauryl Stearate																					
Cetyl Myristate	2010																				
Tridecyl Stearate																					
Myristyl Stearate	1985*						X								X			X			X
Cetyl Palmitate	1982*	X				X	X		X	X					X	X		X	X	X	X
Stearyl Palmitate	2010																				
Cetyl Stearate	1985*																	X	X		
Lauryl Behenate			X																		
Stearyl Heptanoate	2010						X						X		X	X		X	X		X
Tridecyl Behenate																					
Stearyl Stearate	2010																				
Cetyl Behenate			X																		
Stearyl Behenate	2010																				
Arachidyl Behenate																					
Behenyl Behenate																					
<i>Unsaturated, straight chain</i>																					
Heptyl Undecylenate																					
Butyl Oleate			X			X	X												X		
Caprylyl Eicosenoate																					
Decyl Oleate	1982*		X				X								X	X		X	X		X
Cetyl Myristoleate																					
Lauryl Oleate			X																		
Oleyl Myristate	2010																				
Cetyl Oleate			X	X																	
Tridecyl Erucate																					
Oleyl Stearate			X																		
Stearyl Linoleate																					
Oleyl Oleate			X																		
Oleyl Arachidate			X																		
Stearyl Erucate																					
Erucyl Oleate																					
Oleyl Erucate																					
Arachidyl Erucate																					
Behenyl Erucate																					
Erucyl Arachidate																					
Erucyl Erucate																					
Lignoceryl Erucate																					
<i>Branched, by longest length</i>																					
Isohexyl Neopentanoate																					
Isopropyl Sorbate																					
Ethylhexyl Neopentanoate																					
Isobutyl Pelargonate	2010																				
Isodecyl Neopentanoate																					
Ethylhexyl Isononanoate	2010												X						X		

Alkyl Esters Data Profile –presented by chain length and structure – Dec 2012 – Writer, Monice Fiume

	Year Reviewed	Composition/Constituents/Impurities	Methods of Mfg	Toxicokinetics	Dermal Penetration	Acute Tox-Derm	Acute Tox-Oral	Acute Tox-Inhal	Rptd Dose-Derm	Rptd Dose-Oral	Rptd Dose-Inhal	Repro/Dev Tox	Genotoxicity	Carcinogenicity	Derm Irritation-Non-Human	Derm Sensitization Non-Human	Phototox-Non-Animal	Derm Irritation-Human	Derm Sensitization Human	Phototox - Human	Ocular Irritation
Isohexyl Caprate																					
Isopropyl Laurate			X																		
Tridecyl Neopentanoate																					
Octyldodecyl Neopentanoate																					
Isononyl Isononanoate	2010		X						X	X			X		X			X	X		X
Ethylhexyl Pelargonate	2010						X								X						X
Propylheptyl Caprylate						X	X			X			X		X	X		X			X
Isopropyl Myristate	2010	X	X	X		X			X				X	X	X	X		X	X	X	X
Myristyl Neopentanoate																					
Isobutyl Myristate	2010																				
Isohexyl Laurate																					
Isoamyl Laurate																					
Isodecyl Isononanoate	2010																	X	X		
Isopropyl Palmitate	1982*	X				X	X	X	X						X			X	X	X	X
Ethylhexyl Laurate			X			X	X	X		X			X		X	X		X			X
Isostearyl Neopentanoate	1985*		X			X				X					X	X	X	X	X	X	X
Isotridecyl Isononanoate	2010																				
Ethylhexyl Myristate	2010																				
Octyldodecyl Neodecanoate																					
Isobutyl Palmitate																					
Isopropyl Linoleate	1992	X					X								X						X
Isopropyl Oleate			X																		
Isopropyl Isostearate	1992*	X													X						X
Isopropyl Stearate	1985*						X											X	X		X
Hexyldecyl Hexyldecanoate																					
Isodecyl Laurate							X			X			X		X	X					X
Isohexyl Palmitate																					
Isobutyl Stearate	1985*			X								X			X			X	X	X	
Tridecyl Isononanoate	2010																				
Butyl Isostearate																					
Ethylhexyl Isopalmitate																					
Ethylhexyl Palmitate	1982*					X	X		X						X	X		X	X		X
Isopropyl Arachidate			X																		
Hexyldecyl Laurate																					
Isodecyl Myristate	2010																				
Hexyl Isostearate																					
Ethylhexyl Isostearate																					
Cetyl Isononanoate	2010						X					X			X	X					
Isotridecyl Laurate																					
Ethylhexyl Stearate	1985*						X								X			X	X	X	X
Octyldodecyl Octyldodecanoate																					
Octyldodecyl Myristate	2010		X																		
Butyloctyl Palmitate																					
Ethylhexyl Oleate			X																		
Cetyl Dimethyloctanoate																					
Isopropyl Behenate																					
Isocetyl Isodecanoate																					
Isostearyl Isononanoate	2010																				
Isodecyl Palmitate																					
Isotridecyl Myristate	2010																	X	X		
Butyloctyl Oleate																					
Hexyldecyl Palmitate																					
Isodecyl Stearate																					
Hexyldecyl Isostearate																					
Decyl Isostearate																					
Isodecyl Oleate	1982*		X				X								X	X		X			X
Isocetyl Laurate																					
Tetradecyloctadecyl Hexyldecanoate																					
Hexyldecyl Oleate																					
Hexyldecyl Stearate																					
Octyldecyl Oleate																					
Isocetyl Myristate	2010		X															X	X		
Octyldodecyl Isostearate																					
Isostearyl Laurate																					
Lauryl Isostearate																					
Isotridecyl Stearate																					

Alkyl Esters Data Profile –presented by chain length and structure – Dec 2012 – Writer, Monice Fiume

	Year Reviewed	Composition/Constituents/Impurities	Methods of Mfg	Toxicokinetics	Dermal Penetration	Acute Tox-Derm	Acute Tox-Oral	Acute Tox-Inhal	Rptd Dose-Derm	Rptd Dose-Oral	Rptd Dose-Inhal	Repro/Dev Tox	Genotoxicity	Carcinogenicity	Derm Irritation-Non-Human	Derm Sensitization Non-Human	Phototox-Non-Animal	Derm Irritation-Human	Derm Sensitization Human	Phototox - Human	Ocular Irritation
Butyloctyl Behenate																					
Octyldodecyl Octyldodecyl Oleate Stearate																					
Isostearyl Myristate	2010																				
Isocetyl Palmitate																					
Tetradecyloctadecyl Myristate	2010																				
Isocetyl Isostearate																					
Myristyl Isostearate																					
Isostearyl Palmitate																					
Isocetyl Stearate	1985*						X								X	X		X	X	X	X
Isolauryl Behenate																					
Octyldodecyl Behenate																					
Isostearyl Isostearate																					
Octyldodecyl Erucate																					
Isostearyl Linoleate																					
Tetradecyleicosyl Stearate																					
Tetradecyloctadecyl Stearate																					
Isocetyl Behenate																					
Behenyl Isostearate																					
Isostearyl Behenate																					
Isostearyl Erucate																					
Tetradecyloctadecyl Behenate																					
Hydroxy-substituted, by longest length																					
Isopropyl Hydroxystearate																					
Isopropyl Ricinoleate	2007																				
Ethylhexyl Hydroxystearate																					
Isodecyl Hydroxystearate																					
Heptylundecyl Hydroxystearate																					
Octyldodecyl Ricinoleate	2007																				
Octyldodecyl Hydroxystearate																					
Cetyl Ricinoleate	2007						X								X			X	X		
Hydroxycetyl Isostearate																					
Isostearyl Hydroxystearate																					
Chimyl Isostearate																					
Chimyl Stearate																					
Batyl Isostearate																					
Batyl Stearate																					
Hydroxyoctacosanyl Hydroxystearate																					
Mixtures (alphabetical)																					
Behenyl Beeswax																					
Behenyl/Isostearyl Beeswax																					
Behenyl Oliviate																					
Butyl Avocadoate																					
Butyl Babassuate																					
Butyloctyl Beeswax																					
Butyloctyl Candelillate																					
Butyloctyl Cetearate																					
C14-30 Alkyl Beeswax																					
C18-38 Alkyl Beeswax																					
C30-50 Alkyl Beeswax																					
C20-40 Alkyl Behenate																					
C18 -38 Alkyl C24-54 Acid Ester																					
C16-36 Alkyl Stearate																					
C20-40 Alkyl Stearate																					
C30-50 Alkyl Stearate																					
C40-60 Alkyl Stearate																					
Cetearyl Behenate																					
Cetearyl Candelillate																					
Cetearyl Isononanoate	2010		X									X							X		
Cetearyl Nonanoate	2010					X	X						X		X	X		X	X		X
Cetearyl Oliviate																					
Cetearyl Palmate																					
Cetearyl Palmitate																					
Cetearyl Rice Branate																					
Cetearyl Stearate																					
Cetyl Babassuate																					

Alkyl Esters Data Profile –presented by chain length and structure – Dec 2012 – Writer, Monice Fiume

	Year Reviewed	Composition/Constituents/Impurities	Methods of Mfg	Toxicokinetics	Dermal Penetration	Acute Tox-Derm	Acute Tox-Oral	Acute Tox-Inhal	Rptd Dose-Derm	Rptd Dose-Oral	Rptd Dose-Inhal	Repro/Dev Tox	Genotoxicity	Carcinogenicity	Derm Irritation-Non-Human	Derm Sensitization Non-Human	Phototox-Non-Animal	Derm Irritation-Human	Derm Sensitization Human	Phototox - Human	Ocular Irritation
Cetyl Tallowate																					
C10-40 Isoalkyl Acid Octyldodecanol Esters																					
C4-5 Isoalkyl Cocoate																					
C32-36 Isoalkyl Stearate																					
Coco-Caprylate																					
Coco-Caprylate/Caprates																					
Coco-Rapeseedate																					
Decyl Castorate																					
Decyl Cocoate	2011																				
Decyl Jojobate																					
Decyl Olivates																					
Decyltetradecyl Cetearate																					
Ethylhexyl Adipate/Palmitate/Stearate																					
Ethylhexyl C10-40 Isoalkyl Acidate																					
Ethylhexyl Cocoate	2011																				
Ethylhexyl Olivates																					
Hexyldodecyl/Octyldecyl Hydroxystearate																					
Hydrogenated Castor Oil Behenyl Esters																					
Hydrogenated Castor Oil Cetyl Esters																					
Hydrogenated Castor Oil Stearyl Esters																					
Hydrogenated Ethylhexyl Olivates																					
Hydrogenated Ethylhexyl Sesamate																					
Hydrogenated Isocetyl Olivates																					
Hydrogenated Isopropyl Jojobate																					
Isobutyl Tallowate																					
Isoodecyl Cocoate	2011																				
Isooctyl Caprylate/Caprates																					
Isooctyl Tallate																					
Isopropyl Avocadoate																					
Isopropyl Babassuate																					
Isopropyl Jojobate																					
Isopropyl Tallowate																					
Isostearyl Avocadoate																					
Lauryl Cocoate	2011																				
Octyldodecyl Avocadoate																					
Octyldodecyl Beeswax																					
Octyldodecyl Cocoate	2011																				
Octyldodecyl Meadowfoamate																					
Octyldodecyl Olivates																					
Octyldodecyl Safflowerate																					
Stearyl Beeswax																					
Stearyl Olivates	2010																				
Tetradecylpropionates																					
Tridecyl Cocoate	2010																				

*indicates that the conclusion was reaffirmed at a later time

Alcohols and Acids Data Profile --presented by chain length or alphabetical -- Sept 2012 -- Writer, Monice Fiume

	Year Reviewed	Composition/Constituents/Impurities	Methods of Mfg	Toxicokinetics	Dermal Penetration	Acute Tox-Derm	Acute Tox-Oral	Acute Tox-Inhal	Rptd Dose-Derm	Rptd Dose-Oral	Rptd Dose-Inhal	Repro/Dev Tox	Genotoxicity	Carcinogenicity	Derm Irritation-Non-Human	Derm Sensitization Non-Human	Phototox-Non_Animal	Derm Irritation-Human	Derm Sensitization Human	Phototox - Human	Ocular Irritation
Alcohols																					
Batyl Alcohol	2011		X	X									X								
Behenyl Alcohol	1988*		X				X														X
Butyl Alcohol	2008		X	X		X	X	X		X	X	X	X					X	X		X
Cetearyl Alcohol	1988*	X	X												X			X	X		X
Cetyl Alcohol	1988*	X	X	X		X	X	X	X				X		X			X	X	X	X
Cetyl Glycol	2011																				
Chimyl Alcohol	2011	X	X	X	X		X						X		X						X
Coconut Alcohol	2011		X																		
Isopropyl Alcohol	2010			X							X	X	X	X					X		X
Isostearyl Alcohol	1988		X				X								X	X		X	X		X
Jojoba Alcohol	2008		X				X		X				X		X	X		X		X	X
Myristyl Alcohol	1988		X			X	X	X							X			X	X	X	X
Octyl Dodecanol	1985		X			X	X								X			X	X	X	X
Oleyl Alcohol	1985	X	X	X			X								X			X	X	X	X
Stearyl Alcohol	1985	X	X	X			X		X				X		X	X		X	X		X
Not Reviewed, but data were included in the Appendix to the Dicarboxylic Acid Rpt																					
Caprylic Acid															X			X			
Decyl Alcohol																		X			
Ethylhexyl Alcohol												X	X		X						X
Hexyl Alcohol																X					X
Isobutyl Alcohol										X											
Isodecyl Alcohol												X									
Isooctyl Alcohol										X		X	X	X							
Propyl Alcohol												X						X			
Acids																					
Adipic Acid	2010			X						X	X	X	X	X	X	X					X
Babassu Acid	2011																				
Coconut Acid	2011		X												X						X
Hydrolyzed Collagen	1985*		X				X		X						X	X	X	X	X	X	X
Hydroxystearic Acid	1998	X	X	X						X		X	X	X				X			
Isostearic Acid	1983*	X	X				X								X			X	X	X	X
Lauric Acid	1987*	X	X			X							X	X	X				X		X
Myristic Acid	2010	X	X			X									X			X			X
Oleic Acid	1987*	X	X	X	X	X				X			X	X	X	X		X	X	X	X
Palm Acid	2011																				
Palmitic Acid	1987*	X	X		X	X				X				X	X			X	X	X	X
Rice Bran Acid	2011																				
Safflower Acid	2011																				
Sorbic Acid	1988*		X	X			X		X	X			X	X	X	X		X	X		X
Stearic Acid	1987	X	X	X	X	X				X			X	X	X			X	X	X	X
Tall Oil Acid	2009	X					X			X		X	X					X	X	X	

Alkyl Esters Data Profile --presented alphabetically -- Dec 2012 -- Writer, Monice Fiume

	Year Reviewed	Composition/Constituents/Impurities	Methods of Mfg	Toxicokinetics	Dermal Penetration	Acute Tox-Derm	Acute Tox-Oral	Acute Tox-Inhal	Rptd Dose-Derm	Rptd Dose-Oral	Rptd Dose-Inhal	Repro/Dev Tox	Genotoxicity	Carcinogenicity	Derm Irritation-Non-Human	Derm Sensitization Non-Human	Phototox-Non-Animal	Derm Irritation-Human	Derm Sensitization Human	Phototox - Human	Ocular Irritation
Arachidyl Behenate																					
Arachidyl Erucate																					
Arachidyl Propionate	1990*		X			X	X			X					X	X		X	X	X	X
Batyl Iostearate																					
Batyl Stearate																					
Behenyl Beeswax																					
Behenyl Behenate																					
Behenyl Erucate																					
Behenyl Iostearate																					
Behenyl Olivat																					
Behenyl/Isostearyl Beeswax																					
Butyl Avocado																					
Butyl Babassuate																					
Butyl Iostearate																					
Butyl Myristate	2010		X	X		X	X		X						X	X					X
Butyl Oleate			X			X	X												X		
Butyl Stearate	1985*	X					X			X		X			X	X		X	X	X	X
Butyloctyl Beeswax																					
Butyloctyl Behenate																					
Butyloctyl Candelillate																					
Butyloctyl Cetearate																					
Butyloctyl Oleate																					
Butyloctyl Palmitate																					
C10-40 Isoalkyl Acid Octyldodecanol Esters																					
C14-30 Alkyl Beeswax																					
C16-36 Alkyl Stearate																					
C18 -38 Alkyl C24-54 Acid Ester																					
C18-38 Alkyl Beeswax																					
C20-40 Alkyl Behenate																					
C20-40 Alkyl Stearate																					
C30-50 Alkyl Beeswax																					
C30-50 Alkyl Stearate																					
C32-36 Isoalkyl Stearate																					
C40-60 Alkyl Stearate																					
C4-5 Isoalkyl Cocoate																					
Caprylyl Butyrate																					
Caprylyl Caprylate																					
Caprylyl Eicosenoate																					
Cetearyl Behenate																					
Cetearyl Candelillate																					
Cetearyl Isononanoate	2010		X									X							X		
Cetearyl Nonanoate	2010					X	X						X		X	X		X	X		X
Cetearyl Olivat																					
Cetearyl Palmate																					
Cetearyl Palmitate																					
Cetearyl Rice Branate																					
Cetearyl Stearate																					
Cetyl Babassuate																					
Cetyl Behenate			X																		
Cetyl Caprate																					
Cetyl Caprylate																					
Cetyl Dimethyloctanoate																					
Cetyl Esters	1997	X					X								X						X
Cetyl Isononanoate	2010						X						X		X	X					
Cetyl Laurate																					
Cetyl Myristate	2010																				
Cetyl Myristoleate																					
Cetyl Oleate			X	X																	
Cetyl Palmitate	1982*	X				X	X		X	X					X	X		X	X	X	X
Cetyl Ricinoleate	2007						X								X			X	X		
Cetyl Stearate	1985*																	X	X		
Cetyl Tallowate																					
Chimyl Iostearate																					
Chimyl Stearate																					
Coco-Caprylate																					

Alkyl Esters Data Profile –presented alphabetically – Dec 2012 – Writer, Monice Fiume

	Year Reviewed	Composition/Constituents/Impurities	Methods of Mfg	Toxicokinetics	Dermal Penetration	Acute Tox-Derm	Acute Tox-Oral	Acute Tox-Inhal	Rptd Dose-Derm	Rptd Dose-Oral	Rptd Dose-Inhal	Repro/Dev Tox	Genotoxicity	Carcinogenicity	Derm Irritation-Non-Human	Derm Sensitization Non-Human	Phototox-Non-Animal	Derm Irritation-Human	Derm Sensitization Human	Phototox - Human	Ocular Irritation
Coco-Caprylate/Caprate																					
Coco-Rapeseedate																					
Decyl Castorate																					
Decyl Cocoate	2011																				
Decyl Isostearate																					
Decyl Jojobate																					
Decyl Laurate																					
Decyl Myristate	2010																				
Decyl Oleate	1982*		X				X								X	X		X	X		X
Decyl Olivat																					
Decyl Palmitate																					
Decyltetradecyl Cetearate																					
Erucyl Arachidate																					
Erucyl Erucate																					
Erucyl Oleate																					
Ethylhexyl Adipate/Palmitate/Stearate																					
Ethylhexyl C10-40 Isoalkyl Acidate																					
Ethylhexyl Cocoate	2011																				
Ethylhexyl Hydroxystearate																					
Ethylhexyl Isononanoate	2010											X							X		
Ethylhexyl Isopalmitate																					
Ethylhexyl Isostearate																					
Ethylhexyl Laurate			X			X	X	X		X		X		X	X			X			X
Ethylhexyl Myristate	2010																				
Ethylhexyl Neopentanoate																					
Ethylhexyl Oleate			X																		
Ethylhexyl Olivat																					
Ethylhexyl Palmitate	1982*					X	X		X						X	X		X	X		X
Ethylhexyl Pelargonate	2010						X								X						X
Ethylhexyl Stearate	1985*						X								X			X	X	X	X
Heptyl Undecylenate																					
Heptylundecyl Hydroxystearate																					
Hexyl Isostearate																					
Hexyl Laurate																					
Hexyldecyl Hexyldecanoate																					
Hexyldecyl Isostearate																					
Hexyldecyl Laurate																					
Hexyldecyl Oleate																					
Hexyldecyl Palmitate																					
Hexyldecyl Stearate																					
Hexyldodecyl/Octyldecyl Hydroxystearate																					
Hydrogenated Castor Oil Behenyl Esters																					
Hydrogenated Castor Oil Cetyl Esters																					
Hydrogenated Castor Oil Stearyl Esters																					
Hydrogenated Ethylhexyl Olivat																					
Hydrogenated Ethylhexyl Sesamate																					
Hydrogenated Isocetyl Olivat																					
Hydrogenated Isopropyl Jojobate																					
Hydroxycetyl Isostearate																					
Hydroxyoctacosanyl Hydroxystearate																					
Isoamyl Laurate																					
Isobutyl Myristate	2010																				
Isobutyl Palmitate																					
Isobutyl Pelargonate	2010																				
Isobutyl Stearate	1985*			X								X		X				X	X	X	
Isobutyl Tallowate																					
Isocetyl Behenate																					
Isocetyl Isodecanoate																					
Isocetyl Isostearate																					
Isocetyl Laurate																					
Isocetyl Myristate	2010		X															X	X		
Isocetyl Palmitate																					
Isocetyl Stearate	1985*						X								X	X		X	X	X	X

Alkyl Esters Data Profile –presented alphabetically – Dec 2012 – Writer, Monice Fiume

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Isodecyl Cocoate	2011																				
Isodecyl Hydroxystearate																					
Isodecyl Isononanoate	2010																	X	X		
Isodecyl Laurate							X			X			X		X	X					X
Isodecyl Myristate	2010																				
Isodecyl Neopentanoate																					
Isodecyl Oleate	1982*		X				X								X	X		X			X
Isodecyl Palmitate																					
Isodecyl Stearate																					
Isohexyl Caprate																					
Isohexyl Laurate																					
Isohexyl Neopentanoate																					
Isohexyl Palmitate																					
Isolauryl Behenate																					
Isononyl Isononanoate	2010		X						X	X			X		X			X	X		X
Isooctyl Caprylate/Caprate																					
Isooctyl Tallate																					
Isopropyl Isostearate	1992*	X													X						X
Isopropyl Arachidate			X																		
Isopropyl Avocadoate																					
Isopropyl Babassuate																					
Isopropyl Behenate																					
Isopropyl Hydroxystearate																					
Isopropyl Jojobate																					
Isopropyl Laurate			X																		
Isopropyl Linoleate	1992	X					X								X						X
Isopropyl Myristate	2010	X	X	X		X			X				X	X	X	X		X	X	X	X
Isopropyl Oleate			X																		
Isopropyl Palmitate	1982*	X				X	X	X	X						X			X	X	X	X
Isopropyl Ricinoleate	2007																				
Isopropyl Sorbate																					
Isopropyl Stearate	1985*						X											X	X		X
Isopropyl Tallowate																					
Isostearyl Avocadoate																					
Isostearyl Behenate																					
Isostearyl Erucate																					
Isostearyl Hydroxystearate																					
Isostearyl Isononanoate	2010																				
Isostearyl Isostearate																					
Isostearyl Laurate																					
Isostearyl Linoleate																					
Isostearyl Myristate	2010																				
Isostearyl Neopentanoate	1985*		X				X			X					X	X	X	X	X	X	X
Isostearyl Palmitate																					
Isotridecyl Isononanoate	2010																				
Isotridecyl Laurate																					
Isotridecyl Myristate	2010																		X		
Isotridecyl Stearate																					
Lauryl Behenate			X																		
Lauryl Cocoate	2011																				
Lauryl Isostearate																					
Lauryl Laurate																					
Lauryl Myristate	2010																				
Lauryl Oleate			X																		
Lauryl Palmitate			X																		
Lauryl Stearate																					
Lignoceryl Erucate																					
Myristyl Isostearate																					
Myristyl Laurate			X																		
Myristyl Myristate	2010	X				X	X								X	X					X
Myristyl Neopentanoate																					
Myristyl Stearate	1985*						X								X			X			X
Octyldecyl Oleate																					
Octyldodecyl Avocadoate																					
Octyldodecyl Beeswax																					
Octyldodecyl Behenate																					

Alkyl Esters Data Profile --presented alphabetically-- Dec 2012 -- Writer, Monice Fiume

	Year Reviewed	Composition/Constituents/Impurities	Methods of Mfg	Toxicokinetics	Dermal Penetration	Acute Tox-Derm	Acute Tox-Oral	Acute Tox-Inhal	Rptd Dose-Derm	Rptd Dose-Oral	Rptd Dose-Inhal	Repro/Dev Tox	Genotoxicity	Carcinogenicity	Derm Irritation-Non-Human	Derm Sensitization Non-Human	Phototox-Non-Animal	Derm Irritation-Human	Derm Sensitization Human	Phototox - Human	Ocular Irritation
Octyldodecyl Cocoate	2011																				
Octyldodecyl Erucate																					
Octyldodecyl Hydroxystearate																					
Octyldodecyl Isostearate																					
Octyldodecyl Meadowfoamate																					
Octyldodecyl Myristate	2010		X																		
Octyldodecyl Neodecanoate																					
Octyldodecyl Neopentanoate																					
Octyldodecyl Octyldodecanoate																					
Octyldodecyl Octyldodecyl Oleate Stearate																					
Octyldodecyl Oliviate																					
Octyldodecyl Ricinoleate	2007																				
Octyldodecyl Safflowerate																					
Oleyl Arachidate			X																		
Oleyl Erucate																					
Oleyl Myristate	2010																				
Oleyl Oleate			X																		
Oleyl Stearate			X																		
Propylheptyl Caprylate						X	X			X		X		X	X	X		X			X
Stearyl Beeswax																					
Stearyl Behenate	2010																				
Stearyl Caprylate	2010																				
Stearyl Erucate																					
Stearyl Heptanoate	2010						X					X		X	X	X		X	X		X
Stearyl Linoleate																					
Stearyl Oliviate	2010																				
Stearyl Palmitate	2010																				
Stearyl Stearate	2010																				
Tetradecyleicosyl Stearate																					
Tetradecyloctadecyl Behenate																					
Tetradecyloctadecyl Hexyldecanoate																					
Tetradecyloctadecyl Myristate	2010																				
Tetradecyloctadecyl Stearate																					
Tetradecylpropionates																					
Tridecyl Behenate																					
Tridecyl Cocoate	2010																				
Tridecyl Erucate																					
Tridecyl Isononanoate	2010																				
Tridecyl Laurate																					
Tridecyl Myristate	2010																				
Tridecyl Neopentanoate																					
Tridecyl Stearate																					

*indicates that the conclusion was reaffirmed at a later time

Search Strategy – Alkyl Esters Re-Review – Sci Finder Search

Keep Me Posted updates are received weekly

July 24, 2012 –

Searched all 58 additional ingredients in SciFinder – used 2000 as a cut-off yr for data – 1922 references found for review using qualifiers – 10 papers ordered

Created Keep Me Posted alert in SciFinder for all 58 ingredients

Dec 2011/Jan 2012 – 1638 abstracts found for review using qualifiers; 54 papers ordered

Created Keep Me Posted alert

The following were searched in SciFinder

Cetyl Esters	Caprylyl Butyrate
Arachidyl Behenate	110-39-4
42233-14-7	Caprylyl Caprylate
Arachidyl Erucate	2306-88-9
86601-86-7	Caprylyl Eicosenoate
Arbutinyl Undecylenate	Cetearyl Behenate
Batyl Isostearate	Cetearyl Candelillate
Batyl Stearate	Cetearyl Olivat
13232-26-3	Cetearyl Palmate
Behenyl Beeswax	Cetearyl Palmitate
Behenyl Behenate	85341-79-3
17671-27-1	Cetearyl Rice Branate
Behenyl Erucate	Cetearyl Stearate
18312-32-8	93820-97-4
Behenyl Isostearate	Cetyl Babassuate
Behenyl/Isostearyl Beeswax	Ceetyl Behenate
Behenyl Olivat	Cetyl Caprate
Butyl Avocadate	Cetyl Caprylate
Butyl Babassuate	29710-31-4
Butyl Isostearate	Cetyl Dimethyloctanoate
121336-68-3	Cetyl Ethylhexanoate
Butyl Oleate	59130-69-7
142-77-8	Cetyl Laurate
Butyloctyl Beeswax	20834-06-4
Butyloctyl Behenate	Cetyl Oleate
Butyloctyl Candelillate	22393-86-8
101227-08-1	Cetyl Tallowate
Butyloctyl Cetearate	Chimyl Isostearate
101227-08-1	Chimyl Stearate
Butyloctyl Oleate	131932-18-8
Butyloctyl Palmitate	C10-40 Isoalkyl Acid Octyldodecanol Esters
C14-30 Alkyl Beeswax	C4-5 Isoalkyl Cocoate
C18-38 Alkyl Beeswax	C32-36 Isoalkyl Stearate
C30-50 Alkyl Beeswax	68201-22-9
C20-40 Alkyl Behenate	Coco-Caprylate
C18-38 Alkyl C24-54 Acid Ester	Coco-Caprylate/Caprate
C12-13 Alkyl Ethylhexanoate	Coco-Rapeseedate
90411-66-8	Decyl Castorate
C12-15 Alkyl Ethylhexanoate	Decyl Hempseedate
90411-66-8	Decyl Isostearate
C14-18 Alkyl Ethylhexanoate	84605-08-3
C16-36 Alkyl Stearate	Decyl Jojobate
C20-40 Alkyl Stearate	Decyl Laurate
C30-50 Alkyl Stearate	36528-28-6
C40-60 Alkyl Stearate	Decyl Olivat

ALKYL ESTERS – FULL PANEL – SEPT 11, 2012

Moving on to the alkyl esters, Dr. Marks.

DR. MARKS: So, I move that we issue a safety assessment of the alkyl esters as used in cosmetics to a tentative amended report with a conclusion of safe. But, there were some ingredients in the conclusion that we particularly Ron Shank felt should be deleted, and they were the ones that had all ethyl hexanoate as the last portion of that chemical name.

So, to begin with was like C12, 13 alkyl ethyl hexanoate, and then going down, tridecyl ethyl hexanoate. And there were 1, 2, 3 16 ingredients. And Ron Shank, do you want to give the concern you had about the ethyl hexanoates?

DR. SHANK: Yes. The European chemical substances information system lists ethylhexyl, ethylhexonate as a reproductive risk, and we don't have very much information in the report on the ethyl hexanoates. Therefore, including them I don't think is a no brainer.

There is a question about a reproductive risk that has been raised. We don't have information, so I don't think we should include them as no brainers.

DR. BERGFELD: Don?

DR. BELSITO: Well, we actually have some information but we agree that it is not a no brainer addition, and we also agree to delete them. So, I don't think we have an issue there.

I would

DR. SNYDER: We do, because also ethylhexyl stearate is also a reproductive toxicant, so we also propose to delete

DR. BELSITO: No.

DR. SNYDER: the ethyl hexyls, I thought.

DR. BELSITO: No. That's the alcohol, remember. We had that discussion.

DR. SNYDER: Oh, that's right. The ethyl hexyl is the front part of the name, it's the alcohol part we're less concerned about.

DR. BELSITO: But we also in the sheer addition of all these numbers, none of us really had time to look back and see what we're doing in terms of concentration to the ones that we were leaving in. And Monice was kind enough to stay up all night and look at the current concentration of use versus what we had approved, and there were quite a few of the ethyl hexanoates that have significantly increased. For instance, ceteryl ethyl hexanoate was less than 25 percent when we reviewed it. It's now 46 percent. There were several. The cetyl risinolate and stearate that were less than 10 that are now up to 16, probably well, there was one decalylate that was reported at greater than 50 now at 94. The ethylhexyl palmitate less than 50, now at 78. I could go on and on.

I, at least, personally did not look at this document in terms of sensitization/irritation, other effects and levels that were higher than we previously looked at. So, I would actually suggest getting rid of that ethyl hexanoate, getting rid of all the data on that but perhaps tabling this to go back and look at the data to see if it actually supports the higher use concentrations for chemicals that we previously found safe.

DR. BERGFELD: Jim?

DR. MARKS: I withdraw my motion and concur with tabling it until we clarify the point that Don has made.

DR. BERGFELD: So, is that a second for the table?

DR. MARKS: Thank you.

DR. BELSITO: Yes.

DR. BERGFELD: First and second. So, call the question to table this ingredient, please indicate by raising your hands if you agree. So we have okay. We have all of you? Okay, unanimous.

I would like to ask a question. If these are to be no brainers and we have to go and do this level of investigation, why are they being included?

DR. BELSITO: Because the ones that are the no brainers have been approved and now are being used at levels that were not approved. So, that's the issue.

DR. BERGFELD: Okay, so that puts before us another level of investigation for all these add ons. We will need to know the concentrations of use.

DR. BELSITO: Well, we have them and it didn't bother me until it became apparent that ones that we had ruled safe as used were now being used at levels that we had not looked at. So, clearly industry is not following they probably have data that support their safety, we just don't have it. So, I would like to see it because we have a significant number that are used on levels that we didn't see data for.

DR. MARKS: So, Monice, could you create a table to that effect?

DR. BELSITO: She has, and she provided it to me. So, the table is essentially done.

DR. MARKS: Okay.

DR. BELSITO: I think what Carol will need to do is probably go back and make sure the ones that are reported as being higher are in fact correct.

DR. EISENMANN: I don't have it.

DR. BELSITO: Oh, you made the table? Monice will give it to you.

DR. MARKS: This is the old concentration.

DR. BERGFELD: Again, I have to state that this does bring up the issue of the concentrations for all the add ons, you know? So

DR. MARKS: This isn't to me, the more problematic is not the add ons. It's what do we do in the future if we get a re review and we find this occurring in there isn't data that support the increased concentration with a lack of sensitivity. We would then have to say insufficient at the present.

DR. BELSITO: Yeah, I mean basically this was a re review and we've now found in the re review that the concentration of use being used is higher than that we originally signed off on. So, it alone is cause to open the document.

DR. BERGFELD: Okay. Well, I think the minutes record all of this concern and we will need to explore this particular group of ingredients as well as future.

DR. HILL: By the way

DR. BERGFELD: Ron and then Alan. Go ahead.

DR. HILL: By the way, I mean, one of the things that we did last time was group the ingredients and they're now tabulated that we can look at read across. At least one of the reasons I made that request was that there are some unusually branched or differently branched alcohols and some different carbocyclic acids for which we don't have data on either esters or acids, and there are a few of those that I had concerns because there was no systemic toxicology data at all for me, where I said are still insufficient in terms of data availability.

And Dan and I disagree about the ability to read across, but an example on decylinic acid component in these esters. We don't have anything for either esters or acids. We know that molecule has anti fungal activity because decylinic acid is used

in over the counter powders but we're not capturing any data. That's one example of several. There are some additional alcohols here and I've flagged them. We don't have any information on and same with the acids. They're a small handful, but they're unusual and they make it for me difficult to read directly across if they're in high concentrations of use in leave ons.

DR. BERGFELD: Well, I think that you've flagged them in your document

DR. HILL: I have.

DR. BERGFELD: and the staff can take a look at those and see what they can come up with. The document has been tabled and so there's time to do some work on it. Alright?

Again, Alan?

DR. ANDERSEN: Before we go on, I didn't see the issue of the use concentrations as anything out of the ordinary. Of course we would want to know the current use concentrations when we are adding something to a re review package. So, it's not a new idea.

The fact that these had previously been found safe in the then current practices of use and concentration does argue that we need to update that information, but that's a normal thing for us to do.

Laying it out so that you can see it is what's new, and I think message received.

DR. BERGFELD: Okay. Paul?

DR. SNYDER: Last comment. So, Alan. Regarding the ethyl hexanoate report that now we know the maximum concentration is not 25 percent, it's actually 78 percent, so can we consider re opening that document and then adding in all the hexanoates and then proceeding? Because I think are we somehow obligated to re open that report knowing that it was safe as then concentration was used? But we know now it's different, because it is a significant repro toxin.

We did obviate the reproductive toxicity based upon metabolic conversion and exposures, but so now we have three full higher exposure, potentially, and just include all the ethyl hexanoates in that report.

DR. ANDERSEN: Yes.

DR. BERGFELD: Thank you, thank you. Alright, any other comment or suggestions? Alright, moving on to the next,

ALKYL ESTERS – MARKS TEAM; SEPT 10, 2012

Over to the Alkyl Esters. It's the Pink Book. So this was reopened in March to expand the ingredients and also to decide whether isopropyl linoleate is now safe. So Ron and Tom the Rons and Tom, are the ingredients okay? And they're from Panel Book page 3, 211, large number of ingredients.

Monice, what number is that? Two hundred and what?

MS. FIUME: Two hundred fifty four.

DR. MARKS: Two fifty Four. Tom?

MS. FIUME: And 60 of those have previously been reviewed.

DR. SHANK: I had a question on the ethylhexanoates. On page let's see, Panel Book 28, the European chemical substances information system lists ethylhexanoate as a reproductive risk. So the embryo would be a target. And I think we have information on cetearyl ethylhexanoate. That has been reviewed already and found to be safe. So in the discussion we

could handle the question of the ethylhexanoates relying on the information we have on cetearyl ethylhexanoate. Or eliminate the ethylhexanoates because they're not no brainers.

DR. MARKS: So you would just handle that in the discussion?

DR. SHANK: Well, either handle it in the discussion saying that we're not concerned about the ethylhexanoates because we have data on cetearyl ethylhexanoate or don't add the ethylhexanoates to this list of ingredients because they're not no brainers. One or the other..

DR. BERGFELD: But the decision that we made was it should be no brainers on the add ons.

DR. SHANK: That's my position. I would just take those out.

DR. MARKS: Ron Hill? So you would take them out, Ron, because you can read across. You didn't feel comfortable with reading across?

DR. SHANK: That's correct.

DR. HILL: Which one is it you're looking at? I mean, I know which one is in the text, but which ingredients of them are we talking about because basically the chain length mattered and absorption rates mattered. A general thing a general issue that I identified in going and looking and saying and this was the one where it stood out glaringly to me, thus and such ingredient has been previously reviewed and found to be safe, but then what we're really not capturing in statements like that is safe when we have a document is contingent on conditions of use and the ingredients that are reviewed in that particular document. And we're not always picking that up, which is why you sent us those three big thick supplement books so that we could look at all those old reports. And I didn't remember I remember basically grilling people on the ethylhexanoate in particular and that we got data eventually to suggest that we were okay, but now

DR. SHANK: The European

DR. HILL: I thought we looked at that one before. Isn't that on the list? No, we didn't according to this.

MS. FIUME: So Dr. Shank, in the discussion, the draft wording that is there, want to alleviate the concern for the ethylhexanoate component, it would be the first full paragraph on CIR Panel Book page 35? It's report page 9.

DR. HILL: The trouble is there, and I noticed that statement but I didn't notice it necessarily, terephthalate is very different molecule than these extended esters. And so I'm not sure we know how the hydrolysis rate compares, how the systemic availability would compare in those two cases. Do we know if that was a chronic oral study or a single dose oral study or the terephthalate?

MS. FIUME: I'm trying to find right now if I pulled that from the discussion on cetearyl ethylhexanoate.

DR. HILL: Okay, well, we'll wait.

DR. SHANK: My feeling, that's a good paragraph but I didn't think it went far enough to cover no brainers. And since there is a concern on some of the ethylhexanoates, I didn't feel comfortable just including all of them without any data.

DR. HILL: This is a case where the reported use concentrations are pretty high. Up to 55 percent body and hand creams, lotions, and powders.

DR. MARKS: So, Ron, specifically, do we have which tables should we look at that we can see the ingredients you would delete? Are they in one block or are they scattered throughout?

DR. SHANK: They are scattered throughout, so you just have to look at the list. Go down and see where it says ethylhexanoate.

DR. MARKS: Okay.

DR. BERGFELD: I think page 36, maybe.

DR. SHANK: Pardon me?

DR. BERGFELD: The page 36 CIR Panel is the list.

DR. SHANK: 35 and 36.

DR. MARKS: 35 36. So like the first one that I see on page 35, Panel Book 35, is the C12 13 alkyl ethylhexanoate. So anything that has a hexanoate in the ingredient would be eliminated. Now, none of these, Monice, have been reviewed before? Because obviously we aren't going to eliminate ones that have been reviewed before.

DR. SHANK: Some of them have been reviewed before should be left in. It's just the add ons that are ethylhexanoates I don't think should be added on because they're not no brainers. But if they've already been reviewed, that's fine. Keep them in.

DR. MARKS: Okay. So obviously we want to at this point identify those. We won't go through all those now, I don't think Ron Shank, unless you want to. But eliminate the ethylhexanoates that are add ons that haven't been previously reported, and that's because of your concern about was it reproductive?

DR. SHANK: Reproductive.

DR. MARKS: Reproductive. Okay..

DR. BRESLAWEK: Dr. Shank, what about the ones that start with ethylhexyl but have the group on the other side?

DR. SHANK: I'm sorry, which ones.

DR. EISENMANN: The ones that start with ethylhexyl.

DR. HILL: They would be the alcohol.

DR. MARKS: So you're talking about on page 36 there in the first column. There are a number that start with ethylhexyl, like ethylhexyl adipate, ethylhexyl C10 to C4, et cetera. Those. They're the ones you're questioning, Carol? Yes. Ron, what do you feel about those?

DR. HILL: I thought we had data on that alcohol but perhaps not.

DR. MARKS: Again, I think the question is can we read across? We obviously aren't going to eliminate ones that were assessed to be safe previously. It will depend on you, Monice, when we get this new list and the next rendition of this report.

MS. FIUME: As far as those starting ethylhexyl, there are quite a few that have been reviewed. The cocoate, isononanonate, maristate, palmitate, pelargonate, and stearate have all been reviewed. So far the only one I'm finding that ends with ethylhexanoate that has been reviewed is the cetearyl.

DR. HILL: And even in those ones you just mentioned, the commonality of long chain, large fatty acids, shortest would be, what, myristoyl in that list I think that you just read?

MS. FIUME: If you say so I'll agree with that.

DR. BERGFELD: I saw in the list on page 36 the isodecyl was reviewed and then, but not reviewed was the octyldodecyl. Is that the one you mentioned? Correction, I see that has a star.

DR. MARKS: Any other comments about the ingredient list? Am I correct that we decided isopropyl lineolate is now safe. The conclusion will be safe with formulated to be non irritating with these ingredients. But Tom, page the genotox okay? I had page 67 highlighted. Let me see what was on page 67. But you were fine with the genotox?

DR. SLAGA: Mm hmm.

DR. MARKS: Okay, good. Yeah, that was the isopropyl lineolate from previous insufficient. Okay.

Any other comments? So I think will this continue procedurally to be a draft tentative amended report of safe to be with the tentative conclusion safe to be non irritating or can we issue a tentative amended report just without these ingredients?

MS. FIUME: We should be able to move on and issue a tentative amended report.

DR. MARKS: Okay. With a conclusion safe to be non irritating. And deleting those ethylhexanoate add ons because we don't have clear reproductive toxicity on those. Any other comments?

MS. FIUME: Then before we move on further can I ask, as far as the discussion goes, were there any other changes that you would like to see to the discussion or was that okay?

DR. SHANK: It's okay.

DR. BRESLAWEK: I think the reason you're removing these is not because they don't have data but because they're not a no brainer, correct?

DR. SHANK: That's correct.

DR. BRESLAWEK: Thank you.

DR. MARKS: Any other comments? So tomorrow I will move that a tentative amended report with a conclusion of safe as long as formulated to be non irritating for these alkyl esters and the add ons which will be eliminated are the ethylhexanoates because they are not no brainers and we would need reproductive toxicity. If there is discussion, Ron Shank, I'll ask you to weigh in on that. Thanks.

Okay, yes, Ron Hill.

DR. HILL: This is just an after a tag on. I remember one of the groups that I had flagged last time and looked at was the anything that was an undecylenic acid ester based on some toxicology of that. Did that concern anybody else? If not, I'm going to let that drop for the moment. We know that has biological activity because it's used as an anti fungal. Nobody else picked up on that, all right. Okay, I'm going to let it go then.

Monice, I thought that the inhalation portion of that wasn't as good as in your other ones. So maybe you could have a look at that again.

MS. FIUME: Okay.

ALKYL ESTERS – BELSITO TEAM – SEPT 10, 2012

DR. BELSITO: So, are we ready to tackle the alkyl esters? That is a pink book.

So, in March we agreed to reopen the safety assessment of cetyl esters, not because of new data, but because there were a whole bunch of alkyl esters that we could add in actually, 254, to be exact. And we thought that the data could likely be extended to support the safety of all of these.

And so now we're getting this pink draft, and to decide if we're happy with what they put together.

So this is actually one of the ones that I pointed out this morning, where isopropyl linoleate was previously "insufficient," now has gone "sufficient." And I think that we dealt with the irritation and sensitization in the "Discussion," but saying "when formulated to be non irritating."

But the other "insufficient" point for that was genotoxicity in the original report. And I'm not do we need to say, you know, based upon the genotoxicity for related structures we didn't feel we needed it for this? Or should we just ignore that point?

DR. LIEBLER: Where are you, Don?

DR. BELSITO: I'm on page 34, Panel Book, 34, page 8, where we mention that there are data gaps, yada yada yada.

DR. LIEBLER: Fourth paragraph?

DR. BELSITO: Well, I'm just trying to figure out where I said you dealt with the isopropyl the irritation and sensitization of the linoleate. It's there in one of the

MS. FIUME: It's on

DR. ANDERSEN: Second to the last paragraph?

MS. FIUME: Page 9, the report page 9.

DR. BELSITO: Yes.

DR. KLAASSEN: Non irritation.

DR. LIEBLER: "A formulation containing 10 percent isopropyl palmitate, which was moderately irritating guinea pig skin was well tolerated in a human chamber scarification test?"

DR. BELSITO: Oh, no yeah, it's the last line of the just above the last paragraph in the "Discussion."

"The Expert Panel specified that products must be formulated to be non irritating. Consequently, with the use of this caveat, the data on isopropyl linoleate are now sufficient to determine safety."

But the other issue in the isopropyl linoleate was that we were asking for genotox. So do we have to say something about, you know "Although there are data gaps, the similar chemical ..." yada yada yada, that are available, that allowed us to, you know, eliminate the data need for genotoxicity for isopropyl linoleate as well? I mean

DR. LIEBLER: Was it "insufficient" for genotox

DR. BELSITO: Yes.

DR. LIEBLER: in the previous assessment? That's the issue?

DR. BELSITO: Yes for irritation, sensitization, and genotox.

DR. LIEBLER: : Well, I don't see why in the world anybody would have a concern about that kind of structure for genotox.

DR. BELSITO: Because, back then, we had a checklist, and if we didn't have Ames testing and one mammalian, it was insufficient.

DR. LIEBLER: Oh.

DR. BELSITO: And the panel has evolved tremendously in many ways. So, it was not I mean, it's the same reason we would limit concentrations to the highest we had for irritation, rather than saying "when formulated not to be irritating."

I'm just pointing that out

DR. LIEBLER: Yes.

DR. BELSITO: that we make note of why, for irritation and sensitization we don't need it, but we don't say anything about genotox.

And I guess the only other comment I had on this group is, it says that, "Although there are data gaps, the similar chemical structures, physicochemical properties, and functions ..." and isopropyl sorbate doesn't have the same function as any of them. It's listed as a preservative.

Now, do we need to make a comment, "While isopropyl sorbate is a preservative, it is an alkyl ester, nonetheless, and the other toxicologic endpoints would be expected to be the same?" Because, I mean, it's an outlier. It doesn't have any I mean, the only function listed for it is "preservative."

Otherwise, I was okay with the document.

DR. ANDERSEN: Well, to the first question, on the genotox we have genotox now on four or five separate ones, including a

DR. BELSITO: Oh, I'm not having a problem with it. It's just that

DR. ANDERSEN: No, no, I'm saying the thing that we liked about this report format was, it didn't go back and just reiterate everything, it just added in the new data.

DR. BELSITO: Mm hmm.

DR. ANDERSEN: And so now, when we look at the new family, there is new data that came with it that goes directly to the issue of genotox.

DR. BELSITO: And I agree. It's just that there's one, you know, chemical in here that we previously looked at data, and said that it was insufficient. And now, without getting either of those data points, we're now saying it's sufficient. And I think that we've covered the irritation issue by saying "when formulated not to be irritating." But we haven't said anything specifically about genotoxicity that we thought you could read across for it.

And I don't know that we need to. I'm just pointing it out.

MS. FIUME: I could very easily so it doesn't look like we've missed something just pull it out into its own paragraph, and address that in the past it was "insufficient."

It is now "sufficient," and this is why.

DR. BELSITO: Yeah, I would do that

MS. FIUME: Just (inaudible) Paragraph.

DR. BELSITO: just because, you know, someone looking, going, okay, you know, isopropyl linoleate was "insufficient," and it was "insufficient" for these reasons, "And I don't see any of the new data addressing those reasons.

So why do you think it's now 'sufficient'?"

DR. LIEBLER: And I think you can cite the negative results in the genotoxicity assays with structurally analogous compounds, mitigate concern about genotoxic.

DR. BELSITO: Uh huh.

DR. SNYDER: So this one, I had it was a tough one to look at, because we're referring to so many older reports, about either the acid or the alcohol. And so, like in one instance the reference to a previous report sets somewhat of a domino effect. And the ethylhexyl cocoate was used in support of these alkyl esters, was actually based on a previous coconut acid report, which was then based on another report.

And so we end up with this almost "data dilution." So by the time you go back to the original report, the reports that we have referenced, there's actually very little data there. And I became somewhat concerned about that, a little bit, and how we ferret out that we're not, you know, building a house of cards, using some of the older reports.

And then on for instance, we know that cetyl ethylhexanoate and ethylhexyl stearate are both reproductive toxicants. And then there's a whole bunch more ethylhexyls and ethylhexanoates in here that we don't know anything about.

Now, granted, we understood the repro tox was related to

DR. BELSITO: Zinc.

DR. SNYDER: a zinc deficiency in those. But, again, so we're making a presumption.

And I had a question for Dan, so that, in the absence of dermal penetration or penetration enhancement, is there any reason to think that those would act differently, in regards to specifically, on page 45, "Metabolic clearance was used to alleviate the concerns in previous reports" so, regarding those two components.

And so, particularly the ethylhexanoates being converted to two ethylhexanoic acid, which was a maternal liver toxicant, and a zinc deficiency mechanism in embryos.

But we use, in part of our alleviation of concern for that, the metabolic clearance issue. And so then what about predicted clearances in these ethylhexanoates? So would we presume that they're cleared in a similar fashion? Or not?

DR. LIEBLER: Are you referring to page 45 of the Panel

DR. SNYDER: Well, just page 45, at that table. Because all the other ethylhexyls, and all the other ethylhexanoids. But if you actually go to, if you go to the bigger table

DR. LIEBLER: The structures list, do you mean?

DR. SNYDER: No, if you go to like

DR. BELSITO: Panel Book page? Or

DR. SNYDER: Panel Book page it's Table 3, where we've separated out what used.

DR. BELSITO: Right.

DR. SNYDER: And where we have some data on the acids, some data on the alcohol.

But if you go to the actual Table 2, the discussion points for these things is that we actually used if you go to page 40, Panel Book page 66, for ethylhexyl stearate, part of our discussion item for dealing with the repro tox was that we said that there was the hexanol absorption, and the load that we expected to enter the hepatic circulation, the potential to induce was not thought to be an issue.

So, again, we use some metabolic clearance to give us confidence that we weren't there would be no attaining those kinds of levels in humans.

And so I'm just raising that for a discussion point. And then I also had a in this report, along those same lines, is that the old report on cetyl ethylhexanoate, had a maximum concentration of use of 25 percent. In this report, it has it at 78 percent? And then for ethylhexyl stearate, the old report had a maximum of 5 percent, and the new one has 38 percent. So we've got dramatic increases in concentration of use also in this report, for those two ingredients that have been previously reviewed.

So what do we do when we're referencing an old report, saying "safe as used," but there's an example where the use is dramatically different.

DR. BELSITO: I didn't catch that.

DR. SNYDER: So if you go to page 63, Panel Book page 63, for cetyl ethylhexanoate, it says, "Up to 25 percent in leave ons." And if you go to page 160, in the "Data" section, and the appendix, we're at a much higher percentage, at 78 percent.

So

DR. BELSITO: What page are you on, Paul?

DR. SNYDER: (Inaudible 00:12:57.) So this was on the summary statements for all the individual reports. So if you go to page, Panel Book page 63

DR. BELSITO: Uh huh.

DR. SNYDER: for acetyl ethylhexanoate, we say, "The maximum reported concentration use was up to 25 percent in leave ons and rinse off formulations." But if you go in the back, to our new "Use" table, we have an eye makeup remover that goes to 78 percent.

So we've got this dramatic so the use concentrations are dramatically different in the new data, compared to the old report. And it's the same thing for ethylhexyl stearate where, on page 40, we say that the maximum use was 5 percent, the concentration was 5 percent, and the new data tells us it's eightfold higher, at 38 percent.

So how do we deal with that? How do we because we're using the report.

DR. BELSITO: Yeah no.

DR. SNYDER: So and the only reason I looked at those closely, because they were well established repro tox. And then when I saw those other ethylhexanoates and things pop up

DR. BELSITO: And 78 percent is dermal contact.

DR. SNYDER: Yeah eye makeup remover.

DR. BELSITO: And 52 percent is mucous membrane.

DR. SNYDER: Yeah. And if you look on page 40, it says the maximum use was well, maximum use was 5 percent.

So

DR. LIEBLER: You make a pile of points.

DR. SNYDER: A little bit of a fly in the ointment there.

DR. LIEBLER: It might be easier to disentangle the pile a little bit, and deal with these separately.

So, the first point you the points, I think the main points I think you have are, one, that we have use concentrations from the old reports that are outdated. And the use concentrations could have influenced the conclusions from the previous report. And those changes in use concentration may change our interpretation this time.

That's one issue, right?

DR. SNYDER: Correct.

DR. LIEBLER: So, the differences between the use concentrations, between now and then, essentially.

DR. SNYDER: Right.

DR. LIEBLER: And then there's the issue of the dilution of the primary references, by being filtered through several reports. And, in fact, those two issues could be intermingled. Because if the primary references refer to different uses or use concentrations.

DR. SNYDER: Correct. So, that what kind of when I started going back and looking at it, I was focused on the ones that I was worried about for the repro tox, because that had been a loud signal before. But I knew how we addressed it, and what we attributed it to.

But then, when I started looking at that, and it said, well this report was based upon this report, which was based upon this report and so then, when I actually went back to, like, the coconut, there was very little data to support coconut anything. But now we're using coconut to substantiate things in this report.

DR. LIEBLER: So I think a good operational rule of thumb might be that if the older if there are no new data, or there is no significant change in the use or use concentration, then I think the old report you could simply cite and say there's no reason to have a different conclusion right? That part's pretty straightforward.

It's when

DR. SNYDER: I mean, I wouldn't have minded a slight

DR. LIEBLER: Even if excuse me, just to interrupt you

DR. SNYDER: I'm sorry.

DR. LIEBLER: even if we're citing, even if we're very indirectly citing a primary literature by citing the reports, as long as we can verify that the circumstances really haven't changed, then that's okay, I think, in my book right?

DR. SNYDER: But I was just bringing that issue more

DR. BELSITO: Well, I think it's critical. I think what we need to do, unfortunately, Monice, is the ones that were previously reviewed, I think we need to go back and put what the maximum concentration of use was considered to be. And then where there's a significant increase as Paul has noted for two, and perhaps there are others then we're actually going to have to get, we're going to have to have access to those specific reports to see whether the data justifies using them at the new concentration.

So I think I would suggest we table this

DR. SNYDER: Right.

DR. BELSITO: For inclusion of the previously reported concentrations of use in the table

MS. FIUME: Okay, so you want them in the "Use." So they are in Table 2. There's

DR. BELSITO: Yes, but it makes it much easier to have them there was, in one table was it in this one? There was one table where you put the 2000 whatever, and then 2012 right next to the numbers, and use concentration

DR. SNYDER: Well, it's a little hard to do, because they were reviewed at different times. So she can't really put columns, because she'll have to have a column for every year the report was reviewed.

DR. BELSITO: No, I think what you can do is, you know, simply put "Concentration When Last Reviewed," and don't specify a year.

DR. SNYDER: Okay. Yes. Okay.

DR. BELSITO: And then, you know, just reference the report, so that we can easily scan the columns and go, okay, you know, these are all significant increases in concentration.

You know, we need to go back and look at that report. I mean, Monice doesn't I mean, the reports are all available on line. You don't necessarily have to copy all the reports although Wilma probably would want them.

DR. BELSITO: Well, it's here. She captured it in this format here.

MS. FIUME: And you do have that was the book that you did not

DR. BELSITO: Right.

MS. FIUME: the one that I e mailed you about.

DR. BELSITO: Right. Right. Right.

MS. FIUME: Can it be another row, under where it says, "Totals," and have one row as "Current," and one row as

DR. SNYDER: Previous?

MS. FIUME: "Previous?"

DR. BELSITO: Yes.

MS. FIUME: Is a row okay?

DR. BELSITO: Yeah.

DR. ANDERSEN: You want the table with that?

MS. FIUME: Table 8.

DR. ANDERSEN: Okay.

DR. SNYDER: And I still think that because we use part of the metabolic clearance to alleviate the repro concerns, that we need to think about that. Was there any difference to think these other ethylhexyls or hexanoates will clear differently?

Does that make sense?

DR. LIEBLER: So, again, you're Paul, the example that you're pointing us to is on page

DR. SNYDER: Ethylhexanoates.

DR. LIEBLER: Panel Book page what?

DR. SNYDER: 64. The cetyl all right, wait a minute, that's not that was one cetyl there, or the ethylhexyl stearates were used, that the dermal absorption, the combination of normal absorption and the clearance, that we wouldn't enter that it would not be expected to enter the hepatic circulation. So the potential for 2 ethyl 1 hexanol induced reproductive toxicity was not thought to be an issue.

So there, we're using metabolic clearance to alleviate some concerns.

So, my only concern is, I need somebody to tell me that metabolic clearance

DR. LIEBLER: Yeah, actually it's not the clearance so much as the release of the ethylhexanoic alcohol.

DR. SNYDER: Metabolism.

DR. LIEBLER: Right.

DR. SNYDER: Yeah. Of all those other ones

DR. LIEBLER: Or, I'm sorry, ethylhexanoic acid is the

DR. SNYDER: And I just circled, on that table, three. I just circled all the ethylhexyls, and all the hexanoates. It was a kind of a flag for me, because I would presume that they're going to have the same type of potential.

DR. LIEBLER: So my first guess would be they'd have comparable metabolism that they'd have comparable metabolism. I don't know that we have data on that.

Comparable metabolism would mean that there would be a fairly minimal cleavage of the cetearyl ethylhexanoate, for example, to ethylhexanoic acid.

DR. SNYDER: Because I written, for me the note was, Issue: Does the same scientific basis for ethylhexyls and ethylhexanoates apply across the board with regard to dermal penetration and metabolic clearance. Because it was both dermal penetration, absorption, and metabolic clearance.

DR. BELSITO: So your question is, do other ethylhexanoates

DR. SNYDER: Ethylhexyls and ethylhexanoates the two groups. Because there was two of them.

Go to Table 3, on page 70, our book, Panel page 70

DR. BELSITO: Mm hmm.

DR. SNYDER: Cetyl ethylhexanoate, the fourth one down. And ethylhexyl stearate, at the top we've both have identified those as being reproductive tox, in those studies. And we alleviated any concerns about that based upon absorption and clearance, that there wouldn't be an appreciable amount of that to ethylhexanoic acid to reach concentrations through cosmetic use.

So I'm just asking the basic, just the simple question is, so we aren't overlooking something that may be more highly metabolized, or less metabolized.

DR. BELSITO: So you're saying do we know that ethylhexyl stearate metabolism is representative for the other ethyl

DR. SNYDER: The cocoates, the isonoate, the

DR. BELSITO: (inaudible) Et cetera.

DR. SNYDER: And the same thing with

DR. BELSITO: And do we know that the metabolism of cetearyl ethylhexanoate is similar to all the other ethylhexanoates.

DR. SNYDER: Because there's a whole there's 1, there's 3, 4, 5, 6, 7 there's 12 of them that we have not concluded on the safety of the acid or the alcohol. And so there's a number of them that we haven't evaluated on any capacity.

DR. LIEBLER: Paul, the original study that was of concern was ethylhexanoic acid? Or ethylhexanol?

DR. SNYDER: It was

DR. BELSITO: Ethylhexanoic acid.

DR. SNYDER: Ethylhexyl stearate. But the ethylhexyl cetyl ethylhexanoate, and ethylhexyl stearate were, I think it's the metabolism to the 2 ethylhexanoic acid. So ethylhexyl (inaudible)

DR. LIEBLER: Which is a maternal toxic. Maternal toxic so that's the compound you're concerned about

DR. SNYDER: Correct.

DR. LIEBLER: And the ability to generate that from any of these chemicals.

DR. SNYDER: Correct.

DR. LIEBLER: Okay. So there are two considerations. One is the ethyl so anything that's an ethylhexanoate means it's an ester of that acid. Okay?

DR. SNYDER: Okay.

DR. LIEBLER: And therefore it could directly produce that acid by cleavage of the ester. Okay.

Anything that's an ethylhexanoal [sic] ester is ethylhexanol. And that would not produce that's

DR. SNYDER: Would result in the

DR. LIEBLER: metabolically from being the acid. That's, I think, much less of a concern.

Then the question boils down to whether or not any of the ethylhexanoate esters release ethylhexanoic acid, under conditions of use, sufficient to elicit the effect we're concerned about.

DR. SNYDER: Correct. Well, it's two factors. One is, is it absorbed, so that systemically that it can

DR. LIEBLER: Right.

DR. SNYDER: So that was the reason we did it, was because on the other ones, we said there was not appreciable dermal absorption.

DR. LIEBLER: Right.

DR. SNYDER: And the clearance was rapid enough.

DR. LIEBLER: Yes. So, if absorption's low, and the use concentration well, I don't if absorption and the use concentration are both low, and metabolism is low, all those things would contribute to keeping the ethylhexanoic acid below the threshold of toxicologic concern, I suppose.

I think absorption of these will mostly be low right? And use concentrations, some of them are fairly high. And metabolism in the skin probably won't be that high. If it got to the gut, it would probably be high.

MS. FIUME: And I think there's a 52 percent use in a lipstick, right?

DR. LIEBLER: Yep. Yep. Yep.

DR. SNYDER: It's 78 percent on a makeup remover, 52 in the lipstick. And then the other one had, it was 78 percent in acetyl

DR. BELSITO: So, Paul, this is what Monice just showed me, and our discussion.

DR. SNYDER: So, was it absorption end? Metabolic? Because that's what

DR. LIEBLER: Could you just read it? Could you just read it for us?

DR. SNYDER: Yes, it says here, "These findings suggest the process of metabolic conversion and subsequent hydrolysis results in the (inaudible) For this molecule, (inaudible) allows clearance before sufficient levels can rise to produce acute liver toxicity."

So it's what I'm saying. I mean, if we believe that the rest of them behave the same, then I'm okay with it. But I just think we need to think about that.

DR. BELSITO: I mean, why wouldn't they behave the same?

DR. SNYDER: I'm just asking.

DR. BELSITO: I mean, the driver I mean, they're all going to be small or similarly sized alcohols, and the driver behind the toxicity is ethylhexanoic acid. So, I mean, the amount of esterases you have in the skin are going to be similar. I mean, I would imagine they'd do the same thing to cetearyl as they do to isopropyl, no? I mean, I don't know. I'm not a chemist.

DR. SNYDER: Well, that's certainly I mean, the question I had was what are the predicted clearances for these additional ethylhexanoics? And then

DR. BELSITO: Well, I think the bigger question is the concentration.

DR. SNYDER: do they penetrate? Well, yeah. That's two separate issues to me, but

DR. BELSITO: Right.

DR. SNYDER: But that kind of came out as a result of looking at the two pretty closely. But I don't know about for any I didn't look for all the ingredients in this.

DR. BELSITO: Mm hmm. No, I understand.

DR. SNYDER: Because those were the two that I was most concerned about.

DR. BELSITO: And I think that's a huge issue. We need to identify I mean, I think that Carol has to beat the bushes and verify that the numbers we were given are, in fact, correct.

DR. LIEBLER: So for the big ones, like the cetearyl ethylhexanoate, I agree with what's in here, with the language of the previous report.

But on the other hand, you have ethyl sorry, I just had it in front of me ethylhexyl, ethylhexanoid. All right? That's not as big. I mean, I could see some significant, possible some significant absorption of that. I don't know how efficient the de esterification would be to release the ethylhexanoic acid. But you basically get ethylhexanol and ethylhexanoate out of that. That would be the one that would concern me the most.

But there are no data. "CIR Has Not Concluded on the Safety of the Acid or the Alcohol" so that's the group I'm looking at.

DR. BELSITO: Mm hmm.

DR. LIEBLER: So the ones that are ethylhexyl, as the first word in the name, that means that's the alcohol piece. And the alcohol piece would have to be first of all, the compound would have to be absorbed, then it would have to be liberated by de esterification. Then the alcohol would have to undergo two steps of oxidation to get to the ethylhexanoic acid.

And those examples really don't concern me very much, because the absorption of most of these is going to be pretty low. And then the metabolic steps, there's going to be attrition in each step, so that I think that the production of ethylhexanoic acid in sufficient concentrations to elicit toxicity is very unlikely.

DR. BELSITO: Okay.

DR. LIEBLER: The only one that I would really be concerned about would be the ethylhexyl ethylhexanoate. And I don't see anything small, like caproyl ethylhexanoate, for example.

MS. FIUME: I don't know if it's useful. It may help some but on Panel Book page 144, for example, there was information on ethylhexyl alcohol that was included in the appendix of the dicarboxylic acid report, I believe it was.

So what information that was found on ethylhexyl alcohol is summarized there. So I don't know if that's helpful.

And there's a couple of other alcohols and acids that are back there, as well mostly alcohols.

DR. BELSITO: Mm hmm.

DR. LIEBLER: So, acute dermal toxicity with ethylhexyl alcohol, LD50 is greater than 2380mg/kg. That's really big. So right? 2.3 grams per kg. So the ethylhexanol is not something you need to worry about.

So that goes along with my previous comment about the ethylhexyl being the first word in the name. Those guys are probably not a problem.

DR. SNYDER: But there was a repro study on the next page, it says "estrogenic activity of 2 ethylhexanoic acid was examined and found to be weak estrogenic activity. Additional details were not provided."

So, again, it's this

DR. BELSITO: Well, I mean, looking cross eyed at the right system is "weak estrogenic activity." So, you know, I wouldn't hang much on that. Unless there were some real data behind that, I don't think that tells us much of anything.

DR. SNYDER: I'm agreeing with everything you're saying. I think we just need to capture that somehow, that we considered it, and these are the reasons why we're you know, the same justification, it was not

DR. BELSITO: Well, I mean, I think that what we're going to have to rely on is, you know, when it comes to including the other ethylhexanoates, what I'm hearing from Dan is the ethylhexyl cocoids, none of those bother us.

DR. SNYDER: Right.

DR. BELSITO: And the ethylhexyl alcohol. It's the ethylhexanoic acid component.

DR. SNYDER: Right.

DR. BELSITO: And so I think we're going to have to if we get to that point, if we agree to keep the ethylhexanoics in this at all, we're going to have to rely on Dan to help with the understanding of the metabolism.

DR. SNYDER: Well, I think the absorption data suggests that they're not absorbed.

DR. BELSITO: Again, what I think we need to do, though or absorption data, right. I mean, we can always go "insufficient" with those. We've done that before.

But I think we just need to table it, and put in what was known about concentrations before, and take a good look at it with your point about the metabolism and the absorption.

DR. LIEBLER: So I think if absorption is low, it pretty much takes care of it.

DR. SNYDER: Yeah.

DR. LIEBLER: If absorption is I don't know what low and high will be but, you know, if absorption is on the order of a percent or less, or a couple of percent

DR. SNYDER: I mean, absorption's always taken in the context of the concentration in use, too.

DR. LIEBLER: Right.

DR. SNYDER: So they kind of aren't they're both linked.

DR. LIEBLER: Yes. So if use is high and absorption is high, then we've got a problem and we might have to go "insufficient" for these.

If use level, concentration of use level is low, and absorption is low, I think we can certainly argue that this is not going to be significant, won't reach the threshold of toxicological concern.

DR. BELSITO: Monice?

MS. FIUME: Actually, I have two questions first, on the "insufficient" versus this is a re review, where ingredients were added, so there's the "no brainer" aspect. Does that play a role?

DR. ANDERSEN: Right. They wouldn't go "insufficient," they would be excluded from the family. Yep.

MS. FIUME: So, that's an option?

DR. LIEBLER: So we already made the decision to add all these ingredients?

MS. FIUME: We did this at the last meeting.

DR. LIEBLER: Okay.

MS. FIUME: Originally, we did not include ingredients that had been reviewed recently, but because we've done that all in the past, we brought them all in.

So we very well can, or you can very well

DR. LIEBLER: Un include.

MS. FIUME: un include. So that is an option. The second, I have a question as far as tabling for the concentration of us. I have most of the information in the report. If I bring you the table tomorrow that just has the old information and the new information

DR. BELSITO: Sure.

MS. FIUME: would that be too much to process?

DR. SNYDER: Well, but I mean, I think Don kind of raised the issue already, Carol's got to verify did that really go from 25 to 78? Did it really go from 5 to 38?

I mean, so I don't know we're not going to be able to verify that by tomorrow, would we?

DR. BELSITO: I don't think so.

MS. FIUME: Umm

DR. SNYDER: I mean, we've got two different versions updating the concentration of use. I mean, there's two sets of that, the two memos that came from

MS. FIUME: I

DR. SNYDER: I assume it's pretty solid data.

MS. FIUME: Because there are a lot of entries in the unpublished data that are higher. I'm trying to see, in 2008, did we have concentration? Well, in 2002, use was up to 35 percent 34 percent, and it's in products that were applied to the skin; 28 percent are in products 34 percent in foundations.

DR. SNYDER: For ethylhexyl stearate?

MS. FIUME: Cetearyl ethylhexanoate.

DR. SNYDER: Okay. Yeah.

MS. FIUME: Yeah.

DR. SNYDER: But, I mean, that one's for sure, it has that 78 percent listed. So

MS. FIUME: So

DR. SNYDER: And then 52 in the eye makeup remover.

MS. FIUME: But, at least as far as the inclusion, excluding it would give you an idea if it's too much to process, that's fine. But I can very quickly throw together just two lines of what the new maximum concentrations are for leave on, rinse off, (inaudible) Versus the old information.

DR. BELSITO: Yes, I mean, I think that would be very helpful. And, you know, I think based upon that and, you know and I think we're all comfortable with the mechanism of repro toxicity for ethylhexanoic acid, that it's pertinent to rats but not humans, and it's an overdose situation, and it's zinc and all of that.

You know, but I think we need to rely on Dan to you know, I think probably the other thing, if you could do it, Monice, would be to put a list of all of the, just the ethylhexanoates that we're looking at in this report. Because it's looking to me that, with the no brainer, if Dan isn't comfortable saying the cleavage is the same, and we're not comfortable with a dramatic increase in concentration, we can just take all the ethylhexanoates out of the report.

MS. FIUME: And there's about 16 of them.

DR. BELSITO: But, you know, you create a family of, you know, ethylhexanoates.

DR. LIEBLER: And, you know, if we ever had to come back and do those, it would be a nice group to do together. They've got this ethylhexanoic acid toxicity issue that you have to play off against absorption and metabolism. But I just don't think that you need to hamstring this report. You know, I would be comfortable if who reports on this tomorrow?

DR. BELSITO: Someone. (Laughter.) Who reports on this? Dr. Marks.

DR. SNYDER: I'd almost be willing to bet that they would suggest excluding the ethylhexanoates. If they do, I think

DR. BELSITO: We'll go "safe as used?"

DR. SNYDER: Yeah.

DR. BELSITO: I'm okay with that, too.

DR. SNYDER: It's the only place we're hung up.

DR. LIEBLER: And use. Concentration.

DR. SNYDER: If there's not other ones that (inaudible)

DR. BELSITO: Right.

DR. SNYDER: Right. Yeah.

DR. BELSITO: What's funny, Monice?

MS. FIUME: It will be a very consistent discussion tomorrow.

DR. SNYDER: So they already discussed it? Oh. Okay.

DR. LIEBLER: I am not surprised.

DR. BELSITO: So, where are they leaning? Just excluding them, or

MS. FIUME: Yeah.

DR. LIEBLER: I think it's I mean, putting them in was not necessarily a no brainer, in light of what we talked about. You know, this is the only downside of when we see a huge list for the first time in a meeting, you know, we can skip over stuff that's it turns out they look like no brainers, but they're not. And this is a good example of that.

DR. BELSITO: Okay, so Marks is going to come in probably with a proposal to "safe as used," but exclude the ethylhexanoates. We'll just agree with him.

DR. SNYDER: Well, I don't know, I think we still need to verify

DR. BELSITO: Oh, look at the data. Let's look at the data.

DR. SNYDER: The use data is still going to be

DR. BELSITO: Okay.

DR. LIEBLER: For all (inaudible).

DR. BELSITO: Yes, look at the data, and then look at the ethylhexanoates that are there, and give us your thought about how they would be metabolized.

DR. LIEBLER: Well, I think they'd all be metabolized in the same way. I mean, there's two short ones, or relatively short ones: there's a lauric, C 12, right? ethylhexanoate. And then there's the ethylhexyl ethylhexanoate. Those two are the smallest, and likely to be absorbed the most. They probably drive the concern about the group.

The longer chain ones probably won't get absorbed enough to generate enough ethylhexanol gas to be of concern. But, again, that full discussion means it's not a no brainer.

DR. BELSITO: Right.

DR. SNYDER: So, to have a follow up, I think so, shouldn't we then initiate it to put them in a separate group and evaluate them? Because it appears to be that we're avoiding them because of potential repro tox which we've already dealt with in other, two other reports.

It doesn't make us look foolish, does it, that we're, in some sense we're avoiding?

DR. LIEBLER: I don't know. I mean, is there significant use of these ingredients? The ethylhexanoids?

DR. ANDERSEN: We need to look at that, because half of this group has no use.

DR. LIEBLER: So, I just wondered, if the ethylhexanoid esters have significant use, we might want to come back with a separate report with those guys.

DR. SNYDER: And then reopen the other two, and put them all together into the one category you suggested.

MS. FIUME: And so cetyl ethylhexanoate, from a quick, quick look, has 262 uses.

DR. LIEBLER: Acetyl ethylhexanoate.

MS. FIUME: Cetyl

DR. LIEBLER: Oh, cetyl. I'm sorry. Yeah.

MS. FIUME: Sorry. But the only point of consideration on its own, when you bring it to be reopened, it was just looked at in 2004, 2005 recently and not reopened, based on the discussion that you just read.

DR. LIEBLER: Okay.

MS. FIUME: So, if it is a concern

DR. ANDERSEN: 2006.

MS. FIUME: 2006?

DR. ANDERSEN: Mm hmm.

MS. FIUME: So if there is concern with the use, you do have a report out there saying again that it's safe as used.

DR. LIEBLER: And that's for cetyl, which is longer, bigger, less absorption. That's the whole argument in that report for why there wasn't any concern.

And what I'm I guess what I'm pointing to

DR. BELSITO: But that's the one that has jumped up to 78 percent.

DR. LIEBLER: So, use is up. Yeah.

DR. SNYDER: Yeah, so that's a huge issue.

DR. BELSITO: But concentration is

DR. SNYDER: The previous report

DR. BELSITO: huge, which gives us concern that it's being used in ways that we said weren't safe.

DR. SNYDER: Potentially.

DR. BELSITO: So, even based upon that summation, we would want to reopen the ethylhexanoate group, because

DR. SNYDER: Knowing that it's now used at 78 percent.

DR. BELSITO: Right.

MS. FIUME: I don't know that works procedurally.

DR. LIEBLER: Yeah.

MS. FIUME: Being that it wouldn't be up for re review again until

DR. BELSITO: I understand that. But now we're given information by the cosmetic information that it's being used at levels that we have not assessed as safe.

DR. ANDERSEN: Anyone can advance a request.

DR. LIEBLER: So the committee can simply say that the committee would suggest that these alkyl esters be considered in a group safe as used, the ethylhexanoates be spun out in a separate

DR. SNYDER: Yeah, I mean, I think the (inaudible) is an issue. I think we could spin those out and bring a different report, in light of the fact that there's increased concentration of use, and grouping these all together makes sense blah, blah, blah. Put the thing to rest.

DR. BELSITO: Okay. So let's do that. So we're going to get rid of all the ethylhexanoates. We're going to go "safe as used" with all these others, assuming that there's been no significant increase in concentration, although even if there is, we're probably not concerned. But we'd like to see it compared side by side.

And group all the ethylhexanoates and even though cetyl was reviewed in 2006, request a re review based upon information that we were given here that there's been a significant increase in the use concentration, which

DR. SNYDER: In two different products that are over two times what we approved it at.

DR. BELSITO: Right.

DR. SNYDER: Two different uses.

DR. BELSITO: Okay. Well, I'll get rid of all my prior notes on that one. Everything has changed.

DR. LIEBLER: The wisdom of the group will prevail.

DR. KLAASSEN: It's not only the concentration of use that's important, it's the concentration of use times the area of the body that it's applied to that's important.

DR. LIEBLER: Yes. Right exposure, total exposure.

DR. KLAASSEN: So if you have a high exposure to the eyelid, it's probably much, much less than the systemic exposure, than a low percentage applied all over your body.

So, one needs to keep that a little bit in perspective.

DR. SNYDER: So, Monice, just one other comment for the report?

MS. FIUME: Mm hmm?

DR. SNYDER: On page, Panel Book page 35, the first paragraph, at the top, where it says, "It is known that 2 ethylhexanoic acid, a possible metabolite of some of the alkyl esters ..." so you should also include, I think, ethylhexyl stearate there, instead of just cetyl ethyl. Because they're both, they're both (inaudible).

MS. FIUME: So, I can switch it to that paragraph will now come out of this, as far as

DR. SNYDER: Exactly. But that's what yeah. But I'm just telling you yeah. Exactly.

So, if we don't go that way, then you'll have to add that. But, otherwise, that will probably (inaudible).

MS. FIUME: And so the I'm sorry, what

DR. SNYDER: You only listed cetyl ethylhexanoate, when it's actually ethylhexyl stearate, too.

MS. FIUME: But the ethylhexyl is isn't ethylhexyl stearate the alcohol?

DR. LIEBLER: Yeah. That's okay.

DR. SNYDER: Okay.

DR. LIEBLER: If it starts with "ethylhexyl," that means it's the alcohol part.

DR. BELSITO: It doesn't matter.

DR. SNYDER: Okay.

DR. LIEBLER: And that's okay.

DR. SNYDER: Gotcha.

DR. BELSITO: It's the ethylhexyl hexanoate that we. Okay. Anything more?

DR. ANDERSEN: You know, Carol had a comment. It was a regulatory discussion on page 2, Panel Book, 28. It says category 3 CMRs in Europe

MS. FIUME: Oh, she wanted an additional sentence.

DR. ANDERSEN: Right.

MS. FIUME: Do you want me to read what will be added?

DR. BELSITO: Sure.

MS. FIUME: It will be in the next version. But on report page 2, where it talks about ethylhexyl well, again, that will most likely be deleted.

DR. BELSITO: Yes, this will be yeah.

MS. FIUME: It was just adding that it's allowed for use. It would have said, "A substance classified in category may be used in cosmetics if the substance has been evaluated by the SCCS and found acceptable for use in cosmetic products."

But it won't matter now, because it's referring to an ingredient that we're not

DR. BELSITO: Right. Okay.

Amended Safety Assessment of Alkyl Esters as Used in Cosmetics

Status: Draft Tentative Amended Report for Panel Review
Release Date: November 16, 2012
Panel Meeting Date: December 10-11, 2012

The 2012 Cosmetic Ingredient Review Expert Panel members are: Chairman, Wilma F. Bergfeld, M.D., F.A.C.P.; Donald V. Belsito, M.D.; Ronald A. Hill, Ph.D.; Curtis D. Klaassen, Ph.D.; Daniel C. Liebler, Ph.D.; James G. Marks, Jr., M.D.; Ronald C. Shank, Ph.D.; Thomas J. Slaga, Ph.D.; and Paul W. Snyder, D.V.M., Ph.D. The CIR Director is F. Alan Andersen, Ph.D. This report was prepared by Monice M. Fiume, Senior Scientific Analyst/Writer, and Bart Heldreth, Ph.D., Chemist CIR.

Cosmetic Ingredient Review

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ABSTRACT (DRAFT)

The CIR Expert Panel assessed the safety of 238 alkyl esters for use in cosmetics, finding that these ingredients are safe in cosmetic formulations in the present practices of use and concentration when formulated to be non-irritating. The alkyl esters included in this report have a variety of reported functions in cosmetics, with skin conditioning agents being the most common function. The Panel reviewed available animal and clinical data in making its determination of safety, and when data gaps occurred, similarity in structure, properties, functions and uses of these ingredients allowed for extrapolation of the available toxicological data to assess the safety of the entire group.

INTRODUCTION

Cetyl esters, a synthetic wax composed of a mixture of esters of saturated fatty acids and fatty alcohols with carbon chain lengths between 14 and 18, is a cosmetic ingredient that was reviewed previously by the Cosmetic Ingredient Review (CIR) Expert Panel. In 1997, the Panel concluded that cetyl esters is safe as used in cosmetics.¹

Cetyl esters is a constituent of a broader group of cosmetic ingredients, the alkyl esters, which consist of the reaction products of fatty acids and alcohols. The 238 alkyl esters being reviewed in this safety assessment are presented alphabetically in Table 1. Although 57 of these alkyl esters have been reviewed previously by the CIR Expert Panel,¹⁻²¹ they are included because of their structural and functional similarity, thereby creating a complete family of alkyl esters.

The conclusions reached for the previously-reviewed ingredients (including cetyl esters) as well as a summary of the data included in those existing safety assessments are provided in Table 2. The data available for these alkyl esters, which includes single-dose and repeated-dose toxicity, toxicokinetics, reproductive and developmental toxicity, genotoxicity, carcinogenicity, dermal and ocular irritation, and sensitization and photosensitization studies, support the safety of this class of cosmetic ingredient.

In addition, the CIR has concluded that many of the individual constituents that make up the alkyl esters, i.e. the alcohol and/or the acid, are safe as used in cosmetics. Because the safety of the individual constituents is relevant to the safety of the compound, Table 3 indicates whether all, one, or none of the individual constituents of each alkyl esters have been found safe for use in cosmetics and Table 4 provides the conclusions of those individual components.^{5-7,16,17,19,20,22-34} Please note that while the safety assessments on the individual constituents are relevant to the safety of the alkyl esters, the available data are well-documented in the existing CIR reports and will not be summarized here. However, the maximum reported concentration of use is provided in the table.

Because the data from the existing safety assessments are included in Table 2, only new data will be included in the body of this safety assessment.

CHEMISTRY**Definition and Structure**

The ingredients in this review are alkyl esters. The core relationship between these ingredients is a carboxyl ester functional group flanked on both sides by alkyl chains. Some of these alkyl chains are saturated and some are unsaturated and some of the chains are straight and some are branched. (Figure 1). Formal definitions for the ingredients included in this assessment are provided in Table 5.

Methods of Manufacture

Most of these alkyl esters are produced synthetically via classical Fischer type esterification methods (i.e., reaction of a carboxylic acid with an alcohol to produce a carboxylic ester; Figure 2), although the reaction may be promoted by acid or base catalysis, or by the use of an acid chloride.

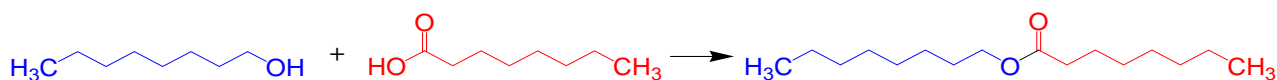


Figure 2. Synthesis of capryl caprylate from capryl alcohol and caprylic acid

However, some of the natural source ingredients in this review may be produced by transesterification (i.e., exchange of alcohol moieties to create a different ester product). For example, the triglycerides (i.e., glyceryl tri-**esters**) in natural oils can be reacted with alcohols to produce new monoesters (and diglycerides, monoglycerides, and glycerin, depending on reaction stoichiometry). Available methods of manufacture are summarized in Table 6.

Physical and Chemical Properties

Alkyl esters are hydrophobic materials that range from oils, at the lowest molecular weights/shortest chain lengths, to waxy solids, at the highest molecular weights/longest chain lengths. Physical and chemical properties data are provided in Table 7.

Impurities

One published reference cited that in the synthesis of oleate esters using sodium alcoholates (base catalyst), methyl oleate was the major impurity.³⁵ (The safety assessment of decyl and isodecyl oleate includes toxicity data on methyl oleate.³⁶)

USE

Cosmetic

The alkyl esters are reported to function in cosmetics mostly as skin conditioning agents.³⁷ Some of the alkyl esters are reported to have additional functions. Most notably, isocetyl tallate is reported to also function as a plasticizer and solvent and tetradecylpropionates as a solvent. Isopropyl sorbate is reported to function as a preservative only, and not as a skin conditioning agent. The functions of each ingredient are provided in Table 5.

The FDA collects information from manufacturers on the use of individual ingredients in cosmetics as a function of cosmetic product category in its Voluntary Cosmetic Registration Program (VCRP). VCRP data obtained from the FDA in 2012³⁸ and data received in response to a survey of the maximum reported use concentration by category conducted by the Personal Care Products Council (Council)^{39,40} indicate that 112 of the 238 alkyl esters named in this safety assessment are currently used in cosmetic formulations. Ethylhexyl palmitate has the most reported uses, 1298, followed by isopropyl myristate, 1149 reported uses, and isopropyl palmitate, 999 reported uses. (Cetyl esters is reported to be used in 452 cosmetic formulations.) The results of the concentration of use survey indicate that many of the alkyl esters are used at high concentrations in cosmetic formulations. Ethylhexyl palmitate had the highest reported use concentration, 78% in body and hand preparations, followed by isopropyl myristate, which is used at 77.3% in other hair grooming aids and 76.6% in aerosol hair spray formulations.

In quite a few cases, reports of uses were received in the VCRP, but no concentration of use data are available. For example, caprylyl caprylate is reported to be used in 11 formulations, but no use concentration data were reported. Additionally, there were quite a few instances in which no reported uses were received in the VCRP, but a use concentration was provided in the industry survey. For example, oleyl linoleate was not reported in the VCRP to be in use, but the industry survey indicated that it is used in leave-on formulations at up to 10-11%. It should be presumed in these cases, there is at least one use in every category for which a concentration is reported.

The frequency and concentration of use data are provided in Table 8. A number of these ingredients have been reviewed previously and the historical data are included in the table. The ingredients not in use according to the VCRP and industry survey are listed in Table 9.

Some alkyl esters are reported to be used on baby skin, to be applied to the eye area or mucous membranes, or could possibly be ingested. Additionally, some of the alkyl esters are used in cosmetic sprays and could possibly be inhaled. Examples of some of the highest concentrations of spray uses are up to 76.6% isopropyl myristate in hair sprays, 45% ethylhexyl palmitate in indoor tanning preparations, and 23% isopropyl myristate in deodorant formulations. In practice, 95% to 99% of the droplets/particles released from cosmetic sprays have aerodynamic equivalent diameters >10 µm, with propellant sprays yielding a greater fraction of droplets/particles <10 µm compared with pump sprays.^{41,42} Therefore, most droplets/particles incidentally inhaled from cosmetic sprays would be deposited in the nasopharyngeal and thoracic regions of the respiratory tract and would not be respirable (i.e., they would not enter the lungs) to any appreciable amount.^{43,44} There is some evidence indicating that deodorant spray products can release substantially larger fractions of particulates having aerodynamic equivalent diameters in the range considered to be respirable.⁴⁴ However, the information is not sufficient to determine whether significantly greater lung exposures result from the use of deodorant sprays, compared to other cosmetic sprays.

All of the alkyl esters named in this report, with the exception of behenyl olivate, cetyl myristoleate, and hexyldodecyl/octyldecyl hydroxystearate, are listed in the European Union inventory of cosmetic ingredients.⁴⁵

Non-Cosmetic

Isoamyl laurate and butyl stearate are approved as a direct food additive for use as a flavor substance adjuvant (21CFR172.515). Many of the alkyl esters are approved as indirect food additives as listed in the Code of Federal Regulations Title 21. Examples of non-cosmetic uses of some of the alkyl esters are provided in Table 10.

TOXICOKINETICS

Absorption, Distribution, Metabolism, and Excretion

Cetyl Myristoleate

Rats were fed chow containing 2% cetyl myristoleate or untreated feed for 2 h.⁴⁶ No cetyl alcohol was found in the stomach, intestinal content, or mucosa in either group. (Additional details were not provided).

Cetyl Oleate

Groups of five male albino rats were fed a diet containing 20% cetyl oleate for 9 days; control groups were fed a fat-free diet or a diet containing 20% cottonseed oil.⁴⁷ The animals were given 12 g of diet per day. The absorption of cetyl oleate was reported to be 75.3%. By day 2 of the study, the animals fed cetyl oleate developed seborrhea, which progressively increased with feeding. The animals were killed after the termination of dosing, and microscopic examination reported thickening and hyperemia of the intestinal wall. The exuded lipid was identified as cetyl oleate. The researchers stated that the absorbability and seborrhea suggested that cetyl oleate was not hydrolyzed in the gut.

The researchers then dosed groups of six male rats with 2 g of cetyl oleate or an equal mixture of cetyl oleate + tributyrin by gavage, and the animals were fed a fat-free diet. Control animals were dosed with sucrose. The animals were fasted overnight on day 10 of dosing, and two animals were then killed. Two of the remaining animals were killed 1 h and two were killed 3 h after a final dose. Seborrhea was observed in both test groups; only cetyl oleate was recovered from the exuded lipid in both test groups. Intestinal weight was markedly increased in the cetyl oleate + tributyrin group. The free fatty acid content of the stomach 3 h after dosing and of the small intestine 1 and 3 h after dosing was increased in group dosed with cetyl oleate (only) when compared to controls. In the cetyl oleate + butyryl group, the free fatty acid content of the stomach was increased at both 1 and 3 h, and in the small intestine it was increased after 1 h.

Dermal PenetrationIsopropyl Myristate

Isopropyl myristate, as a non-polar penetration enhancer, is largely retained in the stratum corneum.⁴⁸ It was not detected in the receptor fluid of flow-through diffusion cells in in vitro skin permeation experiments using human epidermis (stratum corneum and viable epidermis) and dermis (varying thickness).

Isostearyl Isostearate

Pre-deuterated isostearyl isostearate, 7 $\mu\text{L}/\text{cm}^2$, was applied neat to a 2 cm x 8 cm site on the ventral forearm of 14 human subjects for 3 h under non-occlusive conditions.⁴⁹ The test site was tape-stripped 3 h after application, and attenuated total reflectance-Fourier transform infrared (ATF-FTIR) spectra measurements were determined. The researchers stated the most of the isostearyl isostearate was located at the surface of the stratum corneum. (The percent recovery of the amount applied was not specified.)

Penetration Enhancement

Isopropyl myristate is a non-polar penetration enhancer in pharmaceutical and cosmetic preparations. A 50:50 isopropyl alcohol-isopropyl myristate binary enhancer synergistically increased the transport of estradiol across a two-layer human epidermis in vitro.⁴⁸ The same isopropyl alcohol-isopropyl myristate composition was used on both sides of the skin with saturated estradiol.

Isopropyl palmitate is reported to be used in topical formulations as a lipid layer penetration enhancer.⁵⁰ The skin penetration of three lipophilic compounds (partition coefficient order: glidazide>nimesulfide>oxaproxin) and one hydrophilic compound (ribavirin) across excised rat abdominal skin after 2 h pre-treatment with 5-20% w/w isopropyl palmitate in ethanol was determined.⁵¹ All pre-treatment solutions produced a significant increase in the flux and permeation of all four compounds; the effectiveness was concentration-dependent.

Skin penetration enhancement with isostearyl isostearate was evaluated in vitro using excised human abdominal skin by measuring the permeation of 5-fluorouracil through the skin after 6 h.⁵² Both isostearyl isostearate and the buffer control increased the rate of penetration of 5-fluorouracil, but isostearyl isostearate was not a penetration enhancer.

The effect of alkyl esters on the penetration of indomethacin in vitro through excised hairless rat skin was examined.⁵³ The permeation of 1% indomethacin from suspensions and from hydrogenated phospholipid gels containing cetyl caprylate, ethylhexyl palmitate, isocetyl palmitate, isocetyl isostearate, or isocetyl stearate was determined. The permeation rate of indomethacin from the esters increases with increased solubility of the drug in the ester. The solubility of indomethacin in liquid paraffin is very low, and there was no permeation of indomethacin from liquid paraffin after 10 h. Permeation from the isocetyl isostearate suspension, the alkyl ester indomethacin was least soluble in but with a 60-fold increase in solubility compared to liquid paraffin, was 3.8 $\mu\text{g}/\text{cm}^2$ after 10 h. (Of the esters studied, indomethacin had the highest solubility in and permeation from ethylhexyl isononanoate, an alkyl ester previously reviewed by the CIR, with approximately 23 $\mu\text{g}/\text{cm}^2$ permeating in 10 h.) Permeation rates (and solubility) were higher in gels formed by a hydrogenated phospholipid than from suspensions. In all cases, a linear relationship existed between the cumulative amounts of indomethacin that permeated from any ester from 4 h to 10 h. In another study, the permeation rate of ketoprofen from an alkyl ester suspension through excised hairless rat skin was also proportional to its solubility in the suspension.⁵⁴

ANIMAL TOXICOLOGY**Single Dose (Acute) Toxicity****Dermal****Butyl Oleate**

The dermal toxicity of butyl oleate was determined in rabbits.⁵⁵ A single dermal dose of 5 g/kg group butyl oleate was applied to 10 rabbits. Slight erythema was observed in 3 rabbits and moderate erythema in 7, and slight edema was observed in 6 rabbits and moderate edema in 3. None of the animals died, and the dermal LD₅₀ of butyl oleate in rabbits was >5 g/kg. (Additional details were not provided).

Propylheptyl Caprylate

Groups of 5 male and 5 female Wistar rats were dosed dermally with a single semi-occlusive application of 0 or 2000 mg/kg bw propylheptyl caprylate, applied neat.⁵⁶ No irritation or treatment-related signs of toxicity were reported, and the dermal LD₅₀ of propylheptyl caprylate was >2 g/kg/bw.

Ethylhexyl Laurate

The dermal LD₅₀ of ethylhexyl laurate in rats was >3 g/kg bw.⁵⁷ (Details were not provided).

Oral**Butyl Oleate**

A group of 10 rats were dosed orally with 5 g/kg butyl oleate.⁵⁵ None of the animals died. The oral LD₅₀ of butyl oleate in rats was >5 g/kg.

Cetyl Myristoleate

Five male and five female white rats were dosed orally with 5 g/kg cetyl myristoleate.⁴⁶ There was no mortality, and the LD₅₀ was >5 g/kg.

Propylheptyl Caprylate

Six female Wistar rats were dosed orally with 2 g/kg bw propylheptyl caprylate in corn oil.⁵⁶ All animals had hunched posture and piloerection for 6 h after dosing, but none of the animals died during the study. The oral LD₅₀ of propylheptyl caprylate was >2 mg/kg bw.

Ethylhexyl Laurate

The oral LD₅₀ of ethylhexyl laurate in rats was >2 g/kg bw.⁵⁷ (Details were not provided).

Isodecyl Laurate

The oral LD₅₀ of isodecyl laurate in Wistar rats was >13 g/kg (>15 ml/kg).⁵⁸ (Details were not provided).

Inhalation**Ethylhexyl Laurate**

The inhalation LC₅₀ of ethylhexyl laurate in rats was >230 ppm.⁵⁷ (Details were not provided).

Repeated Dose Toxicity**Oral****Propylheptyl Caprylate**

Groups of 10 male and 10 female CD/CrI:CD(SD) rats were dosed daily by gavage with 0, 100, 300, or 1000 mg/kg bw/day propylheptyl caprylate in soybean oil for 90 days.⁵⁶ No test-article related deaths occurred. No test-article related clinical signs of toxicity or changes in body weights or feed consumption, changes in the estrous cycle, or effects on sperm were observed, and there were no effects on any clinical chemistry or hematology parameters. A statistically significant decrease in the urinary pH values in males and females of the 3000 1000 mg/kg bw/day groups was considered test-article related. Absolute and relative liver weights were statistically significantly increased in animals of the high dose group. The change in urinary pH was attributed to the possibility of an acidic metabolite being eliminated in large doses, and the changes in liver weight were considered a non-specific adaptive change to the liver workload at the high doses, therefore, the NOAEL was established as ≥1000 mg/mg bw/day propylheptyl caprylate.

Ethylhexyl Laurate

Male and female Sprague-Dawley rats, number per group not specified, were dosed with 0, 100, 300, or 1000 mg/kg bw ethylhexyl laurate once daily, 5 days/wk, by gavage for 28 days.⁵⁷ The no-observable adverse-effect level (NOAEL) was 1000 mg/kg bw. (No additional details were provided.)

Isodecyl Laurate

Male Wistar rats, number per group not specified, were dosed orally with 500, 1500, or 4500 mg/kg/day isodecyl laurate, 6 days/wk, for 4 wks.⁵⁸ No treatment related changes were observed at any dose level. (No additional details were provided).

GENOTOXICITY

In Vitro

Propylheptyl Caprylate

The mutagenic potential of 0.31, 0.62, 1.25, 2.5, and 5.0 µl/plate propylheptyl caprylate was evaluated in an Ames test, with and without metabolic activation, using *S. typhimurium* strains TA1535, TA1573, TA98, TA100, and TA102.⁵⁶ Dimethyl sulfoxide served as the vehicle. Propylheptyl caprylate was not mutagenic with or without metabolic activation.

An *in vitro* mammalian chromosomal aberration assay was performed in Chinese hamster V79 lung fibroblasts with 22.4-2480 µg/ml propylheptyl caprylate.⁵⁶ The exposure time was 4 h with metabolic activation and ranged from 4-28 h without metabolic activation. Propylheptyl caprylate was not clastogenic to Chinese hamster V79 lung fibroblasts.

Ethylhexyl Laurate

Ethylhexyl laurate, tested at doses 8, 40, 200, 1000, and 5000 µg/plate, was not mutagenic in an Ames test performed in *Salmonella typhimurium* with and without metabolic activation.⁵⁷

Isodecyl Laurate

An Ames test was performed with 312-5000 µg/plate isodecyl laurate.⁵⁸ Isodecyl laurate was not mutagenic towards *S. typhimurium* strains TA97, TA98, TA100, and TA102. (No additional details were provided).

In Vivo

Ethylhexyl Laurate

A mouse micronucleus test was performed in which male and female mice were dosed by gavage with 0, 1.25, 2.5, and 5.0 ml/kg ethylhexyl laurate.⁵⁷ The animals were killed after 4, 48, or 72 h. Ethylhexyl laurate was not genotoxic in this assay.

CARCINOGENICITY

Published carcinogenicity data were not found.

IRRITATION AND SENSITIZATION

Dermal irritation and sensitization studies are summarized in Table 11.

Mixed results were reported in irritation testing in both non-human and human testing with some alkyl esters. In rabbits, propylheptyl caprylate was moderately irritating⁵⁶ and ethylhexyl laurate was not irritating.⁵⁷ A formulation containing 10% isopropyl palmitate was moderately irritating in male hairless guinea pigs.⁵⁰ In one study in which it was unclear from the report whether the testing was done in rats or in rabbits, 30% isodecyl laurate in liquid paraffin was not a dermal irritant.⁵⁸ Propylheptyl caprylate, which was moderately irritating in rabbit skin, was not irritating to human skin when applied for 48-h using an occlusive patch.⁵⁶ In other clinical tests, patch testing with isopropyl myristate resulted in 3/244 positive reactions in subjects with suspected contact dermatitis⁵⁹ and a formulation containing 10% isopropyl palmitate, which was moderately irritating to guinea pig skin, was well tolerated in a human chamber scarification test.⁵⁰ Undiluted and 50% 2-ethylhexyl esters of C8-14 fatty acids applied openly for 60 min and 25 and 50% applied with an occlusive 24-h patch were not irritating, but undiluted 2-ethylhexyl esters of C8-14 fatty acids produced slight erythema and moderate edema when applied with an occlusive 24-h patch.⁵⁷

The alkyl esters were not sensitizers in non-human or human studies. In a mouse local lymph node assay, propylheptyl caprylate did not induce a lymphocyte proliferative response, indicating that it is not a sensitizer.⁵⁶ Ethylhexyl laurate⁵⁷ and isodecyl laurate⁵⁸ were not sensitizers in a guinea pig maximization test. In clinical testing, butyl oleate was not a sensitizer in a maximization study⁶⁰ and a body oil containing 77.9% ethylhexyl palmitate,⁶¹ a lip gloss containing 25.9% ethylhexyl stearate,⁶² an eyebrow pencil formulation containing 38.8% ethylhexyl stearate,⁶³ a concealer containing 29.5% isocetyl myristate,⁶⁴ and a lipstick formulation containing 15.2% cetyl ricinoleate⁶⁵ were not sensitizers in human repeat insult patch tests (HRIPTs).

Ocular Irritation

Propylheptyl Caprylate

The ocular irritation potential of propylheptyl caprylate was evaluated in 3 female rabbits.⁵⁶ Slight conjunctival irritation was observed in all animals 1 h after instillation, and the irritation had increased to a more diffuse response in one animal at 24 h after instillation. All effects subsided within 72 h for two of the animals and by 7 days in the third animal. Propylheptyl caprylate was considered slightly irritating to rabbit eyes.

Ethylhexyl Laurate

Ethylhexyl laurate was not irritating to rabbit eyes.⁵⁷ (Details not provided).

Isodecyl Laurate

A study was conducted in New Zealand White rabbits to determine the ocular irritation potential of 10% isodecyl laurate in liquid paraffin.⁵⁸ No significant treatment-related ocular lesions were observed. (No additional details were provided).

MISCELLANEOUS EFFECTS**Dermal Effects***Isostearyl Isostearate*

A determination of skin surface water loss, measured using a plastic occlusion stress test, indicated that isostearyl isostearate (2 mg/cm², applied neat) improved the stratum corneum water permeability barrier function.⁶⁶ The researchers hypothesize that the improvement was due to effects on stratum corneum lipid phase behavior.

SUMMARY

Cetyl esters has been reviewed previously by the Cosmetic Ingredient Review (CIR) Expert Panel, and in 1997 the Panel concluded that cetyl esters was safe as used in cosmetics. Cetyl esters is a member of a broader group of 238 cosmetic ingredients, the alkyl esters. These ingredients consist of the reaction products of fatty acids and alcohols, and the core relationship between these ingredients is a carboxyl ester functional group flanked on both sides by alkyl chains. Some of these alkyl chains are straight and some are branched. Although 57 of the alkyl esters have been reviewed previously, all are being included as ingredients in this safety assessment due to their structural and functional similarity. Ingredients included in the safety assessment are primarily reported to function in cosmetics as skin conditioning agents; the most notable difference is isopropyl sorbate, which is reported to function as a preservative only.

Most of these alkyl esters are produced synthetically via classical Fischer type esterification methods. However, some of the natural source ingredients in this review may be produced by transesterification. Alkyl esters are hydrophobic materials that range from oils at the lowest molecular weights/shortest chain lengths (e.g.) to waxy solids at the highest molecular weights/longest chain lengths (e.g.).

VCRP and industry data indicate that 112 of the 238 alkyl esters named in this safety assessment are currently used in cosmetic formulations. Ethylhexyl palmitate has the most reported uses, 1298, followed by isopropyl myristate, 1149 reported uses, and isopropyl palmitate, 999 reported uses. Ethylhexyl palmitate had the highest reported use concentration, 78% in body and hand preparations, followed by isopropyl myristate, which is used at 77.3% in other hair grooming aids and 76.6% in aerosol hair spray formulations. Isoamyl laurate and butyl stearate are approved as a direct food additives and a number of the alkyl esters are approved as indirect food additives.

In rats fed a diet containing 20% cetyl oleate, absorption of cetyl oleate was reported to be 75.3%. All the animals developed seborrhea. The absorbability and seborrhea suggested that cetyl oleate was not hydrolyzed in the gut.

Isopropyl palmitate is reported to be used in topical formulations as a lipid layer penetration enhancer. Isostearyl isostearate increased the rate of penetration of fluorouracil through excised skin, but it was not a penetration enhancer. Alkyl esters tended to increase the permeation rate of indomethacin and ketoprofen; the increase occurred due to increased solubility.

The dermal LD₅₀ of butyl oleate in rabbits was >5 g/kg, and the dermal LD₅₀ in rats of propylheptyl caprylate and ethylhexyl laurate was >2 and >3 g/kg/bw, respectively. The oral LD₅₀ in rats was >5 g/kg for butyl oleate and for cetyl myristoleate, >2 g/kg for propylheptyl caprylate and ethylhexyl laurate, >13 g/kg for isodecyl oleate, and >64 cc/kg for isopropyl linoleate. The inhalation LC₅₀ of ethylhexyl laurate in rats was >230 ppm. In repeated dose studies in rats, toxic effects were not observed with oral administration of up to 1000 mg/kg ethylhexyl laurate or 4500 mg/kg/day isodecyl laurate for 4 wks or with up to 1000 mg/kg bw/day propylheptyl caprylate for 90 days.

Propylheptyl caprylate was not mutagenic in an Ames assay (≤5.0 µl/plate) or clastogenic in an *in vitro* mammalian chromosomal aberration assay (≤2480 µg/ml). Ethylhexyl laurate and isodecyl laurate were not mutagenic towards *S. typhimurium* in an Ames assay at doses of ≤5000 µg/plate, and ethylhexyl laurate, ≤5.0 ml/kg, was not genotoxic in a mouse micronucleus test.

Mixed results were reported in irritation testing in non-human testing with some alkyl esters. In rabbits, propylheptyl caprylate was moderately irritating and ethylhexyl laurate was not irritating. A formulation containing 10% isopropyl palmitate was moderately irritating in male hairless guinea pigs. In one study in which it was unclear from the report whether the testing was done in rats or in rabbits, isodecyl laurate was not irritating to the skin. In a mouse local lymph node assay, propylheptyl caprylate did not induce a lymphocyte proliferative response, indicating that it is not a sensitizer. Ethylhexyl laurate and isodecyl laurate were not sensitizers in a guinea pig maximization test.

Mixed irritation results were also observed in human studies. Propylheptyl caprylate, which was moderately irritating in rabbit skin, was not irritating to human skin when applied for 48-h using an occlusive patch. Patch testing with isopropyl myristate resulted in 3/244 positive reactions in subjects with suspected contact dermatitis. A formulation containing 10% isopropyl

palmitate, which was moderately irritating to guinea pig skin, was well tolerated in a human chamber scarification test. Undiluted and 50% 2-ethylhexyl esters of C8-14 fatty acids applied openly for 60 min and 25 and 50% applied with an occlusive 24-h patch were not irritating, but undiluted 2-ethylhexyl esters of C8-14 fatty acids produced slight erythema and moderate edema when applied with an occlusive 24-h patch. No sensitization reactions were observed in human studies. Butyl oleate was not a sensitizer in a maximization study and a body oil containing 77.9% ethylhexyl palmitate, a lip gloss containing 25.9% ethylhexyl stearate, an eyebrow pencil formulation containing 38.8% ethylhexyl stearate, a concealer containing 29.5% isocetyl myristate, and a lipstick formulation containing 15.2% cetyl ricinoleate were not sensitizers in HRIPTs.

Ocular irritation studies were performed using rabbits. Cetyl esters, 60-65%, ethylhexyl laurate, 10% isodecyl laurate in liquid paraffin, and 10% isopropyl laurate in corn oil were not irritating to rabbit eyes and undiluted and 10% aq. isopropyl linoleate and propylheptyl caprylate was slightly irritating to rabbit eyes.

DRAFT DISCUSSION

The discussion for the report will be developed at the meeting. Some of the following discussion items might be included. Additional discussion points may be added; some that are included below may be deleted or changed.

The question of whether a re-review of cetyl esters, an ingredient found safe as used by the Panel in 1997, was warranted was brought to the CIR Expert Panel. Although there were no new data to justify a re-review, the inclusion of additional ingredients did warrant a re-review. As a result, the safety of the Alkyl Esters family is being assessed for cosmetic use; these ingredients consist of the reaction products of fatty acids and alcohols.

Although there are data gaps, the similar chemical structures, physicochemical properties, functions, and concentrations in cosmetics allow grouping these ingredients together and interpolating the available toxicological data to support the safety of the entire group. The available data on many of the ingredients, especially the previously reviewed ingredients, and on some of the constituent alcohols and acids are sufficient, and similar structure activity relationships, biologic functions, and cosmetic product usage suggest that the available data may be extrapolated to support the safety of the entire group. For example, a concern was expressed regarding the extent of dermal absorption for certain long-chain, branched alkyl esters because of a lack of information on dermal absorption and metabolism. The consensus of the Panel was that because dermal penetration of long chain alcohols is likely to be low, and the dermal penetration for alkyl esters is likely to be even lower, inferring toxicity characteristics from ingredients where toxicity data were available was appropriate.

The Expert Panel recognized that some of the alkyl esters can enhance the penetration of other ingredients through the skin. The Panel cautioned that care should be taken in formulating cosmetic products that may contain these ingredients in combination with any ingredients whose safety was based on their lack of dermal absorption data, or when dermal absorption was a concern.

The Panel acknowledged that some of the alkyl esters may be plant-derived or animal-derived. The Panel expressed concern regarding pesticide residues and heavy metal that may be present in botanical ingredients. They stressed the cosmetics industry should continue to use the necessary procedures to limit these impurities in the ingredient before blending them into cosmetic formulations. Additionally, the Panel considered the dangers inherent in using animal-derived ingredients, namely the transmission of infectious agents. While tallow may be used in the manufacture of some ingredients in this safety assessment and is clearly animal-derived, the Expert Panel notes that tallow is highly processed and tallow derivatives even more so. The Panel agrees with determinations by the U.S. FDA that tallow derivatives are not risk materials for transmission of infectious agents.

The Expert Panel was also concerned that the potential exists for dermal irritation with the use of products formulated using some of the alkyl esters. The Expert Panel specified that products must be formulated to be non-irritating. Consequently, with the use of this caveat, the data on isopropyl linoleate are now sufficient to determine safety.

In a previous CIR safety assessment on isopropyl linoleate, the data were insufficient to determine safety for use in cosmetics; human irritation and sensitization data and genotoxicity data were needed. The above discussion point that states that products containing alkyl esters must be formulated to be non-irritating addresses the need for irritation and sensitization data. Regarding the need for genotoxicity data on isopropyl linoleate, the Panel stated that the negative genotoxicity data on structurally analogous compounds mitigates that data need.

The Panel discussed the issue of incidental inhalation exposure to alkyl esters from powders and products that may be aerosolized. Some of the alkyl esters are reportedly used at up to 19% in products that may become airborne, i.e. in face powders, and at quite high concentration in cosmetic products that may be aerosolized, e.g., 77% isopropyl myristate in hair sprays, 45% ethylhexyl palmitate in indoor tanning preparations, and 23% isopropyl myristate in deodorant formulations. There were no repeated dose inhalation toxicity data available for the alkyl esters, but droplets/particles deposited in the nasopharyngeal or bronchial regions of the respiratory tract present no toxicological concerns based on the chemical and biological properties of these ingredients. Coupled with the small actual exposure in the breathing zone and the concentrations at which the ingredients are used, the

available information indicates that incidental inhalation would not be a significant route of exposure that might lead to local respiratory or systemic effects. Also, these ingredients are large macromolecules and most are insoluble in water, which supports the view that they are unlikely to be absorbed or cause local effects in the respiratory tract. The Panel also considered the data available to characterize the potential for alkyl esters to cause systemic toxicity, irritation, sensitization, or other effects and noted that this family of ingredients tended not to produce systemic toxicity at high doses in single-dose oral, dermal, or inhalation studies, not to produce significant systemic toxicity in oral repeated dose studies, not to be reproductive or developmental toxicants, and not to be genotoxic in a variety of systems. A detailed discussion and summary of the Panel's approach to evaluating incidental inhalation exposures to ingredients in cosmetic products that may be aerosolized is available at <http://www.cir-safety.org/cir-findings>.

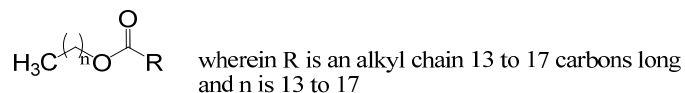
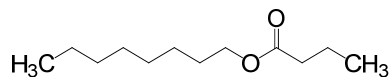
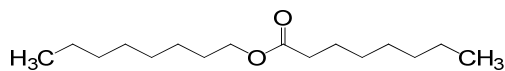
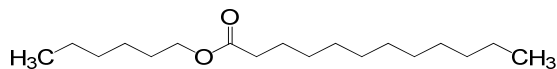
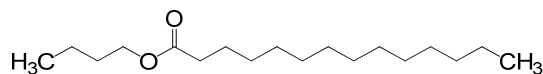
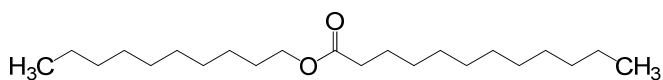
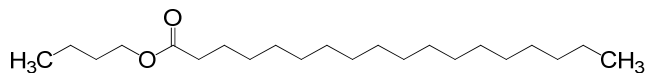
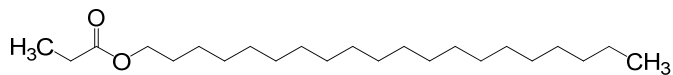
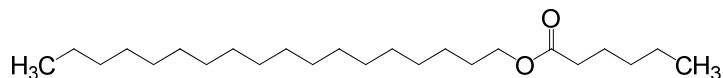
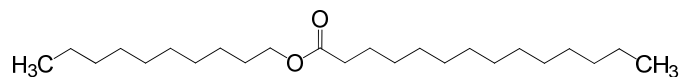
DRAFT CONCLUSION

The CIR Expert Panel concluded that the 238 alkyl esters, listed below, are safe in the present practices of use and concentration described in this safety assessment when formulated to be non-irritating.

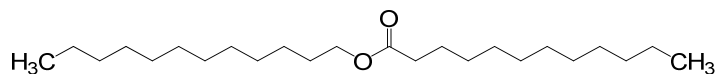
Arachidyl Behenate	Cetyl Oleate*	Hydroxyoctacosanyl Hydroxystearate
Arachidyl Erucate*	Cetyl Palmitate	Isoamyl Laurate
Arachidyl Propionate	Cetyl Ricinoleate	Isobutyl Myristate*
Batyl Isostearate*	Cetyl Stearate	Isobutyl Palmitate*
Batyl Stearate*	Cetyl Tallowate	Isobutyl Perlargonate*
Behenyl Beeswax	Chimyl Isostearate*	Isobutyl Stearate*
Behenyl Behenate	Chimyl Stearate*	Isobutyl Tallowate*
Behenyl Erucate	Coco-Caprylate	Isocetyl Behenate*
Behenyl Isostearate*	Coco-Caprylate/Caprates	Isocetyl Isodecanoate*
Behenyl Oliviate	Coco-Rapeseedate*	Isocetyl Isostearate*
Behenyl/Isostearyl Beeswax*	Decyl Castorate*	Isocetyl Laurate*
Butyl Avocadate	Decyl Cocoate	Isocetyl Myristate
Butyl Babassuate*	Decyl Isostearate*	Isocetyl Palmitate
Butyl Isostearate*	Decyl Jojobate*	Isocetyl Stearate
Butyl Myristate	Decyl Laurate*	Isodecyl Cocoate
Butyl Oleate*	Decyl Myristate*	Isodecyl Hydroxystearate*
Butyl Stearate	Decyl Oleate	Isodecyl Isononanoate
Butyloctyl Beeswax*	Decyl Oliviate	Isodecyl Laurate
Butyloctyl Behenate*	Decyl Palmitate*	Isodecyl Myristate
Butyloctyl Candelillate*	Decyltetradecyl Cetearate*	Isodecyl Neopentanoate
Butyloctyl Cetearate*	Erucyl Arachidate*	Isodecyl Oleate
Butyloctyl Oleate*	Erucyl Erucate*	Isodecyl Palmitate*
Butyloctyl Palmitate*	Erucyl Oleate*	Isodecyl Stearate*
C10-40 Isoalkyl Acid Octyldodecanol Esters*	Ethylhexyl Adipate/Palmitate/Stearate*	Isohexyl Caprate
C14-30 Alkyl Beeswax*	Ethylhexyl C10-40 Isoalkyl Acidate*	Isohexyl Laurate*
C16-36 Alkyl Stearate*	Ethylhexyl Cocoate	Isohexyl Neopentanoate*
C18-38 Alkyl Beeswax*	Ethylhexyl Hydroxystearate	Isohexyl Palmitate*
C18-38 Alkyl C24-54 Acid Ester*	Ethylhexyl Isononanoate	Isolauryl Behenate*
C20-40 Alkyl Behenate*	Ethylhexyl Isopalmitate	Isononyl Isononanoate
C20-40 Alkyl Stearate	Ethylhexyl Isostearate	Isooctyl Caprylate/Caprates*
C30-50 Alkyl Beeswax*	Ethylhexyl Laurate	Isooctyl Tallate*
C30-50 Alkyl Stearate*	Ethylhexyl Myristate	Isopropyl Isostearate
C32-36 Isoalkyl Stearate*	Ethylhexyl Neopentanoate*	Isopropyl Arachidate*
C40-60 Alkyl Stearate*	Ethylhexyl Oleate*	Isopropyl Avocadate*
C4-5 Isoalkyl Cocoate*	Ethylhexyl Oliviate	Isopropyl Babassuate*
Caprylyl Butyrate*	Ethylhexyl Palmitate	Isopropyl Behenate*
Caprylyl Caprylate	Ethylhexyl Pelargonate	Isopropyl Hydroxystearate
Caprylyl Eicosenoate	Ethylhexyl Stearate	Isopropyl Isostearate
Cetearyl Behenate	Heptyl Undecylenate	Isopropyl Jojobate
Cetearyl Candelillate	Heptylundecyl Hydroxystearate	Isopropyl Laurate*
Cetearyl Isononanoate	Hexyl Isostearate	Isopropyl Linoleate
Cetearyl Nonanoate*	Hexyl Laurate	Isopropyl Myristate
Cetearyl Oliviate	Hexyldecyl Hexyldecanoate*	Isopropyl Oleate*
Cetearyl Palmate*	Hexyldecyl Isostearate	Isopropyl Palmitate
Cetearyl Palmitate*	Hexyldecyl Laurate	Isopropyl Ricinoleate
Cetearyl Rice Branate*	Hexyldecyl Oleate*	Isopropyl Sorbate*
Cetearyl Stearate	Hexyldecyl Palmitate*	Isopropyl Stearate
Cetyl Babassuate	Hexyldecyl Stearate	Isopropyl Tallowate*
Cetyl Behenate*	Hexyldodecyl/Octyldecyl Hydroxystearate*	Isostearyl Avocadate
Cetyl Caprate	Hydrogenated Castor Oil Behenyl Esters*	Isostearyl Behenate
Cetyl Caprylate	Hydrogenated Castor Oil Cetyl Esters *	Isostearyl Erucate*
Cetyl Dimethyloctanoate*	Hydrogenated Castor Oil Stearyl Esters*	Isostearyl Hydroxystearate
Cetyl Esters	Hydrogenated Ethylhexyl Oliviate	Isostearyl Isononanoate
Cetyl Isononanoate*	Hydrogenated Ethylhexyl Sesamate*	Isostearyl Isostearate
Cetyl Laurate	Hydrogenated Isocetyl Oliviate*	Isostearyl Laurate
Cetyl Myristate	Hydrogenated Isopropyl Jojobate*	Isostearyl Linoleate
Cetyl Myristoleate*	Hydroxycetyl Isostearate*	Isostearyl Myristate

Isostearyl Neopentanoate	Octyldodecyl Behenate*	Stearyl Behenate*
Isostearyl Palmitate	Octyldodecyl Cocoate*	Stearyl Caprylate
Isotridecyl Isononanoate	Octyldodecyl Erucate	Stearyl Erucate*
Isotridecyl Laurate*	Octyldodecyl Hydroxystearate*	Stearyl Heptanoate
Isotridecyl Myristate*	Octyldodecyl Isostearate	Stearyl Linoleate*
Isotridecyl Stearate	Octyldodecyl Meadowfoamate*	Stearyl Oliviate
Lauryl Behenate*	Octyldodecyl Myristate	Stearyl Palmitate
Lauryl Cocoate*	Octyldodecyl Neodecanoate*	Stearyl Stearate
Lauryl Isostearate*	Octyldodecyl Neopentanoate	Tetradecyleicosyl Stearate*
Lauryl Laurate	Octyldodecyl Octyldodecanoate	Tetradecyloctadecyl Behenate*
Lauryl Myristate*	Octyldodecyl Oleate*	Tetradecyloctadecyl Hexyldecanoate*
Lauryl Oleate/	Octyldodecyl Oliviate	Tetradecyloctadecyl Myristate*
Lauryl Palmitate	Octyldodecyl Ricinoleate	Tetradecyloctadecyl Stearate
Lauryl Stearate/	Octyldodecyl Safflowerate*	Tetradecylpropionates*
Lignoceryl Erucate*	Octyldodecyl Stearate	Tridecyl Behenate*
Myristyl Isostearate*	Oleyl Arachidate*	Tridecyl Cocoate*
Myristyl Laurate	Oleyl Erucate	Tridecyl Erucate*
Myristyl Myristate	Oleyl Linoleate	Tridecyl Isononanoate
Myristyl Neopentanoate	Oleyl Myristate*	Tridecyl Laurate*
Myristyl Stearate	Oleyl Oleate	Tridecyl Myristate*
Octyldecyl Oleate*	Oleyl Stearate*	Tridecyl Neopentanoate
Octyldodecyl Avocadoate*	Propylheptyl Caprylate	Tridecyl Stearate
Octyldodecyl Beeswax*	Stearyl Beeswax	

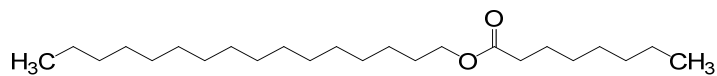
*Not in current use. Were ingredients in this group not in current use to be used in the future, the expectation is that they would be used in product categories and at concentrations comparable to others in this group.

FIGURES**Figure 1. Figures ordered by chain length, chemical structure***Structures, straight chain alkyl ingredients by total length***1. Cetyl Esters****2. Caprylyl Butyrate****3. Caprylyl Caprylate****4. Hexyl Laurate****5. Butyl Myristate****6. Decyl Laurate****7. Butyl Stearate****8. Arachidyl Propionate****9. Stearyl Caprylate****10. Decyl Myristate**

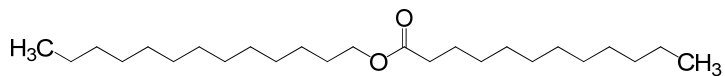
11. Lauryl Laurate



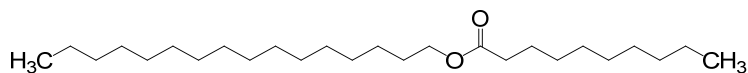
12. Cetyl Caprylate



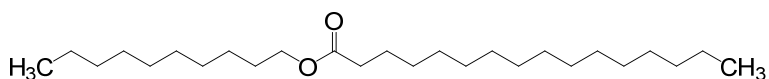
13. Tridecyl Laurate



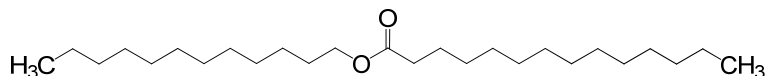
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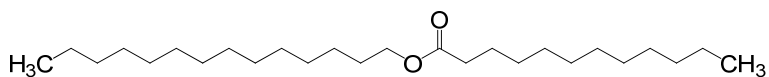
15. Decyl Palmitate



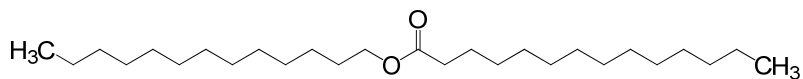
16. Lauryl Myristate



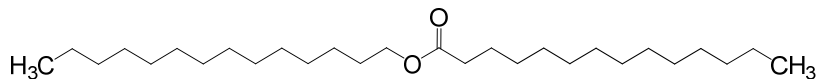
17. Myristyl Laurate



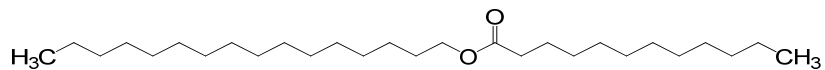
18. Tridecyl Myristate



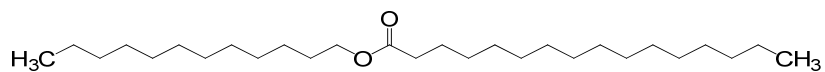
19. Myristyl Myristate



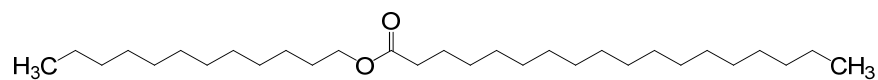
20. Cetyl Laurate



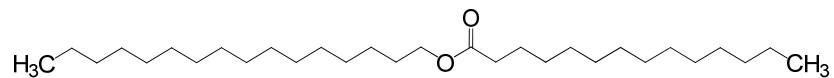
21. Lauryl Palmitate



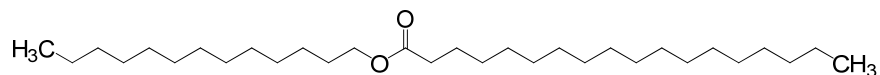
22. Lauryl Stearate



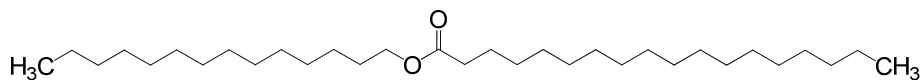
23. Cetyl Myristate



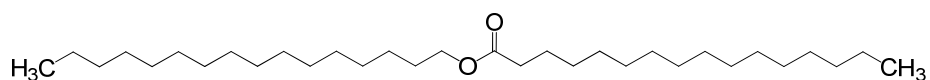
24. Tridecyl Stearate



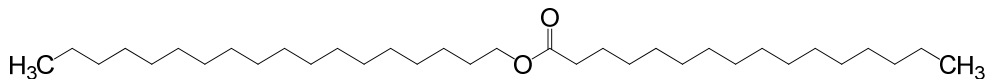
25. Myristyl Stearate



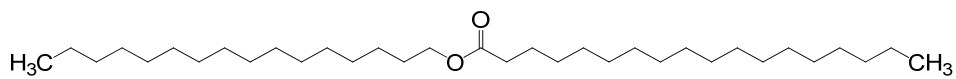
26. Cetyl Palmitate



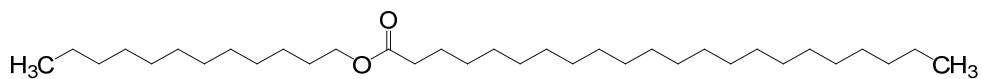
27. Stearyl Palmitate



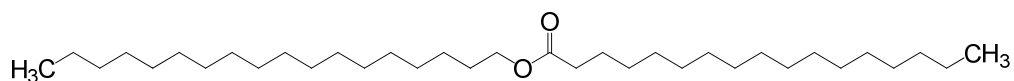
28. Cetyl Stearate



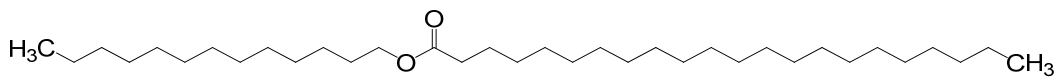
29. Lauryl Behenate



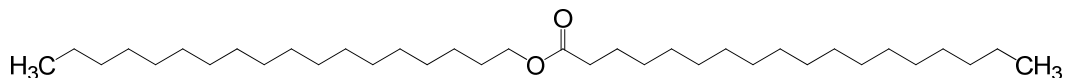
30. Stearyl Heptanoate



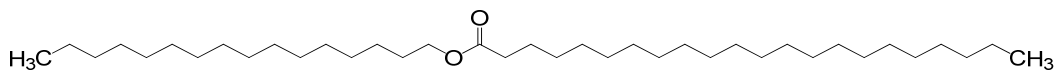
31. Tridecyl Behenate

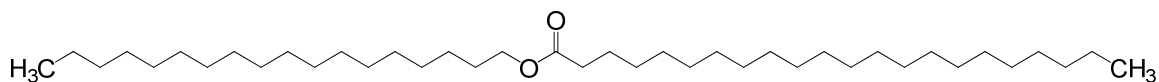


32. Stearyl Stearate

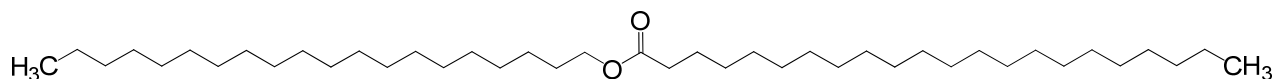


33. Cetyl Behenate

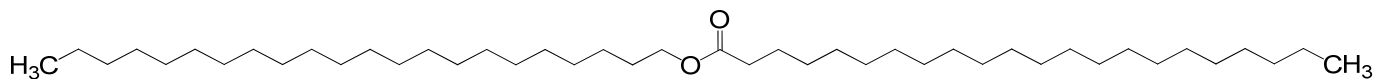




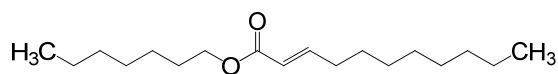
35. Arachidyl Behenate



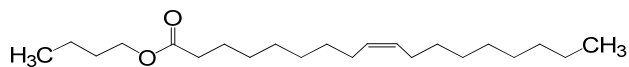
36. Behenyl Behenate



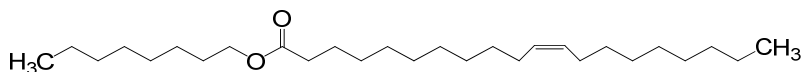
37. Heptyl Undecylenate



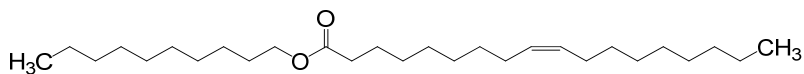
38. Butyl Oleate



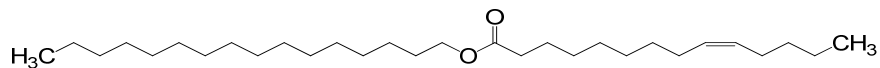
39. Caprylyl Eicosenoate



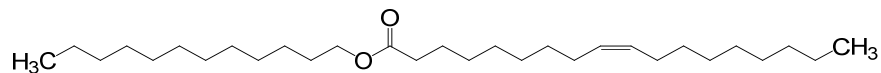
40. Decyl Oleate



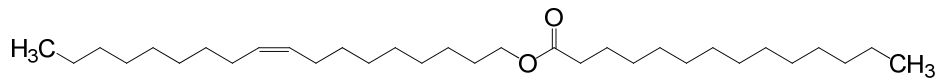
41. Cetyl Myristoleate



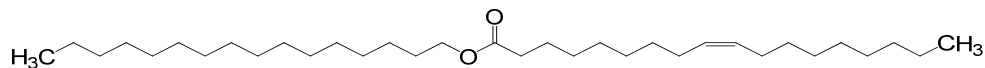
42. Lauryl Oleate



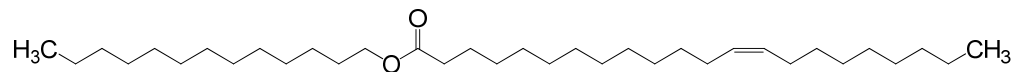
43. Oleyl Myristate



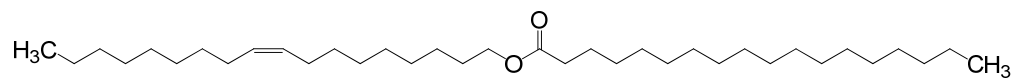
44. Cetyl Oleate



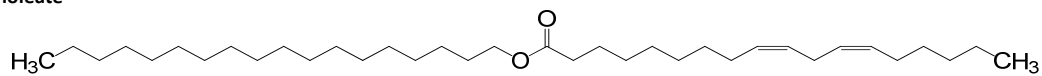
45. Tridecyl Erucate



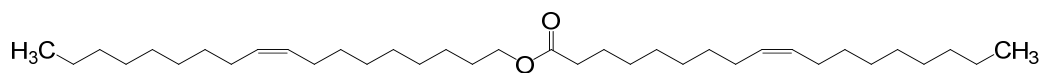
46. Oleyl Stearate



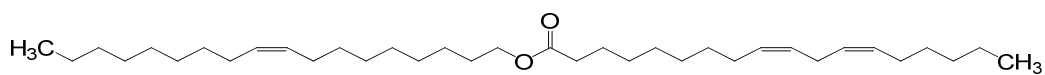
47. Stearyl Linoleate



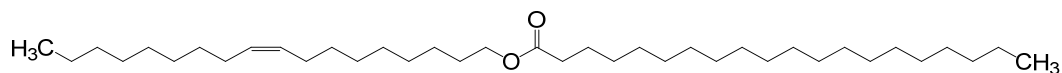
48. Oleyl Oleate



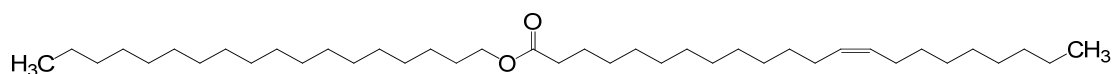
49. Oleyl Linoleate



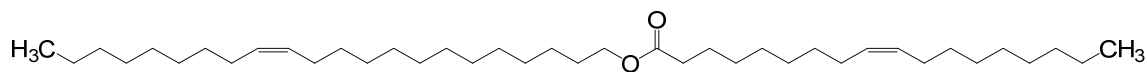
50. Oleyl Arachidate



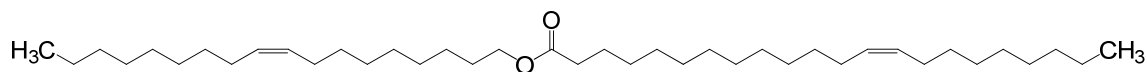
51. Stearyl Erucate



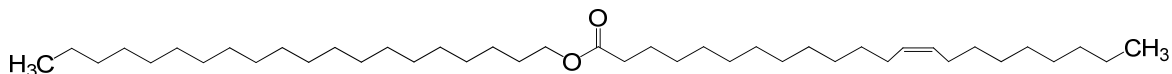
52. Erucyl Oleate



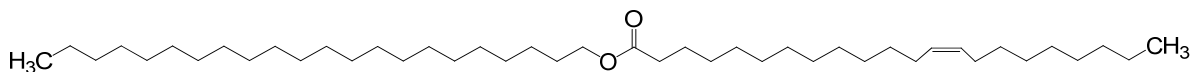
53. Oleyl Erucate



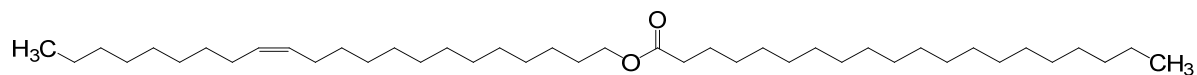
54. Arachidyl Erucate



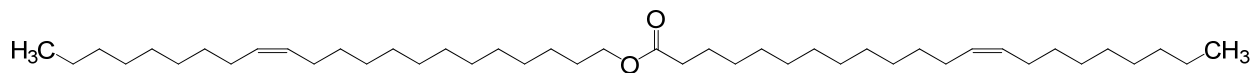
55. Behenyl Erucate

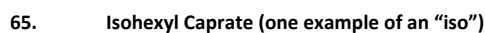
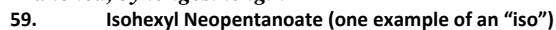


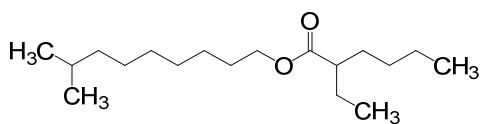
56. Erucyl Arachidate



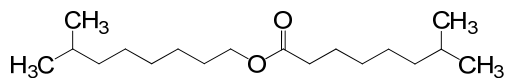
57. Erucyl Erucate



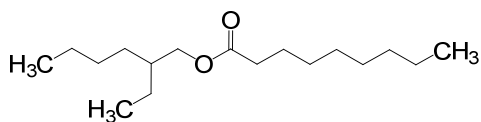




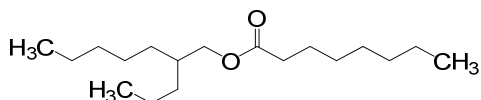
69. Isononyl Isononanoate (one example of an "iso")



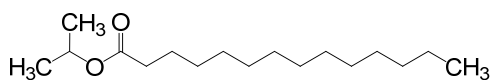
70. Ethylhexyl Pelargonate



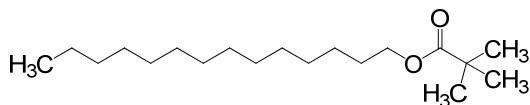
71. Propylheptyl Caprylate



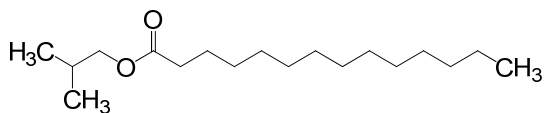
72. Isopropyl Myristate



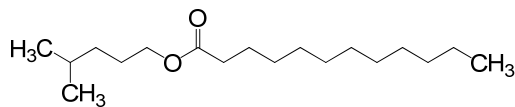
73. Myristyl Neopentanoate



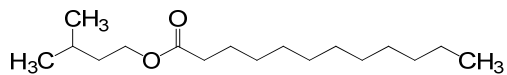
74. Isobutyl Myristate



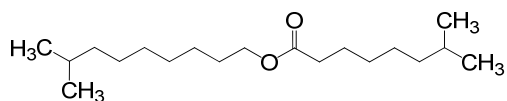
75. Isohexyl Laurate (one example of an "iso")



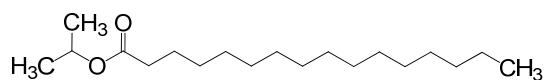
76. Isoamyl Laurate



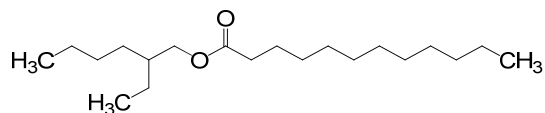
77. Iodecyl Isononanoate (one example of an "iso")



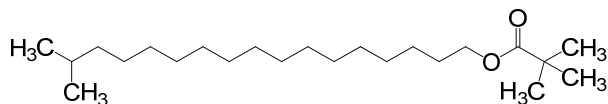
78. Isopropyl Palmitate



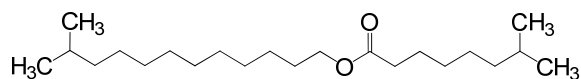
79. Ethylhexyl Laurate



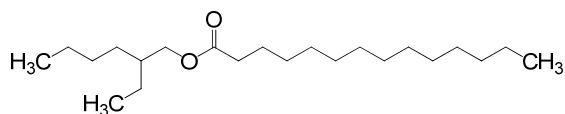
80. Isostearyl Neopentanoate (one example of an "iso")



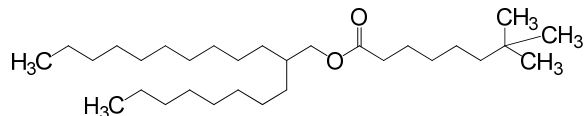
81. Isotridecyl Isononanoate



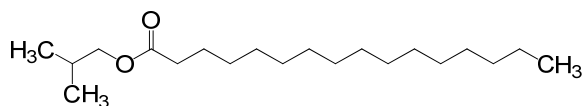
82. Ethylhexyl Myristate



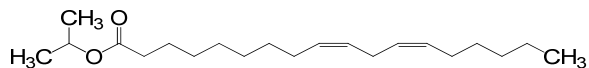
83. Octyldodecyl Neodecanoate



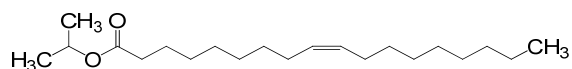
84. Isobutyl Palmitate



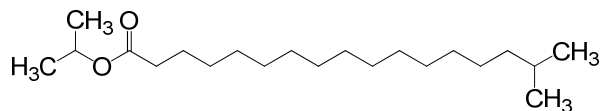
85. Isopropyl Linoleate



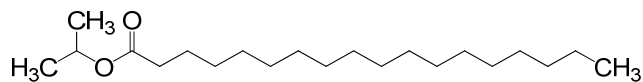
86. Isopropyl Oleate



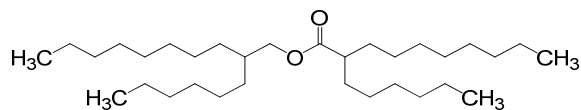
87. Isopropyl Isostearate (one example of an "iso")



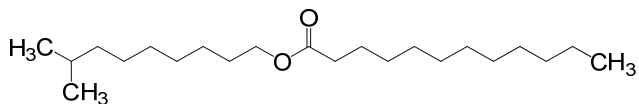
88. Isopropyl Stearate



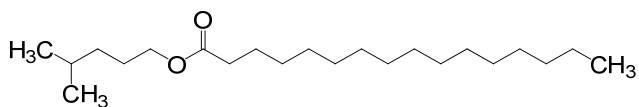
89. Hexyldecyl Hexyldecanoate



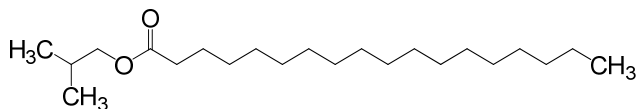
90. Isodecyl Laurate (one example of an "iso")



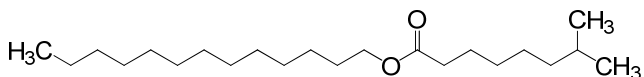
91. Isohexyl Palmitate (one example of an "iso")



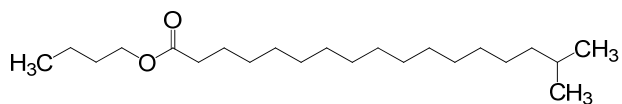
92. Isobutyl Stearate



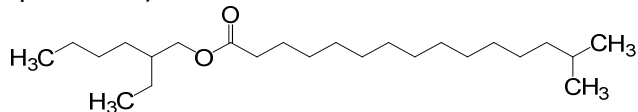
93. Tridecyl Isononanoate



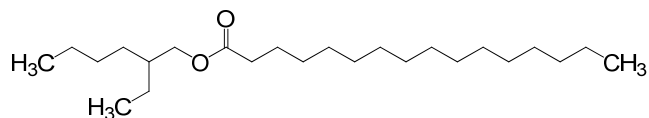
94. Butyl Isostearate (one example of an "iso")



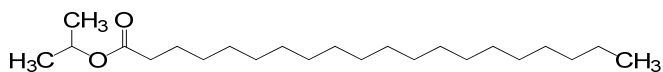
95. Ethylhexyl Isopalmitate (one example of an "iso")



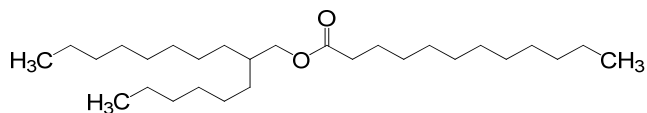
96. Ethylhexyl Palmitate



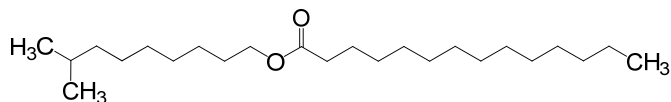
97. Isopropyl Arachidate (one example of an "iso")



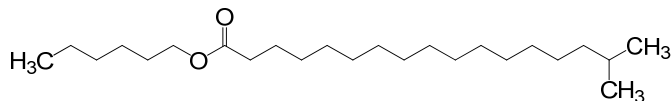
98. Hexyldecyl Laurate



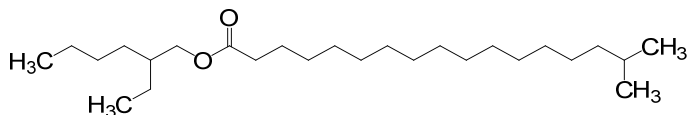
99. Isodecyl Myristate (one example of an "iso")



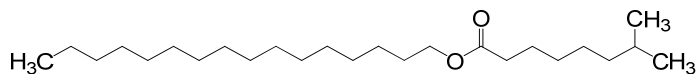
100. Hexyl Isostearate (one example of an "iso")



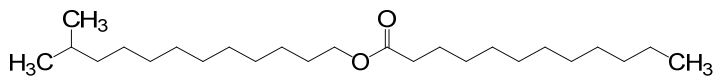
101. Ethylhexyl Isostearate (one example of an "iso")



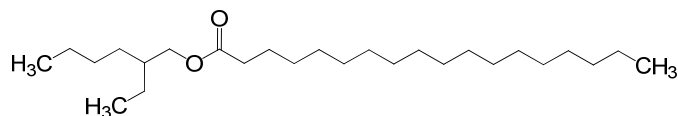
102. Cetyl Isononanoate



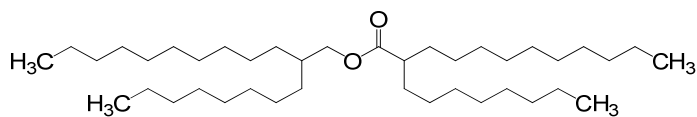
103. Isotridecyl Laurate (one example of an "iso")



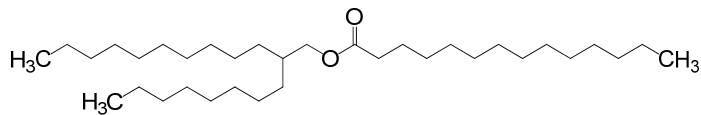
104. Ethylhexyl Stearate



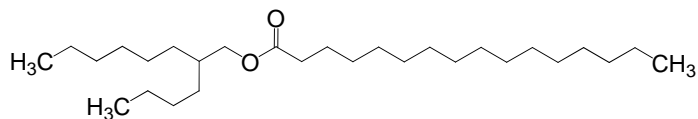
105. Octyldodecyl Octyldodecanoate



106. Octyldodecyl Myristate

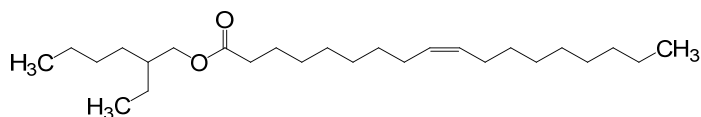


107. Butyloctyl Palmitate

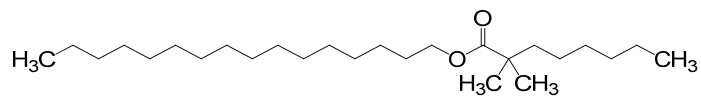


108. Ethylhexyl Oleate

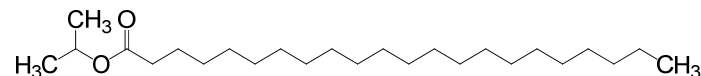
109. Cetyl Dimethyloctanoate



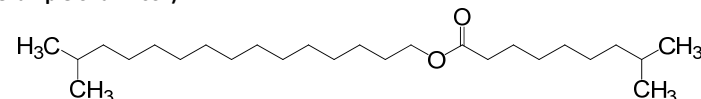
110. Isopropyl Behenate (one example of an "iso")



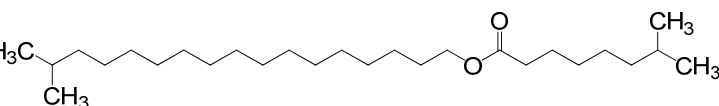
111. Isocetyl Isodecanoate (one example of an "iso")



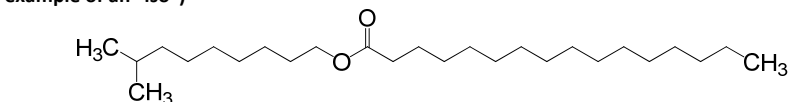
112. Isostearyl Isononanoate (one example of an "iso")



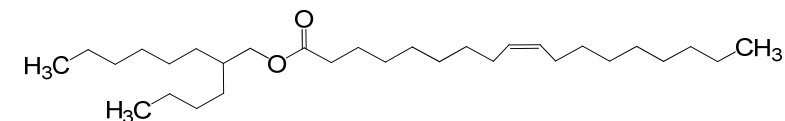
113. Isodecyl Palmitate (one example of an "iso")



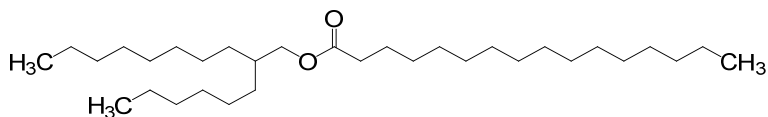
114. Isotridecyl Myristate (one example of an "iso")



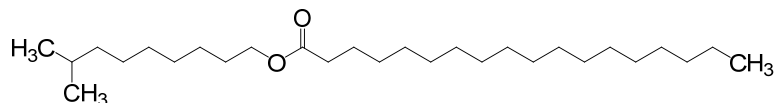
115. Butyloctyl Oleate



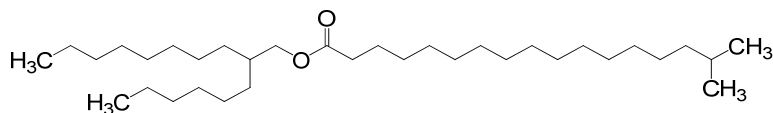
116. Hexyldecyl Palmitate



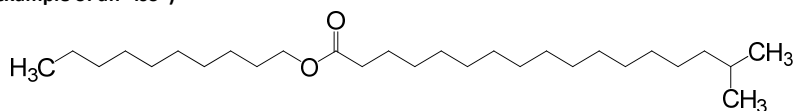
117. Isodecyl Stearate (one example of an "iso")



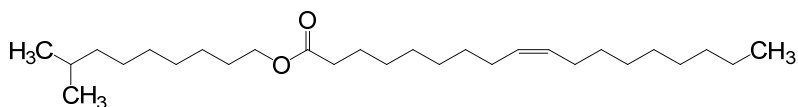
118. Hexyldecyl Isostearate (one example of an "iso")



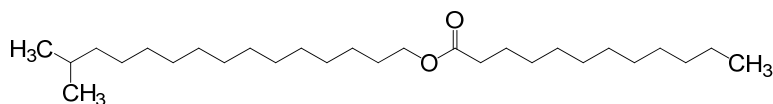
119. Decyl Isostearate (one example of an "iso")



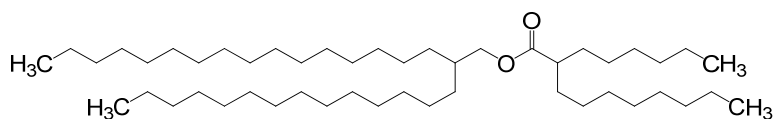
120. Isodecyl Oleate (one example of an "iso")



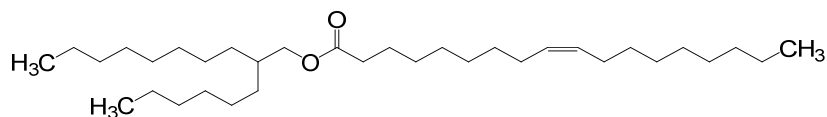
121. Isocetyl Laurate (one example of an "iso")



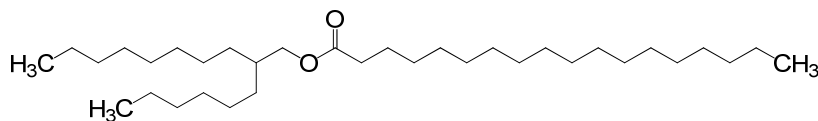
122. Tetradecyloctadecyl Hexyldecanoate



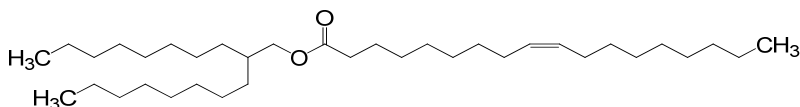
123. Hexyldecyl Oleate



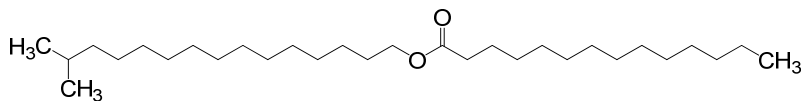
124. Hexyldecyl Stearate



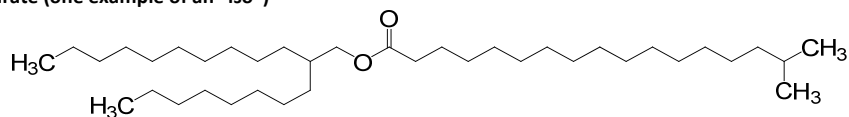
125. Octyldecyl Oleate



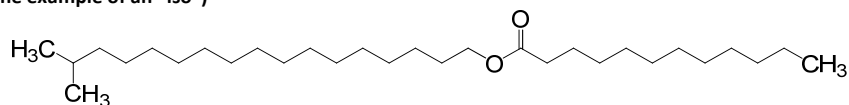
126. Isocetyl Myristate (one example of an "iso")



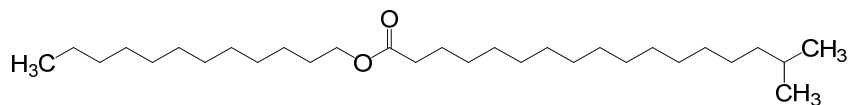
127. Octyldodecyl Isostearate (one example of an "iso")



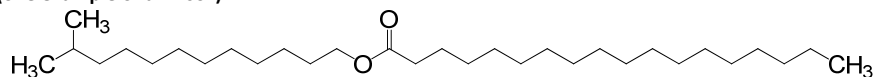
128. Isostearyl Laurate (one example of an "iso")



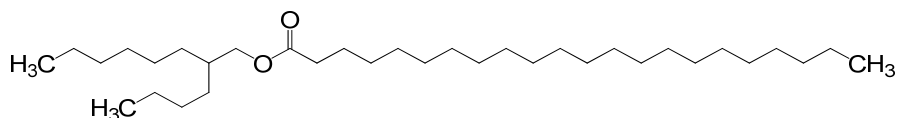
129. Lauryl Isostearate (one example of an "iso")



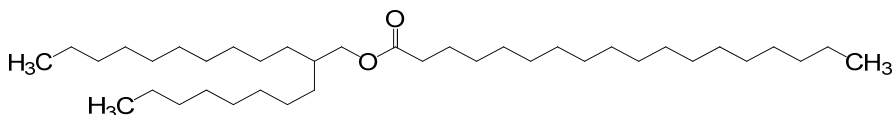
130. Isotridecyl Stearate (one example of an "iso")



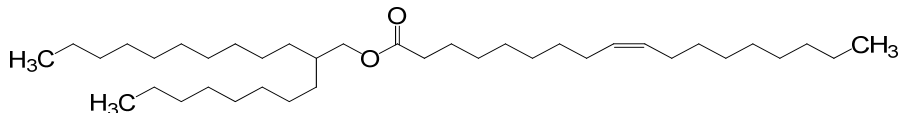
131. Butyloctyl Behenate



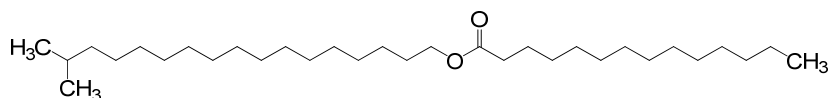
132. Octyldodecyl Stearate



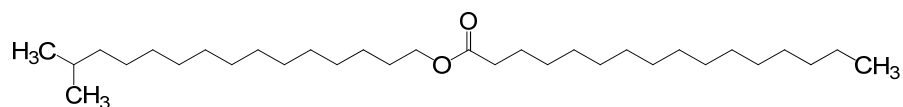
133. Octyldodecyl Oleate



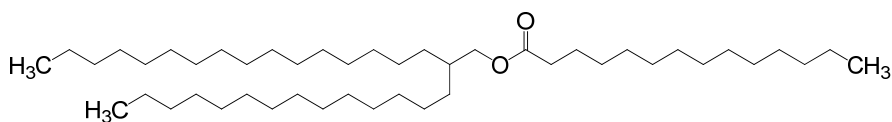
134. Isostearyl Myristate (one example of an "iso")



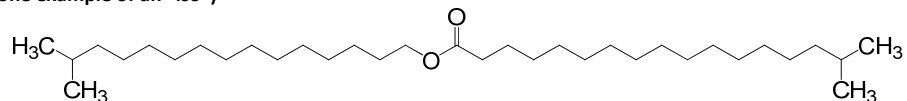
135. Isocetyl Palmitate (one example of an "iso")



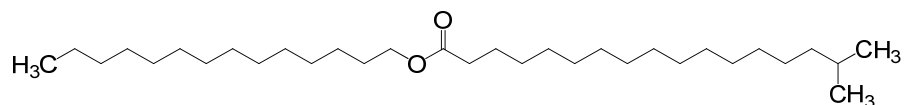
136. Tetradecyloctadecyl Myristate



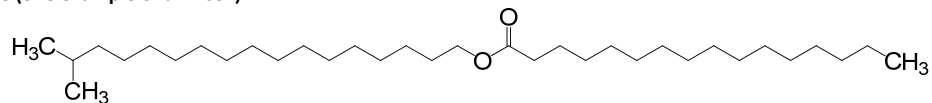
137. Isocetyl Isostearate (one example of an "iso")



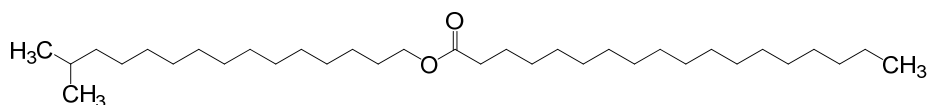
138. Myristyl Isostearate (one example of an "iso")



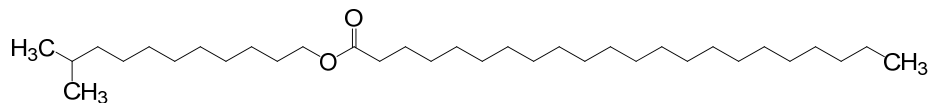
139. Isostearyl Palmitate (one example of an "iso")



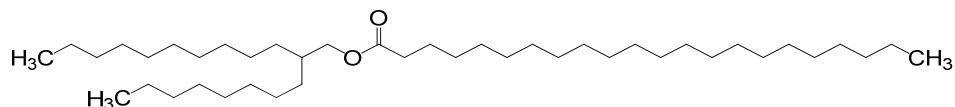
140. Isocetyl Stearate (one example of an "iso")



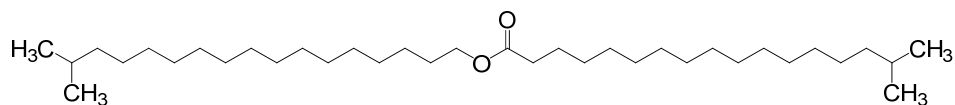
141. Isolauryl Behenate (one example of an "iso")



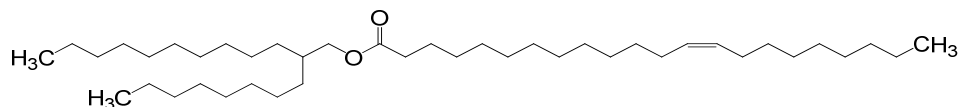
142. Octyldodecyl Behenate



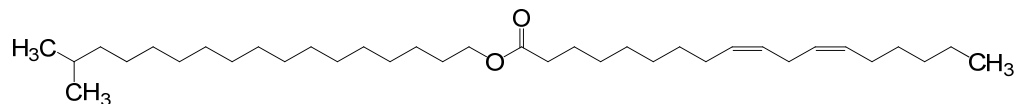
143. Isostearyl Isostearate (one example of an "iso")



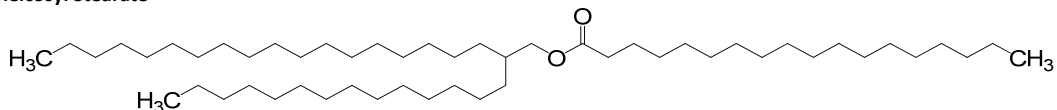
144. Octyldodecyl Erucate



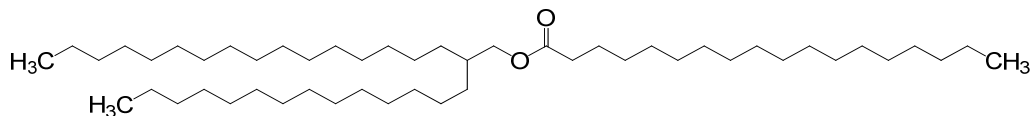
145. Isostearyl Linoleate (one example of an "iso")



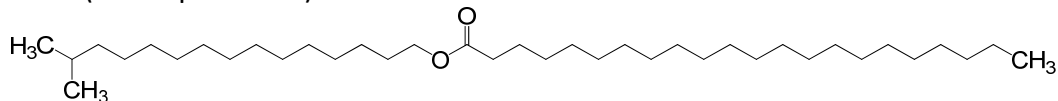
146. Tetradecyleicosyl Stearate



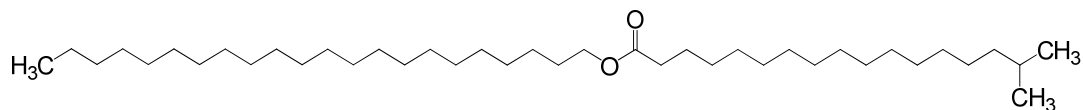
147. Tetradecyloctadecyl Stearate



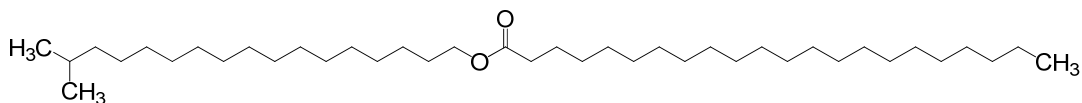
148. Isocetyl Behenate (one example of an "iso")



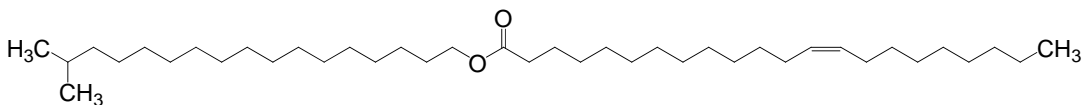
149. Behenyl Isostearate (one example of an "iso")



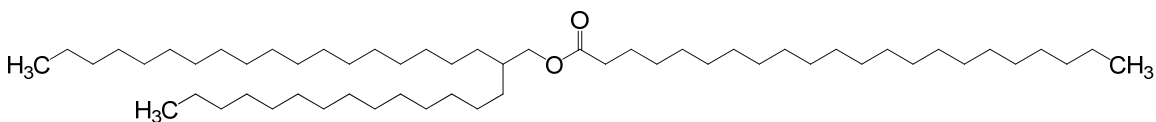
150. Isostearyl Behenate (one example of an "iso")



151. Isostearyl Erucate (one example of an "iso")

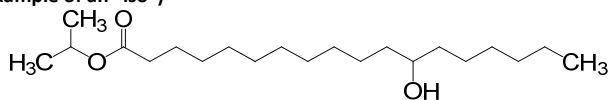


152. Tetradecyloctadecyl Behenate

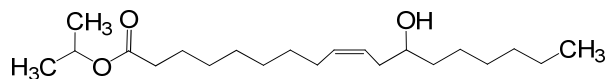


Hydroxy-substituted, by longest length

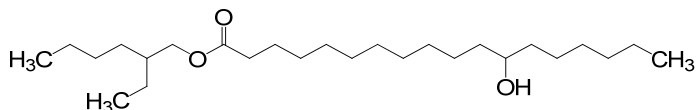
153. Isopropyl Hydroxystearate (one example of an "iso")



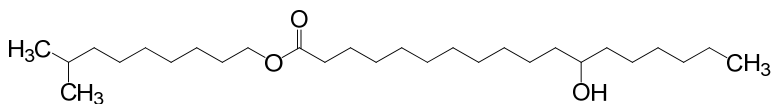
154. Isopropyl Ricinoleate



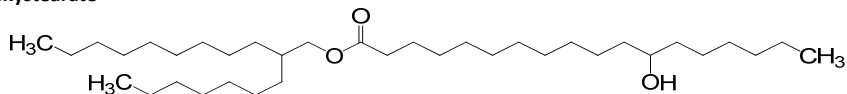
155. Ethylhexyl Hydroxystearate



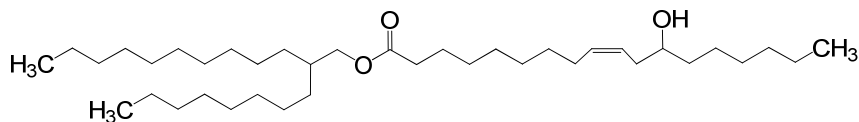
156. Isodecyl Hydroxystearate (one example of an "iso")



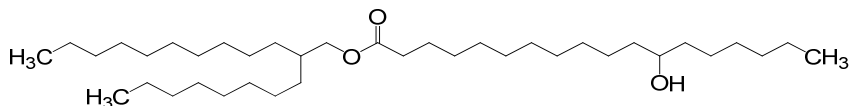
157. Heptylundecyl Hydroxystearate



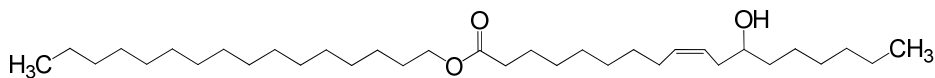
158. Octyldodecyl Ricinoleate



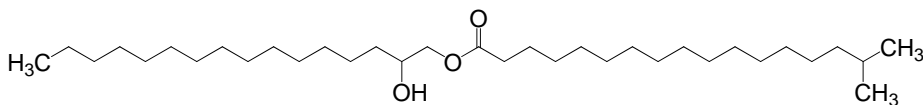
159. Octyldodecyl Hydroxystearate



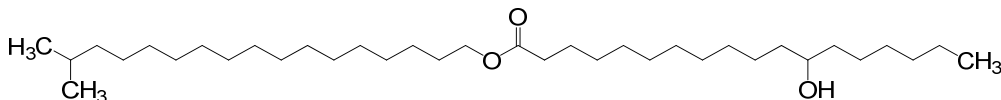
160. Cetyl Ricinoleate



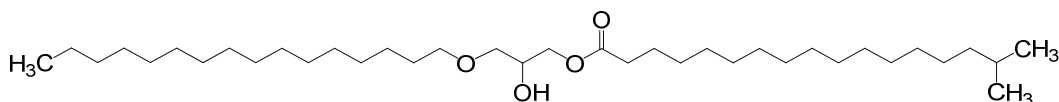
161. Hydroxycetyl Isostearate (one example of an "iso")



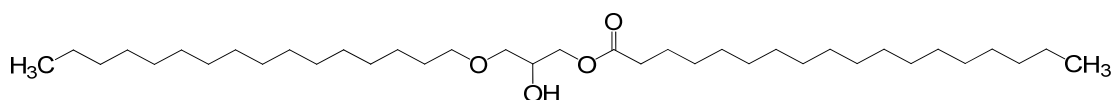
162. Isostearyl Hydroxystearate (one example of an "iso")



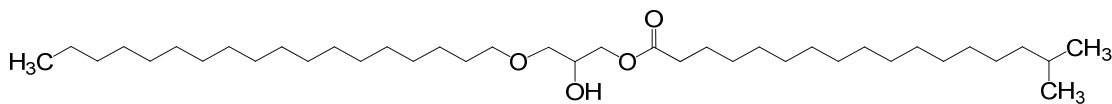
163. Chimyl Isostearate (one example of an "iso")



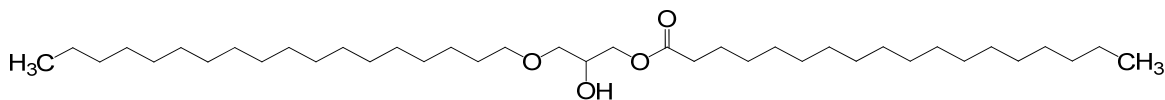
164. Chimyl Stearate



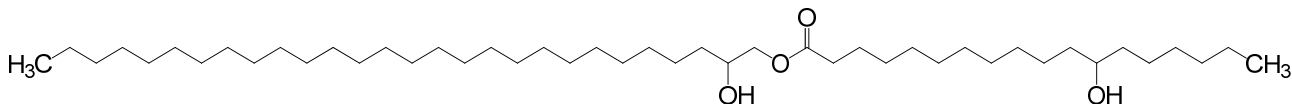
165. Batyl Isostearate (one example of an "iso")



166. Batyl Stearate

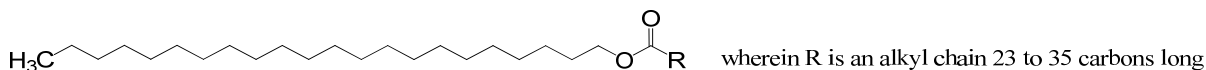


167. Hydroxyoctacosanyl Hydroxystearate

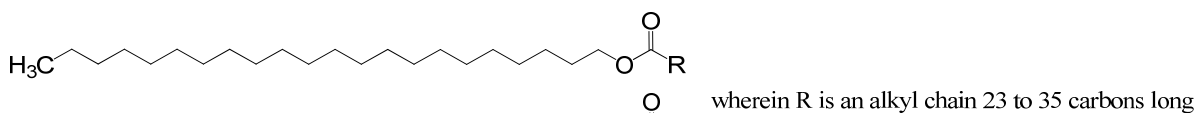


Mixtures (alphabetical)

168. Behenyl Beeswax



169. Behenyl/Isostearyl Beeswax (one example of an "iso")



170. Behenyl Olivat

- $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{O}-\text{C}(=\text{O})-\text{R}$
- wherein R represents the fatty acids derived from avocado oil

- $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{O}-\text{C}(=\text{O})-\text{R}$
- wherein R represents the fatty acids derived from babassu oil

- $$\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}(\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3)-\text{CO}-\text{R}$$
- wherein R is an alkyl chain 23 to 35 carbons long

- wherein R represents the fatty acids derived from candelilla oil

- CCCCC(C)COC(=O)CCCCCCCCCCCCCCCC
-
- CCCCC(C)COC(=O)CCCCCCCCCCCCCCCC

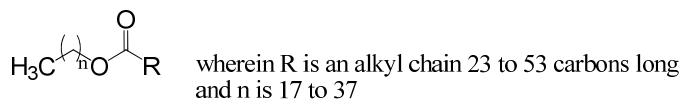
- $$\text{H}_3\text{C}-(\text{CH}_2)_n-\text{O}-\text{C}(=\text{O})-\text{R}$$
- wherein R is an alkyl chain 23 to 35 carbons long and n is 13 to 29

- $$\text{H}_3\text{C}-(\text{CH}_2)_n-\text{O}-\text{C}(=\text{O})-\text{R}$$
- wherein R is an alkyl chain 23 to 35 carbons long
and n is 17 to 37

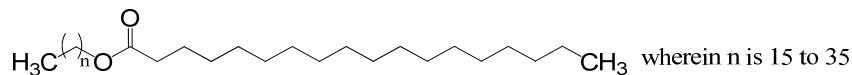
- $$\text{H}_3\text{C}-(\text{CH}_2)_n-\text{O}-\text{C}(=\text{O})-\text{R}$$
- wherein R is an alkyl chain 23 to 35 carbons long and n is 29 to 49

- $$\text{H}_3\text{C}-(\text{---})_n\text{O}-\text{C}(=\text{O})-\text{C}_{20}\text{H}_{41}-\text{CH}_3 \quad \text{wherein n is 19 to 39}$$

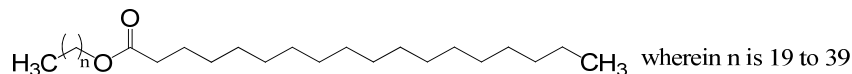
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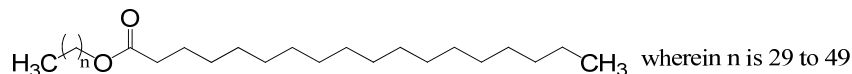
181. C16-36 Alkyl Stearate



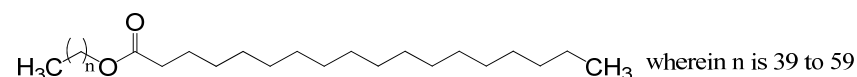
182. C20-40 Alkyl Stearate



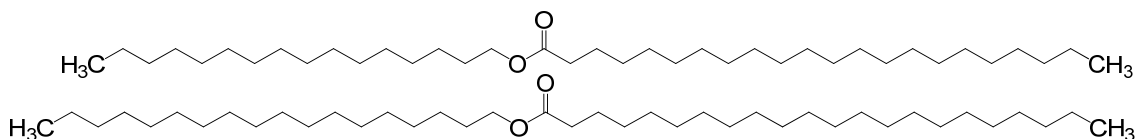
183. C30-50 Alkyl Stearate



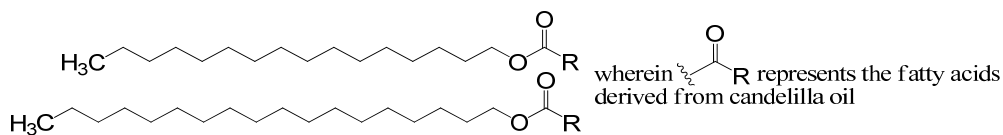
184. C40-60 Alkyl Stearate



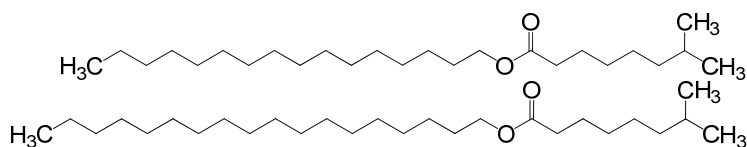
185. Cetearyl Behenate



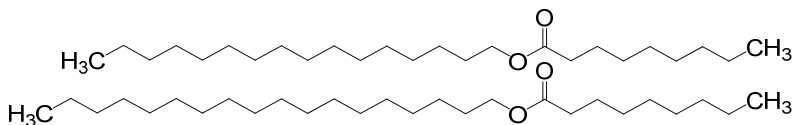
186. Cetearyl Candelillate



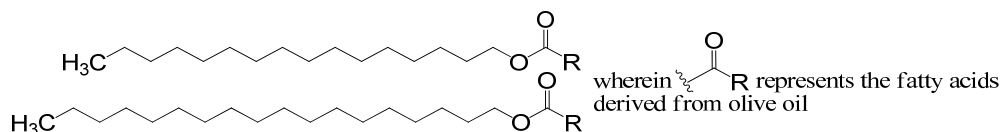
187. Cetearyl Isononanoate (one example of an "iso")



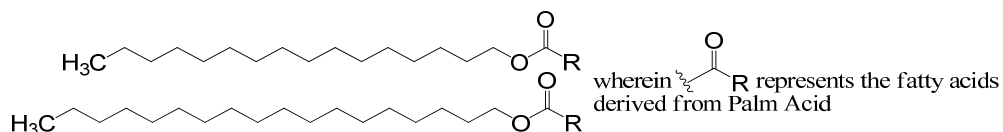
188. Cetearyl Nonanoate



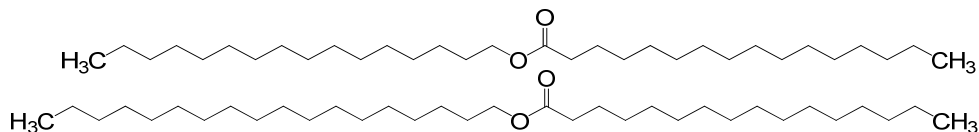
189. Cetearyl Olivatate



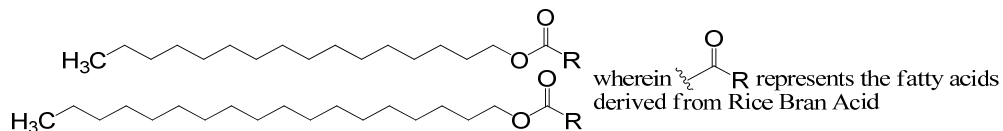
190. Cetearyl Palmate



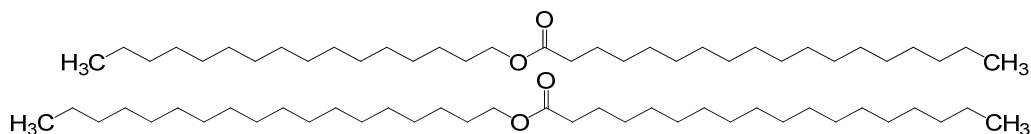
191. Cetearyl Palmitate



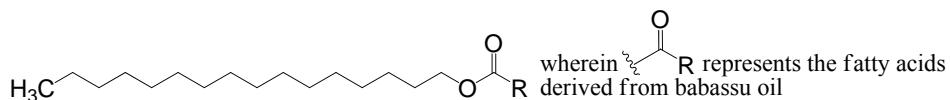
192. Cetearyl Rice Branate



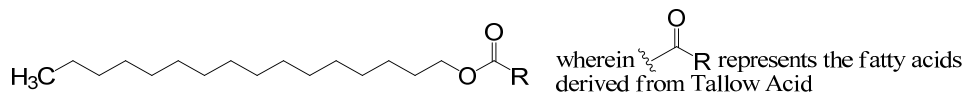
193. Cetearyl Stearate



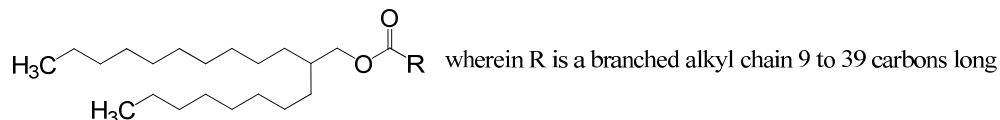
194. Cetyl Babassuate



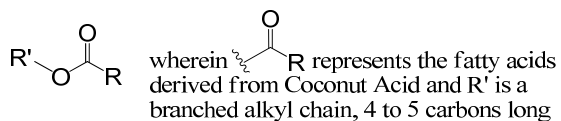
195. Cetyl Tallowate



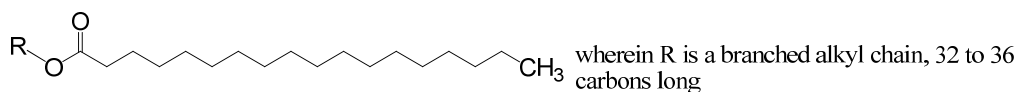
196. C10-40 Isoalkyl Acid Octyldodecanol Esters



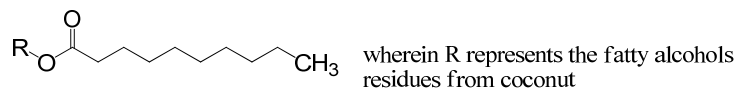
197. C4-5 Isoalkyl Cocoate



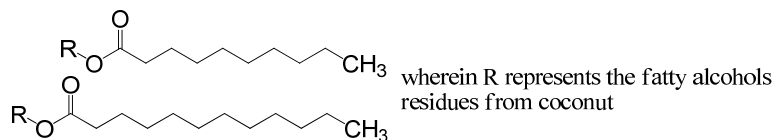
198. C32-36 Isoalkyl Stearate



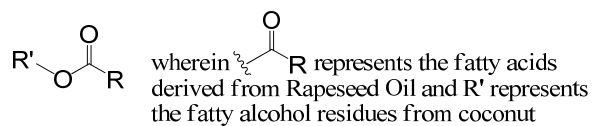
199. Coco-Caprylate



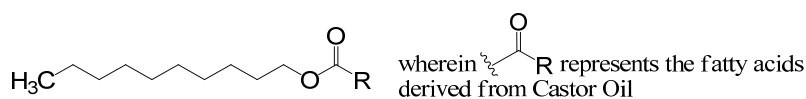
200. Coco-Caprylate/Caprate



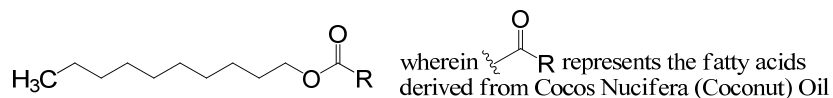
201. Coco-Rapeseedate



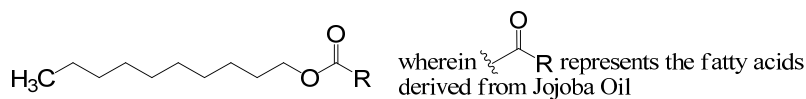
202. Decyl Castorate



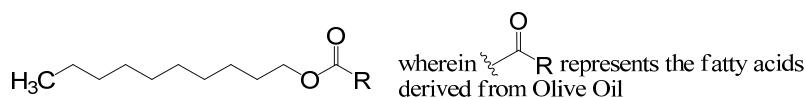
203. Decyl Cocoate



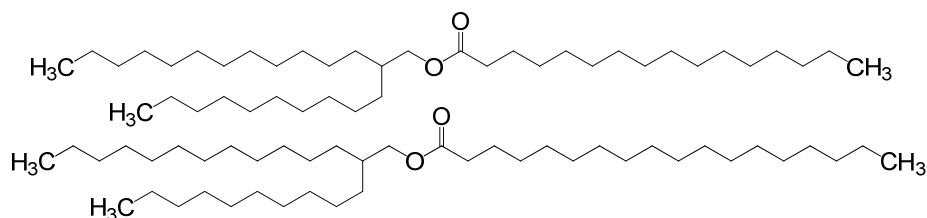
204. Decyl Jojobate



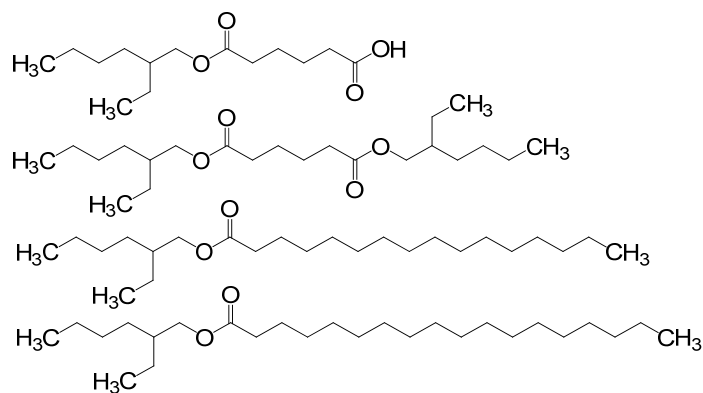
205. Decyl Olivatate



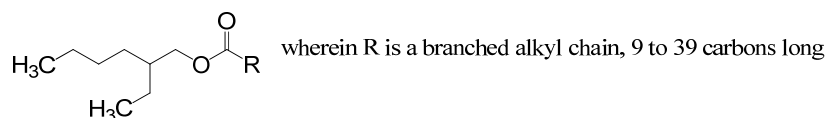
206. Decyltetradecyl Cetearate



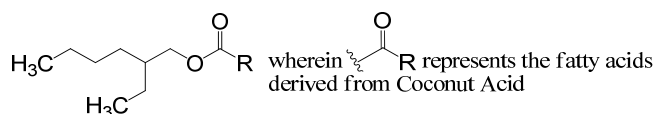
207. Ethylhexyl Adipate/Palmitate/Stearate



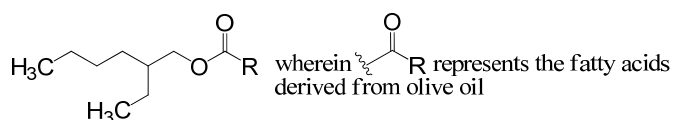
208. Ethylhexyl C10-40 Isoalkyl Acidate



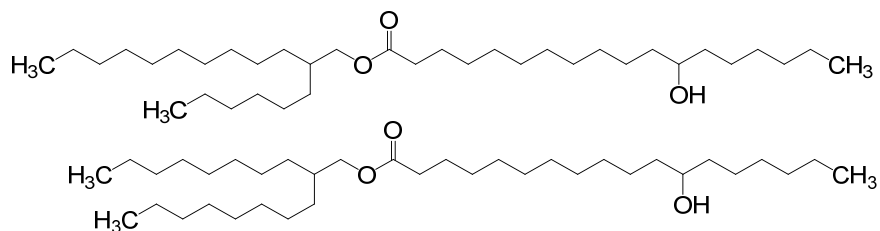
209. Ethylhexyl Cocoate



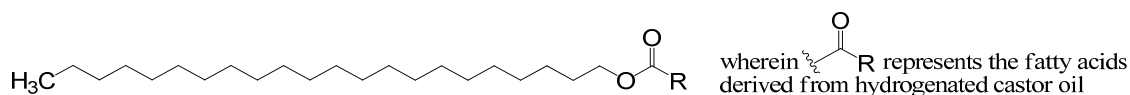
210. Ethylhexyl Olivatate



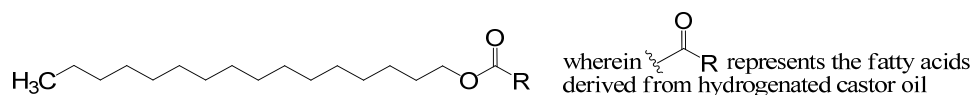
211. Hexyldodecyl/Octyldodecyl Hydroxystearate



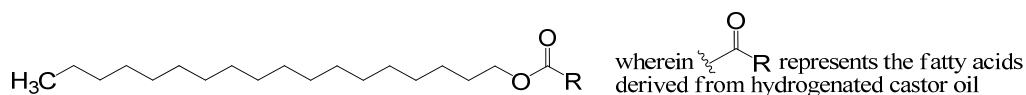
212. Hydrogenated Castor Oil Behenyl Esters



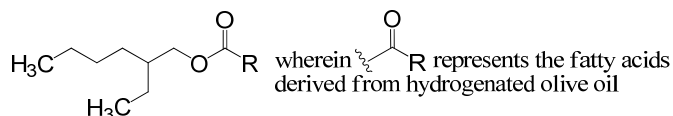
213. Hydrogenated Castor Oil Cetyl Esters



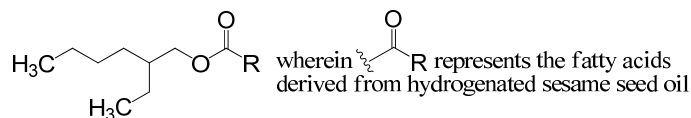
214. Hydrogenated Castor Oil Stearyl Esters



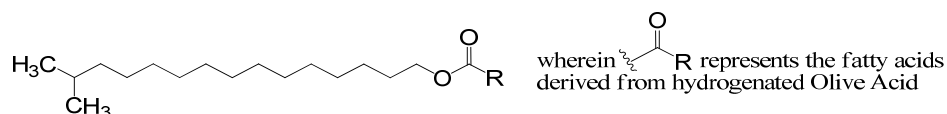
215. Hydrogenated Ethylhexyl Olivatate



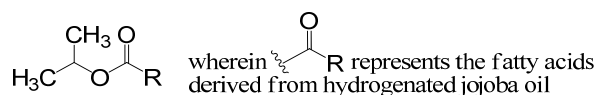
216. Hydrogenated Ethylhexyl Sesamate



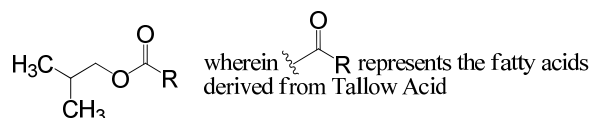
217. Hydrogenated Isocetyl Olivatate (one example of an "iso")



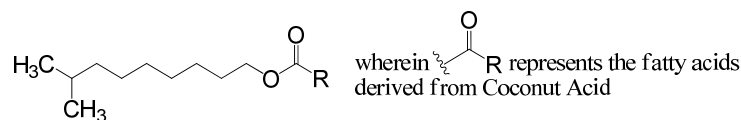
218. Hydrogenated Isopropyl Jojobate



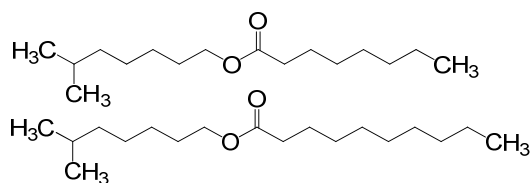
219. Isobutyl Tallowate



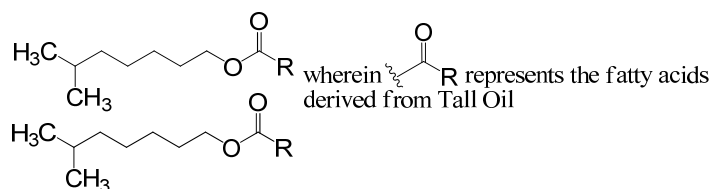
220. Isodecyl Cocoate (one example of an "iso")



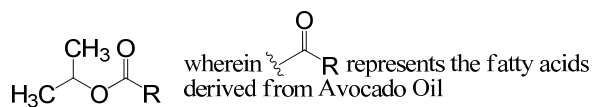
221. Isooctyl Caprylate/Caprate (one example of an "iso")



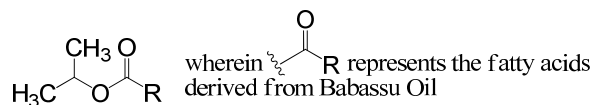
222. Isooctyl Tallate (one example of an "iso")



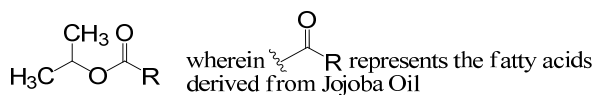
223. Isopropyl Avocadate (one example of an "iso")



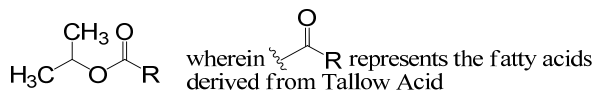
224. Isopropyl Babassuate (one example of an "iso")



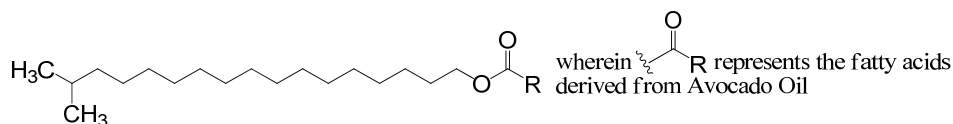
225. Isopropyl Jojobate



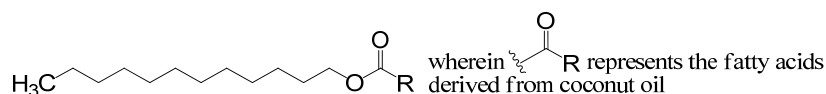
226. Isopropyl Tallowate



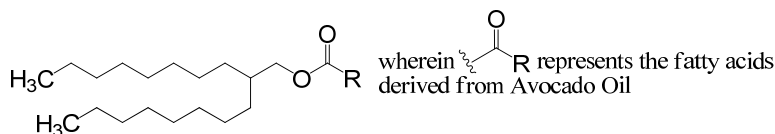
227. Isostearyl Avocadoate (one example of an "iso")



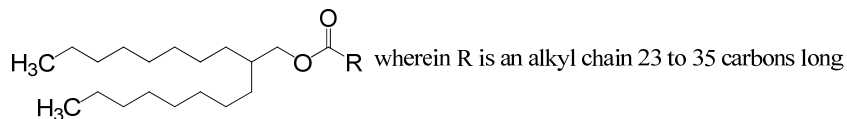
228. Lauryl Cocoate



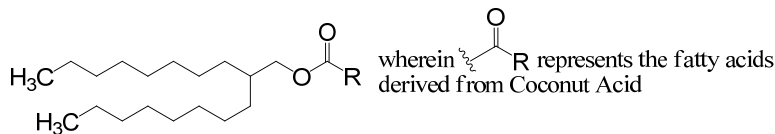
229. Octyldodecyl Avocadoate



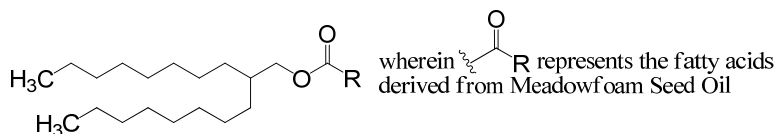
230. Octyldodecyl Beeswax



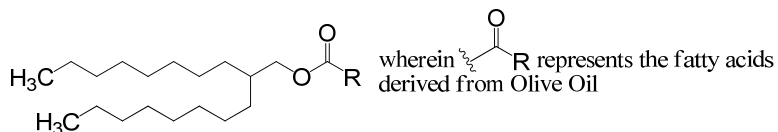
231. Octyldodecyl Cocoate



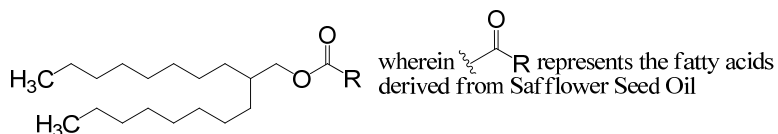
232. Octyldodecyl Meadowfoamate



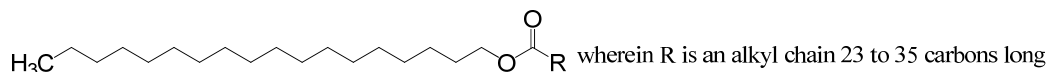
233. Octyldodecyl Olivatate



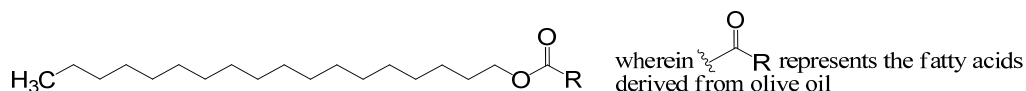
234. Octyldodecyl Safflowerate



235. Stearyl Beeswax

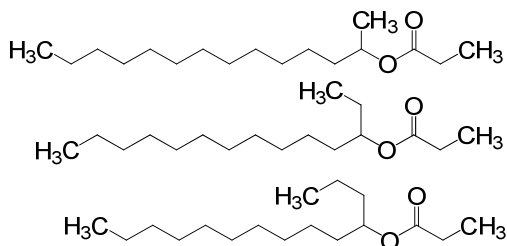


236. Stearyl Olivatate

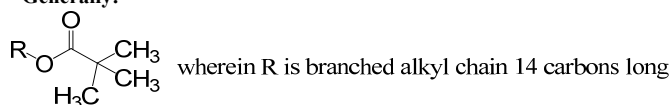


237. Tetradecylpropionates

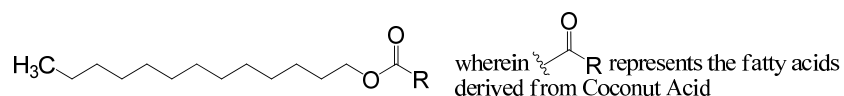
Chiefly:



Generally:



238. Tridecyl Cocoate



TABLES**Table 1. Alkyl Esters Group (presented alphabetically)**

Arachidyl Behenate	Decyl Oleate [#]	Isopropyl Isostearate
Arachidyl Erucate	Decyl Oliviate	Isopropyl Arachidate
Arachidyl Propionate [#]	Decyl Palmitate	Isopropyl Avocadoate
Batyl Isostearate	Decyltetradecyl Cetearate	Isopropyl Babassuate
Batyl Stearate	Erucyl Arachidate	Isopropyl Behenate
Behenyl Beeswax	Erucyl Erucate	Isopropyl Hydroxystearate
Behenyl Behenate	Erucyl Oleate	Isopropyl Isostearate [#]
Behenyl Erucate	Ethylhexyl Adipate/Palmitate/Stearate	Isopropyl Jojobate
Behenyl Isostearate	Ethylhexyl C10-40 Isoalkyl Acidate	Isopropyl Laurate
Behenyl Oliviate	Ethylhexyl Cocoate [#]	Isopropyl Linoleate
Behenyl/Isostearyl Beeswax	Ethylhexyl Hydroxystearate	Isopropyl Myristate [#]
Butyl Avocadoate	Ethylhexyl Isononanoate [#]	Isopropyl Oleate
Butyl Babassuate	Ethylhexyl Isopalmitate	Isopropyl Palmitate [#]
Butyl Isostearate	Ethylhexyl Isostearate	Isopropyl Ricinoleate [#]
Butyl Myristate [#]	Ethylhexyl Laurate	Isopropyl Sorbate
Butyl Oleate	Ethylhexyl Myristate [#]	Isopropyl Stearate [#]
Butyl Stearate [#]	Ethylhexyl Neopentanoate	Isopropyl Tallowate
Butyloctyl Beeswax	Ethylhexyl Oleate	Isostearyl Avocadoate
Butyloctyl Behenate	Ethylhexyl Oliviate	Isostearyl Behenate
Butyloctyl Candelillate	Ethylhexyl Palmitate [#]	Isostearyl Erucate
Butyloctyl Cetearate	Ethylhexyl Pelargonate [#]	Isostearyl Hydroxystearate
Butyloctyl Oleate	Ethylhexyl Stearate [#]	Isostearyl Isononanoate [#]
Butyloctyl Palmitate	Heptyl Undecylenate	Isostearyl Isostearate
C10-40 Isoalkyl Acid Octyldodecanol Esters	Heptylundecyl Hydroxystearate	Isostearyl Laurate
C14-30 Alkyl Beeswax	Hexyl Isostearate	Isostearyl Linoleate
C16-36 Alkyl Stearate	Hexyl Laurate	Isostearyl Myristate [#]
C18-38 Alkyl Beeswax	Hexyldecyl Hexyldecanoate	Isostearyl Neopentanoate [#]
C18-38 Alkyl C24-54 Acid Ester	Hexyldecyl Isostearate	Isostearyl Palmitate
C20-40 Alkyl Behenate	Hexyldecyl Laurate	Isotridecyl Isononanoate [#]
C20-40 Alkyl Stearate	Hexyldecyl Oleate	Isotridecyl Laurate
C30-50 Alkyl Beeswax	Hexyldecyl Palmitate	Isotridecyl Myristate [#]
C30-50 Alkyl Stearate	Hexyldecyl Stearate	Isotridecyl Stearate
C32-36 Isoalkyl Stearate	Hexyldecyl/Octyldecyl Hydroxystearate	Lauryl Behenate
C40-60 Alkyl Stearate	Hydrogenated Castor Oil Behenyl Esters	Lauryl Cocoate [#]
C4-5 Isoalkyl Cocoate	Hydrogenated Castor Oil Cetyl Esters	Lauryl Isostearate
Caprylyl Butyrate	Hydrogenated Castor Oil Stearyl Esters	Lauryl Laurate
Caprylyl Caprylate	Hydrogenated Ethylhexyl Oliviate	Lauryl Myristate [#]
Caprylyl Eicosenoate	Hydrogenated Ethylhexyl Sesamate	Lauryl Oleate
Cetearyl Behenate	Hydrogenated Isocetyl Oliviate	Lauryl Palmitate
Cetearyl Candelillate	Hydrogenated Isopropyl Jojobate	Lauryl Stearate
Cetearyl Isononanoate [#]	Hydroxycetyl Isostearate	Lignoceryl Erucate
Cetearyl Nonanoate [#]	Hydroxyoctacosanyl Hydroxystearate	Myristyl Isostearate
Cetearyl Oliviate	Isoamyl Laurate	Myristyl Laurate
Cetearyl Palmate	Isobutyl Myristate [#]	Myristyl Myristate [#]
Cetearyl Palmitate	Isobutyl Palmitate	Myristyl Neopentanoate
Cetearyl Rice Branate	Isobutyl Perlargonate [#]	Myristyl Stearate [#]
Cetearyl Stearate	Isobutyl Stearate [#]	Octyldecyl Oleate
Cetyl Babassuate	Isobutyl Tallowate	Octyldodecyl Avocadoate
Cetyl Behenate	Isocetyl Behenate	Octyldodecyl Beeswax
Cetyl Caprate	Isocetyl Isodecanoate	Octyldodecyl Behenate
Cetyl Caprylate	Isocetyl Isostearate	Octyldodecyl Cocoate [#]
Cetyl Dimethyloctanoate	Isocetyl Laurate	Octyldodecyl Erucate
Cetyl Esters	Isocetyl Myristate	Octyldodecyl Hydroxystearate
Cetyl Isononanoate [#]	Isocetyl Palmitate	Octyldodecyl Isostearate
Cetyl Laurate	Isocetyl Stearate [#]	Octyldodecyl Meadowfoamate
Cetyl Myristate [#]	Isodecyl Cocoate [#]	Octyldodecyl Myristate [#]
Cetyl Oleate	Isodecyl Hydroxystearate	Octyldodecyl Neodecanoate
Cetyl Palmitate [#]	Isodecyl Isononanoate [#]	Octyldodecyl Neopentanoate
Cetyl Ricinoleate [#]	Isodecyl Laurate	Octyldodecyl Octyldodecanoate
Cetyl Stearate [#]	Isodecyl Myristate [#]	Octyldodecyl Oleate
Cetyl Tallowate	Isodecyl Neopentanoate	Octyldodecyl Oliviate
Chimyl Isostearate	Isodecyl Oleate [#]	Octyldodecyl Ricinoleate [#]
Chimyl Stearate	Isodecyl Palmitate	Octyldodecyl Safflowerate
Coco-Caprylate	Isodecyl Stearate	Octyldodecyl Stearate
Coco-Caprylate/Caprate	Isohexyl Caprate	Oleyl Arachidate
Coco-Rapeseedate	Isohexyl Laurate	Oleyl Erucate
Decyl Castorate	Isohexyl Neopentanoate	Oleyl Linoleate
Decyl Cocoate [#]	Isohexyl Palmitate	Oleyl Myristate [#]
Decyl Isostearate	Isolauryl Behenate	Oleyl Oleate
Decyl Jojobate	Isononyl Isononanoate [#]	Oleyl Stearate
Decyl Laurate	Isooctyl Caprylate/Caprate	Propylheptyl Caprylate
Decyl Myristate [#]	Isooctyl Tallate	Stearyl Beeswax

Table 1. Alkyl Esters Group (presented alphabetically)

Stearyl Behenate [#]	Tetradecyleicosyl Stearate	Tridecyl Cocoate [#]
Stearyl Caprylate [#]	Tetradecyloctadecyl Behenate	Tridecyl Erucate
Stearyl Erucate	Tetradecyloctadecyl Hexyldecanoate	Tridecyl Isononanoate [#]
Stearyl Heptanoate [#]	Tetradecyloctadecyl Myristate [#]	Tridecyl Laurate
Stearyl Linoleate	Tetradecyloctadecyl Stearate	Tridecyl Myristate [#]
Stearyl Oliviate [#]	Tetradecylpropionates	Tridecyl Neopentanoate
Stearyl Palmitate [#]	Tridecyl Behenate	Tridecyl Stearate
Stearyl Stearate [#]		

[#]indicates the ingredient was reviewed previously by the CIR

Table 2. Conclusions (year issued) and data summaries of previously reviewed alkyl esters

Alkyl Ester	Conclusion (Year)	Summary data	Reference
<i>Final report on the safety assessment of arachidyl propionate.</i>			
Arachidyl Propionate	safe as used (1990; reaffirmed 2008)	<ul style="list-style-type: none"> - the acute oral LD₅₀ in rats was >20 g/kg; up to 2500 mg/kg at concentrations of 25% in corn oil was not toxic in a 90-day oral study - the acute dermal LD₅₀ in rabbits was > 2 g/kg - not a primary irritant to rabbit skin when tested undiluted, a formulation containing 7% was not irritating in a 24 h SIOPT, and a 10% solution was non-irritating and undiluted test article was slightly irritating in a cumulative irritation test; not a sensitizer when injected undiluted test material, and was not comedogenic when tested undiluted - undiluted test material and a formulation containing 7% were not irritating to rabbit eyes 	7,13
<i>Final report on the amended safety assessment of myristic acid and its salts and esters as used in cosmetics. (2010)</i>			
<i>Final report on the safety assessment of butyl myristate. (1990)</i>			
		- Discussion item: data on myristic acid myristyl and isopropyl myristate were extrapolated and also used in the determination of safety (1990 report)	16
Butyl Myristate	safe as used (1990; 2010)	<ul style="list-style-type: none"> - was observed to enhance dermal penetration of some chemicals - the oral LD₅₀ in rats was >8 g/kg - a single application of 2 g/kg was non-toxic and non-irritating in rabbits - a 24 h occlusive application of undiluted test material produced moderate irritation (PII = 2.88) in rabbits; a moderate irritant but not a sensitizer in guinea pigs when injected intradermally - non-irritating to rabbit eyes 	14,16
Cetyl Myristate	safe as used (2010)	- no data were available	16
Decyl Myristate	safe as used (2010)	- no data were available	16
Ethylhexyl Myristate	safe as used (2010)	- no data were available	16
Isobutyl Myristate	safe as used (2010)	- no data were available	16
Isocetyl Myristate	safe as used (2010)	- no data were available	16
Isodecyl Myristate	safe as used (2010)	no data were available	16
Isopropyl Myristate	safe as used (1982; 2010)	<ul style="list-style-type: none"> - in a study in which monkeys were exposed for 5 sec to an aerosol antiperspirant containing an unspecified concentration of [¹⁴C]isopropyl myristate, the distribution in the exhaled air and in several tissues indicated only 0.25% of the sprayed dose was absorbed and about 10% of this reached the lower respiratory tract - the acute oral LD₅₀ was >16 ml/kg in rats and 49.7 ml/kg in mice - the acute dermal LD₅₀ in rabbits was 5 g/kg; dermal application of 2 g/kg a formulation containing 16-20% in rabbits for 26 days (20 applications) did not produce signs of toxicity but did cause severe erythema and moderate edema and other dermal effects and microscopically marked to severe acanthosis and hyperkeratosis and mixed inflammatory cell infiltration; application of 2 ml/kg of a formulation containing 43-47% in rabbits for 4 wks (21 applications) produced erythema, edema, drying, cracking, and fissuring, but microscopic effects were only seen at the application site - 1 h inhalation exposure to formulations containing 16-20% (33-41 mg/l) and 4.7% (9.7 mg/l) did not produce any deaths or evidence of systemic toxicity in rats; in 13-wk inhalation studies, a formulation containing 16-20% was not toxic to guinea pigs (daily mean concentration of 63.3-224 mg/m³ air for three 1-h exposures/day) but did produce coughing and wheezing in monkeys. Macrophage accumulations within the alveolar and bronchiolar walls were seen in the lungs in direct proportion to the dosage of the aerosol (5.3-37.0 mg/m³ in air) - a 50% solution in isopropyl alcohol significantly accelerated the carcinogenic activity of 0.15% benzo[a]pyrene on the skin of mice; no tumors were produced in mice by application of a 1% solution for 18 wks; applications of 10-100% to the backs of Swiss mice 2x/wk did not result in test article-related carcinogenic lesions - in Draize tests, undiluted test material and 15-58% in formulations was at mostly minimally irritating in rabbits, however, application of undiluted test material for 3 days was moderately to severely irritating; produced comedogenic activity in rabbit ears - in human testing, undiluted test material was not irritating (15 subjects) and the highest PII with formulations containing 15-58% was 0.1 (9-50%) in primary irritation studies; in cumulative irritation studies, undiluted test material (25 subjects) and formulations containing 15-58% (9-13 subjects) were minimally irritating; no sensitization was seen in maximization studies (20% in pet. or -42.9% in formulation; 25 subjects) or RIPTs (15 and 52-58%; 99 and 320 subjects); a formulation containing 42.9% was not phototoxic (10 subjects) or a photoallergen (25 subjects) - undiluted material was minimally irritating to rabbit eyes and formulations containing 15-58% were non- to mildly irritating 	10,16

Table 2. Conclusions (year issued) and data summaries of previously reviewed alkyl esters

Alkyl Ester	Conclusion (Year)	Summary data	Reference
		- not genotoxic in the <i>Salmonella</i> /microsome test	
Isostearyl Myristate	safe as used (2010)	- mixed results were seen regarding dermal penetration enhancement - in a study in which monkeys were exposed for 5 sec to an aerosol antiperspirant containing test material, the distribution in the exhaled air and in several tissues indicated only 0.25% of the sprayed dose was absorbed and about 10% of this reached the lower respiratory tract - no other data were available	16
Isotridecyl Myristate	safe as used (2010)	- no data were available	16
Lauryl Myristate	safe as used (2010)	- no data were available	16
Myristyl Myristate	safe as used (1982; 2010)	- the acute oral LD ₅₀ in rats was >14.4 g/kg - the acute dermal LD ₅₀ in rabbits was >2 g/kg - undiluted test material was at most mildly irritating in rabbits; produced comedogenic activity in rabbit ears - in human studies, 8% in formulation was not an irritant (20 subjects) or sensitizer (196 subjects) - undiluted material, 15-50% in corn oil, and formulations containing 15-58% were non- to minimally irritating in rabbit eyes	10,16
Octyldodecyl Myristate	safe as used (2010)	- no data were available	16
Oleyl Myristate	safe as used (2010)	- no data were available	16
Tetradecyloctadecyl Myristate	safe as used (2010)	- no data were available	16
Tridecyl Myristate	safe as used (2010)	- no data were available	16
Final report on the safety assessment of butyl stearate, cetyl stearate, isobutyl stearate, isocetyl stearate, isopropyl stearate, myristyl stearate, and octyl stearate.			
Butyl Stearate	safe as used (1985, reaffirmed 2005)	- the acute oral LD ₅₀ in rats was >32 g/kg; in a 2 yr feeding study in rats with up to 6000 mg/kg/day, no test article-related toxicity was observed - dietary administration of 6.25% for to male and female rats for 10 wks prior to mating did not affect fertility, litter size, or neonate survival, but growth was decreased pre- and post-weaning - undiluted test material was at most moderately irritating (in one study) to rabbit skin (PIIs ranged from 0-2.75); 0.1% in physiological saline was not a sensitizer in 2 guinea pigs when tested using intracutaneous injections; 50% in mineral oil weakly comedogenic in rabbits in a 2 wk study - in human testing, 24 and 48 h occlusive patch testing with 2% in formulation resulted in PIIs of 0.03 and 0.11, respectively (number of subjects not specified); 50% in mineral oil was at most a mild irritant and was not a sensitizer in an RIPT (111 subjects); 10% in formulation was not an irritant, sensitizer, (54 subjects) or photosensitizer (10 subjects) - undiluted test material was not irritating to rabbit eyes	5,11
Cetyl Stearate	safe as used (1985, reaffirmed 2005)	- 50% in mineral oil was at most a mild irritant and was not a sensitizer in an RIPT (111 subjects), although sensitization was reported in 1 subject	5,11
Ethylhexyl Stearate (originally Octyl Stearate)	safe as used (1985, reaffirmed 2005)	- the acute oral LD ₅₀ in rats was >8 ml/kg - undiluted test material was at most mildly irritating to rabbit skin (PIIs 0.0 and 1.42); in a 6-day cumulative skin irritation study, undiluted test material had a MMII of 0.67 and was poorly tolerated and a 10% aq. solution had a MMII of 0.33 was relatively well tolerated - in human testing, a formulation containing 7.6% was not an irritant or sensitizer (56 subjects), not phototoxic (10 subjects), and not a photosensitizer (27 subjects), although some slight reactions were reported in the photosensitization study - undiluted test material did not provoke any significant injury in rabbit eyes (max PII 4.67/100 at 1 h) <u>Discussion item:</u> the Panel noted that the reproductive toxicity of 2-ethyl-1-hexanol was addressed in a fetotoxicity study (performed on diethylhexyl adipate); it was suggested that the fetotoxicity reported for mice in that study was actually due to a zinc deficiency and that given the extent of 2-ethyl-1-hexanol absorption and the load that would be expected to enter the hepatic circulation, the potential for 2-ethyl-1-hexanol-induced reproductive toxicity was not thought to be an issue	5,11
Isobutyl Stearate	safe as used (1985, reaffirmed 2005)	- undiluted test material was mildly irritating to rabbit skin (PIIs =0.62) in a 24 h occlusive study - in human testing, a mild irritant and not a sensitizer when tested undiluted in an RIPT (149 subjects); 50% in mineral oil was not phototoxic or a photosensitizer (23 subjects)	5,11
Isocetyl Stearate	safe as used (1985, reaffirmed 2005)	- no data were available	5,11
Isopropyl Stearate	safe as used (1985, reaffirmed 2005)	- maximum reported use concentration was up to 25% in a leave-on formulation - the acute oral LD ₅₀ in rats was >8 ml/kg - undiluted test material was moderately irritating to rabbit skin (PIIs 2.35 in two studies) - in human testing, 1.0% in formulation was non- (105 subjects) to slightly irritating (12 subjects) and produced no adverse reactions in a 4-wk use test (40 subjects) - undiluted test material was not irritating to rabbit eyes	5,11
Myristyl Stearate	safe as used (1985, reaffirmed 2005)	- maximum reported use concentration was up to 5% in a leave-on formulation - the acute oral LD ₅₀ in mice was >10 g/kg with corn oil and >1 g/kg neat - undiluted test material was not irritating to rabbit skin (PII = 0.0) - in human testing, formulations containing 2.35 – 9.8% produced no skin reactions in open and closed patch tests 22-100 subjects/test) - undiluted test material produced slight vessel injection involving only the conjunctivae at 24 h and no irritation was observed on days 2-7	5,11

Table 2. Conclusions (year issued) and data summaries of previously reviewed alkyl esters

Alkyl Ester	Conclusion (Year)	Summary data	Reference
Final report on the safety assessment of pelargonic acid (aka nonanoic acid) and the nonanoate esters)			
		<u>Discussion items:</u> because of the skin penetration enhancement property of pelargonic acid in the presence of p-aminobenzoic acid, care should be taken in formulating products containing this ingredient in combination with any ingredients whose safety was based on lack of dermal absorption or when dermal absorption was a concern; because animal sources have been reported, this ingredient must be free of detectable pathogenic viruses or infectious agents	19
Cetearyl Isononanoate	safe as used (2010)	<ul style="list-style-type: none"> - the oral LD₅₀ in mice was >5 g/kg; in an oral study in which rats were dosed with 100, 300, or 1000 mg/kg, reversible fatty alterations were induced in the liver of female mid dose and male and female high dose animals and the NOAEL was 100 mg/kg/day - not a reproductive toxicant in a study in which 100-1000 mg/kg was administered orally to gravid rats on days 6-15 of gestation, and the NOAEL for maternal and embryo-/fetotoxicity was 100 mg/kg - not mutagenic in an Ames test at doses up to 5000 µg/plate with or without metabolic activation - slightly irritating to the skin of hairless mice and not irritating to rabbit skin; not a sensitizer in guinea pigs (25% injected intracutaneously at induction and challenge); 10-100% was not comedogenic in rabbit ears - in human testing, 20% active and undiluted test material had very good skin compatibility in a 24-h SIOPT (21 subjects); a formulation containing 1.5% was not a contact allergen in a maximization test (25 subjects) and undiluted test material was not an irritant or sensitizer in a provocative RIPT (20 eczema patients) - 10% active was not irritating to rabbit eyes 	19
Cetearyl Nonanoate	safe as used (2010)	<ul style="list-style-type: none"> - the oral LD₅₀ in rats was 2 g/kg - the acute dermal LD₅₀ in rats was >2 g/kg and there was no dermal irritation observed - undiluted test material (97% pure) was non-irritating to rabbit skin; not a sensitizer in a GPMT (10% for intracutaneous induction, 50% for topical induction, 10% at challenge, sesame oil was the vehicle) - not mutagenic in an Ames test at doses up to 5000 µg/plate with or without metabolic activation - in human testing, undiluted test material (97% pure) was not an irritant in a 48-h SIOPT (52 subjects); undiluted test material was not an irritant or a sensitizer in a RIPT (106 subjects) - undiluted test material was minimally irritating to rabbit eyes 	19
Cetyl Isononanoate	safe as used (2010)	- no data were available	19
Ethylhexyl Isononanoate	safe as used (2010)	<ul style="list-style-type: none"> - not mutagenic in an Ames test at doses up to 5000 µg/plate with or without metabolic activation - in human testing, undiluted test material did not indicate potential for allergic contact sensitization in an RIPT (10 subjects) 	19
Ethylhexyl Pelargonate	safe as used (2010)	<ul style="list-style-type: none"> - the acute oral LD₅₀ in rats was >5 g/kg - undiluted test material was not irritating to rabbit skin (PII = 0.40) - undiluted test material was not irritating to rabbit eyes 	19
Isobutyl Pelargonate	safe as used (2010)	- no data were available	19
Isoodecyl Isononanoate	safe as used (2010)	- in human testing, a formulation containing 51.35% was not an irritant or sensitizer in a RIPT (101 subjects) and a formulation containing 2.6% was not a contact allergen in a maximization test (26 subjects)	19
Isononyl Isononanoate	safe as used (2010)	<ul style="list-style-type: none"> - the acute oral LD₅₀ in rats was >5 g/kg; 300 and 1000 mg/kg/day induced mortality and all doses (100-1000mg/kg/day) induced liver and kidney toxicity in a 4-wk oral study in rats - 300 mg/kg/day (2 wks) and 860 mg/kg/day (8 days) induced liver and adrenal gland toxicity in a dermal study in rats - did not induce direct embryotoxicity or fetotoxicity in rats at doses up to 3000 mg/kg/day - not mutagenic in an Ames test at doses up to 5000 µg/plate with or without metabolic activation - slightly irritating to rabbit skin (study details not provided) - in human testing, lipstick formulations containing 3.552% (53 subjects) and 3.128% (97 subjects) were not irritants or sensitizers in RIPTs and a formulation containing 24.66% was not a contact allergen in a maximization test (26 subjects) - not irritating to rabbit eyes (concentration tested was not stated) 	19
Isostearyl Isononanoate	safe as used (2010)	-no data were available	19
Isotridecyl Isononanoate	safe as used (2010)	- in human testing, a formulation containing 4.3% was not a contact allergen in a maximization test (28 subjects)	19
Tridecyl Isononanoate	safe as used (2010)	- no data were available	19
Final report on the safety assessment of cetyl esters			
Cetyl Esters	safe as used (1997)	<ul style="list-style-type: none"> - (synonymous with synthetic spermaceti wax) a commercial cetyl esters preparation comprised of a mixture of one or more of the following esters: cetyl palmitate, myristyl myristate, cetyl stearate, myristyl stearate, cetyl myristate, and stearyl stearate - the oral LD₅₀ in mice of a formulation containing 60-65% >20 g/kg - a formulation containing 60-65% was not irritating to rabbit skin in a 24 h SIOPT - a formulation containing 60-65% was not an irritant to rabbit eyes <u>Discussion item:</u> data from the safety assessments on cetyl palmitate, myristyl myristate, cetyl stearate, and myristyl stearate were extrapolated to determine safety 	1
Final report on the safety assessment of octyl palmitate, cetyl palmitate, and isopropyl palmitate			
Cetyl Palmitate	safe as used (1982; reaffirmed in 2005)	<ul style="list-style-type: none"> - was quantitatively excreted in the feces of male rats when fed at 20% in the diet - acute oral LD₅₀ was > 14.4 g/kg in rats; not toxic in a 9-day dietary study in rats - no mortality was observed when a 50% slurry was applied to rabbit skin under an occlusive patch - was at most mildly irritating in rabbits when applied undiluted or in formulation (2.5-2.7%) under occlusion; a 1% suspension produced minimal irritation and was not sensitizing in the Landsteiner and 	5,9

Table 2. Conclusions (year issued) and data summaries of previously reviewed alkyl esters

Alkyl Ester	Conclusion (Year)	Summary data	Reference
		Jacobs test in guinea pigs - in humans, a formulation containing 2.7% was not a primary irritant (10 subjects); in maximization studies, a formulation containing 2.5% was classified as a weak potential sensitizer that was unlikely to present a risk of contact sensitization under conditions of normal use (50 subjects) and one containing 2.7% was classified as a weak potential sensitizer of the lowest grade (25 subjects); a formulation containing 2.7% was not phototoxic (10 subjects) or photoallergenic (25 subjects); low irritation potential was observed in in-use studies (28-56 days; 30-100 subjects per study) - minimally irritating to rabbit eyes; OILs ranged from 0.3 – 6.7 for undiluted test material and 0.0 for a 5% (w/w) dispersion	
Ethylhexyl Palmitate (originally, Octyl Palmitate)	safe as used (1982; reaffirmed in 2005)	- the acute oral LD ₅₀ was >64 ml/kg in rats - the acute dermal LD ₅₀ was >9.4 ml/kg in rabbits (only 2 rabbits in each group); dermal toxicity was not observed in a 6 wk dermal study with undiluted material; undiluted test material was “poorly tolerated” in a 60-day study with “congestive dermatitis” in 2/3 rabbits - was a mild irritant tested undiluted in an SIOPT in rabbits; 0.1% suspensions were not sensitizers in the Landsteiner and Jacobs test in guinea pigs - in human studies, 3 formulations containing 1-5% and one containing 40-50% tested in 48-h occlusive tests with 100 subjects and 3 formulations containing 45.72-46.52% tested in an 18 day occlusive RIPT with 20 subjects were not irritants, and in a 21-day occlusive RIPT a formulations containing 42.25% resulted in signs of irritation in 7/24 subjects and the avg. cumulative irritation score was 2.58/84 - OILs for undiluted test material ranged from 0.33 – 4.17 in 3 Draize studies, indicating that it did not cause significant injury to rabbit eyes	5,9
Isopropyl Palmitate	safe as used (1982; reaffirmed in 2005)	- the acute oral LD ₅₀ was >64 ml/kg in rats - the dermal LD ₅₀ was >2.0 ml/kg in rabbits - no inhalation toxicity in rats exposed to 200mmg/l for 1 h - undiluted test material was non-irritating to slightly irritating to rabbit skin - in human testing, in 3 studies with 24-h occlusive patches with undiluted test material performed in a total of 160 subjects, there were five irritation scores of 0.5/4, and the remainder were 0/4 and in a 10-day primary irritation study, a formulation containing 45.6% was not irritating in 10 subjects; not a sensitizer when tested undiluted in an RIPT with 102 subjects or in formulation at 45.6% in a maximization test with 25 subjects; a formulation containing 45.6% was not phototoxic (10 subjects) or photoallergenic (25 subjects) - OILs ranged from 0.0 – 6.5 in 5 Draize studies, indicating that it did not cause significant injury to rabbit eyes	5,9
Final report on the safety assessment of <i>Ricinus communis</i> (castor) seed oil, hydrogenated castor oil, glyceryl ricinoleate, glyceryl ricinoleate se, ricinoleic acid, potassium ricinoleate, sodium ricinoleate, zinc ricinoleate, cetyl ricinoleate, ethyl ricinoleate, glycol ricinoleate, isopropyl ricinoleate, methyl ricinoleate, and octyldodecyl ricinoleate			
		- <u>Discussion item:</u> safety test data on <i>Ricinus Communis</i> (Castor) Seed Oil, which contains ricinoleic acid (and for which data were included), was considered applicable for extrapolation to determine safety; retrospective study reports of sensitization reactions to ricinoleic acid in patients with eczematous cheilitis was determined to be expected in that patient group but not the general population, and based on the Panel’s expertise and experience, the incidence of positive reactions to ricinoleic acid were very low	
Cetyl Ricinoleate	safe as used (2007)	- the acute oral LD ₅₀ in mice was >2 g/kg - not irritating to rabbit skin (test concentration not stated)	20
Isopropyl Ricinoleate	safe as used (2007)	- no specific safety data were available	20
Octyldodecyl Ricinoleate	safe as used (2007)	- no specific safety data were available	20
Final report on the safety assessment of <i>Cocos nucifera</i> (coconut) oil and related ingredients			
		<u>Discussion items:</u> because there is no reason to expect the toxicity to differ from that of coconut oil, coconut acid, hydrogenated coconut oil, and hydrogenated coconut acid and therefore the data available on these ingredients are supportive of safety; necessary procedures should be continued by the cosmetics industry to limit pesticide residues and heavy metals	
Decyl Cocoate	safe as used (2011)	- no data were available	17
Ethylhexyl Cocoate	safe as used (2011)	- no data were available	17
Isodecyl Cocoate	safe as used (2011)	- no data were available	17
Lauryl Cocoate	safe as used (2011)	- no data were available	17
Octyldodecyl Cocoate	safe as used (2011)	- no data were available	17
Tridecyl Cocoate	safe as used (2011)	- no data were available	17
Final report on the safety assessment of decyl and isodecyl oleates			
Decyl Oleate	safe as used (1982; reaffirmed in 2003)	- the acute oral LD ₅₀ was > 40 ml/kg and >5 g/kg in rats - in a primary dermal irritation study using rabbits, the PIs for a 10% solution in corn oil, and 20% solution in mineral oil, and undiluted test material were 0.08, 0.05, and 0.28, respectively, and in a modified Draize test, a 15% solution in polyoxyethylene sorbitan stearate (3%), preservative (2%), and water and undiluted test material were non-irritating; in an 8-wk study in rabbits, daily application of the 15% solution produced some papulae or vesicles but was generally well tolerated and the undiluted material resulted in skin thickening in 3 rabbits (total tested not stated) and vesicles in 1 rabbit and was poorly tolerated; a 15% solution in corn oil was not a sensitizer in the Landsteiner and Jacobs test in guinea pigs - in human testing, no sensitization was reported in a RIPT in 103-subject with a formulation	4,36

Table 2. Conclusions (year issued) and data summaries of previously reviewed alkyl esters

Alkyl Ester	Conclusion (Year)	Summary data	Reference
containing 1-5% or in 402 subjects with 4 formulations containing 5.5% - at most, a very slight irritant to rabbit eyes when tested undiluted			
Isodecyl Oleate	safe as used (1982; reaffirmed in 2003)	- the acute LD ₅₀ was > 40 ml/kg in rats - undiluted test material had a PII of 1.0 in 3 rabbits, but subsequent testing reported a PII of 0.28 and additional studies with undiluted the a 15% solution in polyoxyethylene sorbitan stearate (3%), preservative (2%), and water indicated reported the material was non-irritating (PII scores of 0.0 and 0.13 for the undiluted material and 0.0 for the 15% solution); in an 8-wk study in rabbits, daily application of the 15% solution produced episodic macules, papulae, and vesicles but was relatively well tolerated and the undiluted material was poorly tolerated with congestive dermis effects; a 15% solution in corn oil was not a sensitizer in the Landsteiner and Jacobs test in guinea pigs - in humans, undiluted test material was not an irritant in an SIOPT in 19 subjects and in a 21-day cumulative irritancy test in 9 subjects with undiluted material, the irritation score was 1.0/756 - at most, a very slight irritant to rabbit eyes when tested undiluted	4,36
Final report on the safety assessment of isopropyl isostearate			
Isopropyl Isostearate	safe as used (1992, reaffirmed in 2011)	- undiluted test material was a non-irritant (PII = 0.42) in rabbit skin 24 and 72 h after application, and in an 8-wk study a 10% aq. solution was relatively well tolerated (IIMM = 2.00) but the undiluted material was poorly tolerated (IIMM = 3.34) and discontinued after 5 wks; undiluted test material induced severe comedones in rabbit ears - 10% aq. and undiluted test material were slight ocular irritants in rabbit eyes <u>Discussion item:</u> because limited toxicological data (dermal irritation, ocular irritation, and comedogenicity data) were available, the Panel used data on similar isopropyl esters that had already been reviewed and found safe to determine safety	2,8
Final report on the safety assessment of isopropyl linoleate			
Isopropyl Linoleate	insufficient to support safety (1992)	- the oral LD ₅₀ in rats of 10% in corn oil was >64 cc/kg - 10% aq. and undiluted test material were classified as slightly irritant and non-irritant, respectively, in primary irritation studies in rabbits; both 10% aq. and undiluted test materials were slight irritants when the study was repeated with purer samples; in another primary skin irritation study, 10% in corn oil did not product any irritation reactions in albino rabbits - 10% aq. and undiluted test material were slight ocular irritants, while 10% in corn oil was not irritating to rabbit eyes <u>Discussion item:</u> human irritation and sensitization data and genotoxicity data were needed	15
Final report on the safety assessment of isostearyl neopentanoate			
Isostearyl Neopentanoate	safe as used (1985, reaffirmed in 2006)	- the acute oral LD ₅₀ was >40 ml/kg in rats; in a 93 day study, oral administration of undiluted test material in rats was safe in terms of cumulative systemic toxicity - undiluted test material applied under a 24 h patch was not irritating to rabbit skin and formulations containing 1.2 – 32% was a most mildly irritating in rabbits; not considered a sensitizer in a GPMT (observations were attributed to scratches) and not a sensitizer in the Landsteiner and Jacobs test in guinea pigs; a formulation containing 3% was a mild primary skin irritant but was not phototoxic; 50% in mineral oil was marginally comedogenic and undiluted was non-comedogenic in rabbit ears - in human testing, was non-irritating in a 48-h SIOPT when tested undiluted or in formulations containing 3-5% (10 or 100 subjects), 4% in formulation (20 subjects) was minimally irritating (PII = 0.08) and 1.2% in formulation was non-irritating (20 subjects) in a 24-h SIOPT, a formulation containing 3% was mildly irritating in a 21-day study (15 subjects); undiluted test material and formulations containing 5-32% were not sensitizers in RIPT studies (52-210 subjects per study), although some irritation was reported; a formulation containing 16.05% was not phototoxic or a photoallergen in 27 subjects - undiluted test material was minimally irritating in rabbit eyes and formulations containing 1.2 – 36% were at most minimally irritating <u>Discussion items:</u> because of the skin penetration enhancement property of pelargonic acid in the presence of p-aminobenzoic acid, care should be taken in formulating products containing this ingredient in combination with any ingredients whose safety was based on lack of dermal absorption or when dermal absorption was a concern	6,12
Final report on stearyl heptanoate and related stearyl alkanoates as used in cosmetics			
Final report on the safety assessment of stearyl heptanoate			
<u>Discussion items:</u> data from the original review on stearyl heptanoate were applicable to determine safety, including extrapolated data on stearyl alcohol and heptanoic acid			18
Stearyl Behenate	safe as used (2010)	- no data were available	18
Stearyl Caprylate	safe as used (2010)	- no data were available	18
Stearyl Heptanoate	safe as used (1995, reaffirmed 2010)	- the oral LD ₅₀ in rats was >16 ml/kg - a mixture that also contained stearyl caprylate was not mutagenic in an Ames test with or without metabolic activation and had no clastogenic effect in an <i>in vivo</i> micronucleus test in which mice were given a single oral dose of 500-1500 mg/kg in corn oil - undiluted test material was mildly irritating to rabbit skin (PII = 1.21/8); a formulation containing 1.5% was not a sensitizer in guinea pigs; a formulation containing 1.5% produced slight to moderate comedogenicity in rabbit ears - in human testing, cosmetic formulations containing 0.7% (198 subjects) and 1.5% (156, 194, and 202 subjects) were not sensitizers in RIPTs - undiluted test material was a Category 3 ocular irritant in rabbit eyes and a formulation containing 1.5% was not a primary ocular irritant <u>Discussion items:</u> although irritation testing was performed at 100%, sensitization testing was only	3,18

Table 2. Conclusions (year issued) and data summaries of previously reviewed alkyl esters

Alkyl Ester	Conclusion (Year)	Summary data	Reference
		performed with a maximum concentration of 1.5%; however, there was no indication that this ingredient would be a sensitizer; mild reactions were observed in ocular irritation studies with undiluted material and no irritation with a formulation containing 1.5%, therefore the Panel was of the opinion that in formulation, this ingredient would not produce significant ocular irritation; because there was limited information available, data on stearyl alcohol and heptanoic acid were extrapolated to determine safety	
Stearyl Olivatate	safe as used (2010)	- no data were available	18
Stearyl Palmitate	safe as used (2010)	- no data were available	18
Stearyl Stearate	safe as used (2010)	- no data were available	18

Abbreviations: GPMT = guinea pig maximization test; IIMM = maximum irritation index; OII = ocular irritation index; PII = primary irritation index; RIPT = repeated insult patch test; SIOPT = single insult occlusive patch test

Table 3. Alkyl Esters Group (grouped by whether individual constituents have been reviewed)

INGREDIENTS HAVE BEEN REVIEWED BY THE CIR AND FOUND SAFE*		
Arachidyl Propionate	Ethylhexyl Stearate	Isotridecyl Myristate
Butyl Myristate	Isobutyl Myristate	Lauryl Cocoate
Butyl Stearate	Isobutyl Perlargonate	Lauryl Myristate
Cetearyl Isononanoate	Isobutyl Stearate	Myristyl Myristate
Cetearyl Nonanoate	Isocetyl Myristate	Myristyl Stearate
Cetyl Esters	Isocetyl Stearate	Octyldodecyl Cocoate
Cetyl Isononanoate	Isodecyl Cocoate	Octyldodecyl Myristate
Cetyl Myristate	Isodecyl Isononanoate	Octyldodecyl Ricinoleate
Cetyl Palmitate	Isodecyl Myristate	Oleyl Myristate
Cetyl Ricinoleate	Isodecyl Oleate	Stearyl Behenate
Cetyl Stearate	Isononyl Isononanoate	Stearyl Caprylate
Decyl Cocoate	Isopropyl Isostearate	Stearyl Heptanoate
Decyl Myristate	Isopropyl Myristate	Stearyl Olivatate
Decyl Oleate	Isopropyl Palmitate	Stearyl Palmitate
Ethylhexyl Cocoate	Isopropyl Ricinoleate	Stearyl Stearate
Ethylhexyl Isononanoate	Isopropyl Stearate	Tetradecyloctadecyl Myristate
Ethylhexyl Myristate	Isostearyl Isononanoate	Tridecyl Cocoate
Ethylhexyl Palmitate	Isostearyl Myristate	Tridecyl Isononanoate
Ethylhexyl Pelargonate	Isostearyl Neopentanoate	Tridecyl Myristate
	Isotridecyl Isononanoate	
BOTH THE ACID AND THE ALCOHOL HAVE BEEN FOUND SAFE BY THE CIR		
Batyl Isostearate	Cetyl Oleate	Isostearyl Isostearate
Batyl Stearate	Chimyl Isostearate	Isostearyl Laurate
Behenyl Isostearate	Chimyl Stearate	Isostearyl Palmitate
Behenyl Olivatate	Hydrogenated Castor Oil Behenyl Esters	Myristyl Isostearate
Butyl Isostearate	Hydrogenated Castor Oil Cetyl Esters	Myristyl Laurate
Butyl Oleate	Hydrogenated Castor Oil Stearyl Esters	Octyldodecyl Hydroxystearate
Cetearyl Olivatate	Isopropyl Hydroxystearate	Octyldodecyl Isostearate
Cetearyl Palmate	Isopropyl Laurate	Octyldodecyl Oleate
Cetearyl Palmitate	Isopropyl Oleate	Octyldodecyl Olivatate
Cetearyl Rice Branate	Isopropyl Sorbate	Octyldodecyl Stearate
Cetearyl Stearate	Isostearyl Hydroxystearate	Oleyl Oleate
Cetyl Laurate		Oleyl Stearate
THE ACID OR THE ALCOHOL HAS BEEN FOUND SAFE BY THE CIR		
Behenyl Beeswax	Ethylhexyl Laurate	Isopropyl Jojobate
Behenyl Behenate	Ethylhexyl Oleate	Isopropyl Tallowate
Behenyl Erucate	Erucyl Oleate	Isostearyl Avocadoate Isostearyl Behenate
Behenyl/Isostearyl Beeswax	Heptylundecyl Hydroxystearate	Isostearyl Erucate
Butyl Avocadoate	Hexyldecyl Isostearate	Isostearyl Linoleate
Butyl Babassuate	Hexyldecyl Laurate	Isotridecyl Laurate
Butyloctyl Ceteate**	Hexyldecyl Oleate	Isotridecyl Stearate
Butyloctyl Oleate	Hexyldecyl Palmitate	Lauryl Isostearate
Butyloctyl Palmitate	Hexyldecyl Stearate	Lauryl Laurate
C16-36 Alkyl Stearate	Hexyldodecyl/Octyldodecyl Hydroxystearate	Lauryl Oleate
C20-40 Alkyl Stearate	Hexyl Isostearate	Lauryl Palmitate
C30-50 Alkyl Stearate	Hexyl Laurate	Lauryl Stearate
C40-60 Alkyl Stearate	Hydrogenated Ethylhexyl Olivatate	Myristyl Neopentanoate
Cetearyl Behenate	Hydrogenated Ethylhexyl Sesamate	Octyldodecyl Oleate
Cetearyl Candelillate	Hydrogenated Isocetyl Olivatate	Octyldodecyl Avocadoate
Cetyl Babassuate	Hydrogenated Isopropyl Jojobate	Octyldodecyl Beeswax
Cetyl Behenate	Hydroxycetyl Isostearate	Octyldodecyl Behenate
Cetyl Caprate	Hydroxyoctacosanyl Hydroxystearate	Octyldodecyl Erucate
Cetyl Caprylate	Isoamyl Laurate	Octyldodecyl Meadowfoamate
Cetyl Dimethyloctanoate	Isobutyl Palmitate	Octyldodecyl Neodecanoate
Cetyl Tallowate	Isocetyl Isostearate	Octyldodecyl Neopentanoate
C10-40 Isoalkyl Acid Octyldodecanol Esters	Isocetyl Laurate	Octyldodecyl Octyldodecanoate

Table 3. Alkyl Esters Group (grouped by whether individual constituents have been reviewed)

C4-5 Isoalkyl Cocotate	Isocetyl Palmitate	Octyldodecyl Safflowerate
C32-36 Isoalkyl Stearate	Isodecyl Hydroxystearate	Oleyl Arachidate
Coco -Caprylate	Isodecyl Laurate	Oleyl Erucate
Coco -Caprylate/Caprate	Isodecyl Palmitate	Oleyl Linoleate
Coco -Rapeseedate	Isodecyl Stearate	Stearyl Beeswax
Decyl Isostearate	Isohexyl Laurate	Stearyl Erucate
Decyl Laurate	Isohexyl Palmitate	Stearyl Linoleate
Decyl Palmitate	Isocetyl Tallate	Tetradecyleicosyl Stearate
Decyltetradecyl Cetearate	Isopropyl Arachidate	Tetradecyloctadecyl Stearate
Ethylhexyl Adipate/Palmitate/Stearate	Isopropyl Avocadate	Tridecyl Laurate
Ethylhexyl Hydroxystearate	Isopropyl Babassuate	Tridecyl Stearate
Ethylhexyl Isostearate	Isopropyl Behenate	
CIR HAS NOT CONCLUDED ON THE SAFETY OF THE ACID OR THE ALCOHOL		
Arachidyl Behenate	Decyl Jojobate	Isodecyl Neopentanoate
Arachidyl Erucate	Ethylhexyl C10-40 Isoalkyl Acidate	Isohexyl Caprylate
Butyloctyl Beeswax	Ethylhexyl Isopalmitate	Isohexyl Neopentanoate
Butyloctyl Behenate	Ethylhexyl Neopentanoate	Isolauryl Behenate
Butyloctyl Candelillate	Ethylhexyl Olivatate	Isocetyl Caprylate/Caprate
C14-30 Alkyl Beeswax	Erucyl Arachidate	Lauryl Behenate
C18-38 Alkyl Beeswax	Erucyl Erucate	Lignoceryl Erucate
C30-50 Alkyl Beeswax	Heptyldecyl Undecylenate	Propylheptyl Caprylate
C20-40 Alkyl Behenate	Hexyldecyl Hexyldecanoate	Tetradecyloctadecyl Behenate
C18-38 Alkyl C24-54 Acid Ester	Isobutyl Tallowate	Tetradecyloctadecyl Hexyldecanoate
Caprylyl Butyrate	Isocetyl Behenate	Tetradecylpropionates
Caprylyl Caprylate	Isocetyl Isodecanoate	Tridecyl Behenate
Caprylyl Eicosenoate		Tridecyl Erucate
Decyl Castorate		Tridecyl Neopentanoate

*Isopropyl Linoleate was reviewed previously by the CIR, with a conclusion of insufficient data to support safety

**the acid component is a mixture of fatty acids, containing predominantly palmitic and stearic acids, both of which have been reviewed

Table 4. Constituent alcohols and acids with CIR conclusions

Constituent	Conclusion (year issued; maximum use concentration reported)	Reference
ALCOHOLS		
Batyl Alcohol	safe as used (2011; 3% in leave-ons, 1% in rinse-offs)	25
Behenyl Alcohol	safe as used (1988; reaffirmed 2008; 50% in leave-ons; 10% in rinse-offs)	7,31
Butyl Alcohol	safe as used (2008; 15% in leave-ons; ≤0.1% in rinse-offs)	67
Cetearyl Alcohol	safe as used (1988; reaffirmed 2008; 25% in leave-ons; 25% in rinse-off)	7,31
Cetyl Alcohol	safe as used (1988; reaffirmed 2008; 50% in leave-ons; 25% in rinse-offs)	7,31
Cetyl Glycol (Hydroxycetyl Alcohol)	safe as used (2011; no reported use)	26
Chimyl Alcohol	safe as used (2011; 0.5% in leave-ons, 0.002% in rinse-offs)	25
Coconut Alcohol	safe as used (2011; 0.9% in leave-ons; 0.8% in rinse-offs)	17
Isopropyl Alcohol	safe as used (2012; 100% in leave-ons; 35% in rinse-offs)	23
Isostearyl Alcohol	safe as used (1988; reaffirmed 2008; 50% in leave-ons; 5% in rinse-offs)	7,31
Jojoba Alcohol	safe as used (2008; 1% in leave-ons; 0.5% in rinse-offs)	28
Myristyl Alcohol	safe as used (1988; reaffirmed 2008; 12% in leave-ons; 7% in rinse-offs)	7,31
Octyldodecanol	safe as used (1985; reaffirmed 2006; 85% in leave-ons; 30% in rinse-offs)	6,33
Oleyl Alcohol	safe as used (1985; reaffirmed 2006; >50% in leave-ons; 25% in rinse-offs)	6,33
Stearyl Alcohol	safe as used (1985; reaffirmed 2006; 56% in leave-ons; 25% in rinse-offs)	6,33
ACIDS		
Adipic Acid	safe as used (2012; 0.000001% in leave-on; 18% in rinse-off)	22
Babassu Acid	safe as used (2011; no reported use)	24
Coconut Acid	safe as used (2011; not reported in leave-ons; 14% in rinse-offs)	17,24
Hydroxystearic Acid	safe as used (1999; 10% in leave-ons; not reported for rinse-offs)	29
Isostearic Acid	safe as used (1983; reaffirmed in 2005; 16% in leave-ons, 26% in rinse-offs)	5,34
Lauric Acid	safe as used (1987; reaffirmed in 2006; 10% in leave-ons, 25% in rinse-offs)	6,32
Myristic Acid	safe as used (2010; 15% in leave-ons; 50% in rinse-offs)	16
Oleic Acid	safe as used (1987; reaffirmed in 2006; 25% in leave-ons; 50% in rinse-offs)	6,32
Olive Acid	safe as used (2011; no reported use)	24
Palm Acid	safe as used (2011; not reported in leave-ons; 17% in rinse-offs)	24
Palmitic Acid	safe as used (1987; reaffirmed in 2006; 25% in leave-ons, 25% in rinse-offs)	6,32
Pelargonic Acid	safe as used (2011; no reported use)	19
Rice Bran Acid	safe as used (2011; no reported use)	24
Ricinoleic Acid	safe as used (2007; use concentration not reported)	20
Safflower Acid	safe as used (2011; no reported use)	24
Sorbic Acid	safe as used (1988; reaffirmed in 2008; 5% in leave-ons; 5% in rinse-offs)	7,30
Stearic Acid	safe as used (1987; reaffirmed in 2006; >50% in leave-ons; 50% in rinse-offs)	6,32
Tall Oil Acid	safe as used (2009; not reported in leave-ons; 8% in rinse-offs)	27

Table 5. Definitions and functions

Ingredient/CAS No.	Definition³⁷ (italicized text generated by CIR)	Function³⁷
Arachidyl Behenate 42233-14-7	the ester of arachidyl alcohol and behenic acid. <i>The ester obtained from the reaction of arachidyl alcohol with behenic acid.</i>	skin cond. agent – oc.; visc. incr. agent – nonaq.
Arachidyl Erucate 86601-86-7	the ester of arachidyl alcohol and erucic acid. <i>The ester obtained from the reaction of arachidyl alcohol with erucic acid.</i>	skin cond. agent – emol.
Arachidyl Propionate 65591-14-2	the ester of arachidyl alcohol and n-propionic acid. <i>The ester obtained from the reaction of arachidyl alcohol and n-propionic acid.</i>	skin cond. agent – emol.
Batyl Isostearate 170754-20-8	an ester of Batyl Alcohol and Isostearic Acid. <i>The mixture of esters obtained from the reaction of batyl alcohol with branched-chain stearic acids.</i>	skin cond. agent – oc.
Batyl Stearate 13232-26-3	an ester of Batyl Alcohol and stearic acid. <i>The ester obtained from the reaction of batyl alcohol with stearic acid.</i>	skin cond. agent – oc.
Behenyl Beeswax	the ester of Behenyl Alcohol and Beeswax Acid. <i>The mixture of esters obtained from the reaction of behenyl alcohol with a mixture of straight-chain fatty acids, containing 24 to 36 carbons in alkyl chain length (beeswax acid).</i>	skin cond. agent – oc.
Behenyl Behenate 17671-27-1	the ester of Behenic Acid and Behenyl Alcohol. <i>The ester obtained from the reaction of behenic acid with behenyl alcohol.</i>	skin cond. agent – oc.
Behenyl Erucate 18312-32-8	the ester of Behenyl Alcohol and erucic acid. <i>The ester obtained from the reaction of behenyl alcohol with erucic acid.</i>	skin cond. agent – oc.
Behenyl Isostearate 181496-25-3	the ester of Behenyl Alcohol and isostearic acid that conforms to the formula. <i>The mixture of esters obtained from the reaction of behenyl alcohol with branched-chain stearic acids.</i>	skin cond. agent – oc.
Behenyl/Isostearyl Beeswax	the ester of a mixture of Behenyl Alcohol and Isostearyl Alcohol with Beeswax Acid. <i>The mixture of esters obtained from the reaction of behenyl alcohol and branched-chain stearyl alcohols with a mixture of straight-chain fatty acids, containing 24 to 36 carbons in alkyl chain length (beeswax acid).</i>	skin cond. agent – oc.
Behenyl Oliviate	the ester of behenyl alcohol and Olive Acid that conforms generally to the formula. <i>The mixture of esters obtained from the reaction of behenyl alcohol with the fatty acids derived from olive acid.</i>	skin cond. agent – misc.; emul. stabilizer; film former; slip modifier; visc. incr. agent – nonaq.
Butyl Avocadate	the ester of butyl alcohol and the fatty acids derived from Persea Grattisima (Avocado) Oil. <i>The mixture of esters obtained from the reaction of butyl alcohol with the fatty acids derived from Persea Grattisima (Avocado) Oil.</i>	skin cond. agent – misc.
Butyl Babassuate	the ester of butyl alcohol and the fatty acids derived from babassu oil. <i>The mixture of esters obtained from the reaction of butyl alcohol with the fatty acids derived from babassu oil.</i>	disp. agent-nonsurf.; emul. stab.; skin cond. agent -emol; surf.-solub. agent
Butyl Isostearate	the ester of butyl alcohol and isostearic acid that conforms to the formula. <i>The mixture of esters obtained from the reaction of butyl alcohol with branched-chain stearic acids.</i>	skin cond. agent -emol
Butyl Myristate 110-36-1	the ester of butyl alcohol and myristic acid. <i>The ester obtained from the reaction of butyl alcohol with myristic acid.</i>	skin cond. agent -emol
Butyl Oleate 142-77-8	the ester of butyl alcohol and oleic acid. <i>The ester obtained from the reaction of butyl alcohol with oleic acid.</i>	skin cond. agent –emol.; fragrance ingr.
Butyl Stearate 123-95-5	the ester of butyl alcohol and stearic acid. <i>The ester obtained from the reaction of butyl alcohol and stearic acid.</i>	skin cond. agent –emol.; fragrance ingr.
Butyloctyl Beeswax 151661-98-2	the ester of Butyloctanol and Beeswax Acid. <i>The mixture of esters obtained from the reaction of 2-butyloctanol with a mixture of straight-chain fatty acids, containing 24 to 36 carbons in alkyl chain length (beeswax acid).</i>	skin cond. agent – oc.
Butyloctyl Behenate	the organic compound that conforms to the formula. <i>The ester obtained from the reaction of 2-butyloctanol with behenic acid.</i>	skin cond. agent – emol.
Butyloctyl Candelillate 226994-03-2	the ester of 2-butyloctanol and the acids derived from Euphorbia Cerifera (Candelilla) Wax. <i>The mixture of esters obtained from the reaction of 2-butyloctanol with the fatty acids derived from Euphorbia Cerifera (Candelilla) Wax.</i>	skin cond. agent – oc.
Butyloctyl Cetearate 101227-08-1	the ester of Butyloctanol and a blend of fatty acids containing predominantly palmitic and stearic acid. <i>The mixture of esters obtained from the reaction of 2-butyloctanol with a mixture of fatty acids containing predominately palmitic acid and stearic acid.</i>	skin cond. agent – emol.
Butyloctyl Oleate	the ester of butyloctanol and oleic acid. <i>The ester obtained from the reaction of 2-butyloctanol with oleic acid.</i>	skin cond. agent – oc.
Butyloctyl Palmitate	the ester of Butyloctanol and Palmitic Acid. <i>The ester obtained from the reaction of 2-butyloctanol with palmitic acid.</i>	skin cond. agent – emol.
C14-30 Alkyl Beeswax 209225-40-1	the ester of a mixture of fatty alcohols containing 14 to 30 carbons in the alkyl chain with Beeswax Acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 14 to 30 carbons in the alkyl chain, with a mixture of straight-chain fatty acids, containing 24 to 36 carbons in alkyl chain (beeswax acid).</i>	skin cond. agent – oc.
C18-38 Alkyl Beeswax 223706-17-0	the ester of a mixture of fatty alcohols containing 18 to 38 carbon atoms in the alkyl chain and Beeswax Acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 18 to 38 carbons in the alkyl chain, with a mixture of straight-chain fatty acids, containing 24 to 36 carbons in alkyl chain (beeswax acid).</i>	skin cond. agent – oc.
C30-50 Alkyl Beeswax 223707-19-5	the ester of C30-50 Alcohols and Beeswax Acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 30 to 50 carbons in the alkyl chain, with a mixture of straight-chain fatty acids, containing 24 to 36 carbons in alkyl chain (beeswax acid).</i>	skin cond. agent – oc.
C20-40 Alkyl Behenate	the ester of C20-40 Alcohols and behenic acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 20 to 40 carbons in the alkyl chain, with behenic acid.</i>	skin cond. agent – oc.

Table 5. Definitions and functions

Ingredient/CAS No.	Definition³⁷ (italicized text generated by CIR)	Function³⁷
C18-38 Alkyl C24-54 Acid Ester	the ester of a mixture of fatty alcohols containing 18 to 38 carbon atoms and a mixture of fatty acids containing 24 to 54 carbon atoms. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 30 to 50 carbons in the alkyl chain, with a mixture of straight-chain fatty acids, containing 24 to 54 carbons in alkyl chain.</i>	visc. incr. agent – nonaq.
C16-36 Alkyl Stearate	the ester of C16-36 alcohols and Stearic Acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 16 to 36 carbons in the alkyl chain, with stearic acid.</i>	skin cond. agent – oc.
C20-40 Alkyl Stearate	the ester of C20-40 Alcohols and stearic acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 20 to 40 carbons in the alkyl chain, with stearic acid.</i>	skin cond. agent – oc.; visc. incr. agent-aq.
C30-50 Alkyl Stearate	the ester of C30-50 Alcohols and Stearic Acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 30 to 50 carbons in the alkyl chain, with stearic acid.</i>	skin cond. agent – oc.
C40-60 Alkyl Stearate	the ester of C40-60 Alcohols and Stearic Acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 40 to 60 carbons in the alkyl chain, with stearic acid.</i>	skin cond. agent – oc.
Caprylyl Butyrate 110-39-4	the ester of n-octanol with butyric acid that conforms to the formula. <i>The ester obtained from the reaction of n-octanol with butyric acid.</i>	skin cond. agent – misc.; fragrance ingredient
Caprylyl Caprylate 2306-88-9	the organic compound that conforms to the formula. <i>The ester obtained from the reaction of n-octanol with n-octanoic acid.</i>	skin cond. agent – emol.
Caprylyl Eicosenoate	the organic compound that conforms to the formula. <i>The ester obtained from the reaction of n-octanol with 11-eicosenoic acid.</i>	skin cond. agent – misc.
Cetearyl Behenate	the ester of Cetearyl Alcohol and Behenic Acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 16 to 18 carbons in the alkyl chain, with behenic acid.</i>	skin cond. agent – oc.
Cetearyl Candelillate	the ester of Cetearyl Alcohol and the fatty acids derived from Euphorbia Cerifera (Candelilla) Wax. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 16 to 18 carbons in the alkyl chain, with the fatty acids derived from Euphorbia Cerifera (Candelilla) Wax.</i>	skin cond. agent – oc.
Cetearyl Isononanoate	the ester of cetearyl alcohol and a branched chain nonanoic acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 16 to 18 carbons in the alkyl chain, with branched chain nonanoic acid.</i>	skin cond. agent-emol.; hair cond. agent
Cetearyl Nonanoate 878027-13-5	the organic compound that conforms to the formula. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 16 to 18 carbons in the alkyl chain, with nonanoic acid.</i>	skin cond. agent-emol.
Cetearyl Olivatate	the ester of Cetearyl Alcohol and the fatty acids derived from olive oil. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 16 - 18 carbons in the alkyl chain, with the fatty acids derived from olive oil.</i>	hair cond. agent
Cetearyl Palmate	the ester of Cetearyl Alcohol and Palm Acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 16 to 18 carbons in the alkyl chain, with the fatty acids derived from palm acid.</i>	skin cond. agent – emol.; emul. stab.
Cetearyl Palmitate 85341-79-3	the ester of Cetearyl Alcohol and palmitic acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 16 to 18 carbons in the alkyl chain, with palmitic acid.</i>	skin cond. agent-emol.; hair cond. agent
Cetearyl Rice Branate	the ester of Cetearyl Alcohol and Rice Bran Acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 16 to 18 carbons in the alkyl chain, with the fatty acids derived from rice bran acid.</i>	skin cond. agent – misc.
Cetearyl Stearate 93820-97-4	the ester of Cetearyl Alcohol and stearic acid. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 16 to 18 carbons in the alkyl chain, with stearic acid.</i>	skin cond. agent – oc.
Cetyl Babassuate 613236-40-1	the ester of cetyl alcohol and the fatty acids derived from Orbignya Oleifera (Babassu) Oil. <i>The mixture of esters obtained from the reaction of cetyl alcohol with the fatty acids derived from Orbignya Oleifera (Babassu) Oil.</i>	skin cond. agent – emol.; visc. incr. agent-aq.
Cetyl Behenate 42233-11-4	the ester of that conforms to the formula. <i>The ester obtained from the reaction of cetyl alcohol with behenic acid.</i>	skin cond. agent – oc.
Cetyl Caprate	the ester of cetyl alcohol and capric acid. <i>The ester obtained from the reaction of cetyl alcohol with capric acid.</i>	skin cond. agent – emol.
Cetyl Caprylate 29710-31-4	the ester of cetyl alcohol and caprylic acid. <i>The ester obtained from the reaction of cetyl alcohol with caprylic acid.</i>	skin cond. agent – emol.
Cetyl Dimethyloctanoate	the ester of cetyl alcohol and dimethyloctanoic acid. <i>The ester obtained from the reaction of cetyl alcohol with dimethyloctanoic acid.</i>	skin cond. agent – emol.
Cetyl Esters	a synthetic wax intended to be indistinguishable from natural spermaceti wax with regard to composition and properties. It consists of a mixture of esters of 14 to 18 carbon fatty acids and alcohols. <i>The mixture of esters obtained from the reaction of a mixture of fatty alcohols, containing 14 to 18 carbons in the alkyl chain, with a mixture of straight-chain fatty acids, containing 14 to 18 carbons in the alkyl chain.</i>	skin cond. agent– emol.
Cetyl Isononanoate 84878-33-1	the ester of cetyl alcohol with a branched chain nonanoic acid. <i>The mixture of esters obtained from the reaction of cetyl alcohol with branched-chain nonanoic acids.</i>	skin cond. agent – emol.
Cetyl Laurate 20834-06-4	the ester of cetyl alcohol and lauric acid that conforms to the formula. <i>The ester obtained from the reaction of cetyl alcohol with lauric acid.</i>	skin cond. agent – emol.
Cetyl Myristate 2599-01-1	the ester of cetyl alcohol and myristic acid. <i>The ester obtained from the reaction of cetyl alcohol and myristic acid.</i>	skin cond. agent – oc.

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Ingredient/CAS No.	Definition³⁷ (italicized text generated by CIR)	Function³⁷
Cetyl Myristoleate	the ester of Cetyl Alcohol and myristoleic acid that conforms to the formula. <i>The ester obtained from the reaction of cetyl alcohol and myristoleic acid.</i>	skin cond. agent – misc.
Cetyl Oleate 22393-86-8	the ester of cetyl alcohol and oleic acid. <i>The ester obtained from the reaction of cetyl alcohol with oleic acid.</i>	skin cond. agent – emol.
Cetyl Palmitate 540-10-3	the ester of cetyl alcohol and palmitic acid. <i>The ester obtained from the reaction of cetyl alcohol with palmitic acid.</i>	skin cond. agent – oc.; fragrance ingr.
Cetyl Ricinoleate 10401-55-5	the ester of cetyl alcohol and ricinoleic acid. <i>The ester obtained from the reaction of cetyl alcohol with ricinoleic acid.</i>	skin cond. agent – oc.
Cetyl Stearate 1190-63-2	the ester of cetyl alcohol and stearic acid. <i>The ester obtained from the reaction of cetyl alcohol with stearic acid.</i>	skin cond. agent – oc.
Cetyl Tallowate	the ester of Cetyl Alcohol and Tallow Acid. <i>The mixture of esters obtained from the reaction of cetyl alcohol with the fatty acids derived from tallow acid.</i>	skin cond. agent – misc.
Chimyl Isostearate	the ester of Chimyl Alcohol and isostearic acid. <i>The mixture of esters obtained from the reaction of cetyl glyceryl ether with branched-chain stearic acids.</i>	skin cond. agent – emol.
Chimyl Stearate 131932-18-8	the ester of Chimyl Alcohol and stearic acid. <i>The ester obtained from the reaction of cetyl glyceryl ether with stearic acid.</i>	skin cond. agent – emol.
C10-40 Isoalkyl Acid Octyldodecanol Esters	a mixture of esters of Octyldodecanol with branched-chain alkyl acids containing 10 to 40 carbons. <i>The mixture of esters obtained from the reaction of 2-octyldodecanol with branched-chain fatty acids, containing 10 to 40 carbons in the alkyl chain.</i>	skin cond. agent – misc.; visc. incr. agent-nonaq.
C4-5 Isoalkyl Cocoate	the ester of a branched, saturated fatty alcohol containing 4 to 5 carbons, with Coconut Acid. <i>The mixture of esters obtained from the reaction of branched-chain alcohols, containing 4 to 5 carbons, with the fatty acids derived from coconut acid.</i>	skin cond. agent – emol.
C32-36 Isoalkyl Stearate 68201-22-9	the ester of a branched, saturated fatty alcohol containing 32 to 36 carbons, with stearic acid. <i>The mixture of esters obtained from the reaction of branched-chain alcohols, containing 32 to 36 carbons, with stearic acid.</i>	skin cond. agent – emol.
Coco-Caprylate	the organic compound that conforms to the formula. <i>The mixture of esters obtained from the reaction of the fatty alcohols derived from coconut alcohol with caprylic acid.</i>	skin cond. agent – emol.
Coco-Caprylate/Caprata	a mixture of esters of Coconut Alcohol with Caprylic Acid and Capric Acid. <i>The mixture of esters obtained from the reaction of the fatty alcohols derived from coconut alcohol with a mixture of caprylic acid and capric acid.</i>	skin cond. agent – emol.
Coco-Rapeseedate	the ester of Coconut Alcohol and the fatty acids derived from Brassica Campestris (Rapeseed) Oil. <i>The mixture of esters obtained from the reaction of the fatty alcohols derived from coconut alcohol with the fatty acids derived from Brassica Campestris (Rapeseed) Oil.</i>	skin cond. agent – emol.
Decyl Castorate	the ester of Decyl Alcohol and the fatty acids derived from Ricinus Communis (Castor) Oil. <i>The mixture of esters obtained from the reaction of decyl alcohol with the fatty acids derived from Ricinus Communis (Castor) Oil.</i>	skin cond. agent – emol.; emul. stab.
Decyl Cocoate	the ester of Decyl Alcohol and the fatty acids derived from Cocos Nucifera (Coconut) Oil. <i>The mixture of esters obtained from the reaction of decyl alcohol with the fatty acids derived from Cocos Nucifera (Coconut) Oil.</i>	skin cond. agent – oc.
Decyl Isostearate 84605-08-3	the ester of decyl alcohol and isostearic acid. <i>The mixture of esters obtained from the reaction of decyl alcohol with branched-chain stearic acids.</i>	skin cond. agent – emol.
Decyl Jojobate	the ester of decyl alcohol and the fatty acids derived from Simmondsia Chinensis (Jojoba) Oil. <i>The mixture of esters obtained from the reaction of decyl alcohol with the fatty acids derived from Simmondsia Chinensis (Jojoba) Oil.</i>	skin cond. agent – emol.
Decyl Laurate 36528-28-6	the organic compound that conforms to the formula. <i>The ester obtained from the reaction of decyl alcohol with lauric acid.</i>	skin cond. agent – emol.
Decyl Myristate 41927-71-3	the ester of decyl alcohol and myristic acid that conforms to the formula. <i>The ester obtained from the reaction of decyl alcohol with myristic acid.</i>	skin cond. agent – oc.
Decyl Oleate 3687-46-5	the ester of decyl alcohol and oleic acid. <i>The ester obtained from the reaction of decyl alcohol with oleic acid.</i>	skin cond. agent – emol.
Decyl Olivatate	the ester of Decyl Alcohol and the fatty acids derived from Olea Europea (Olive) Oil. <i>The mixture of esters obtained from the reaction of decyl alcohol with the fatty acids derived from Olea Europea (Olive) Oil.</i>	skin cond. agent – oc.
Decyl Palmitate 42232-27-9	the ester of decyl alcohol and palmitic acid that conforms to the formula. <i>The ester obtained from the reaction of decyl alcohol with palmitic acid.</i>	skin cond. agent – emol.
Decyltetradecyl Cetearate 97404-34-7	the ester of Decyltetradecanol and a blend of fatty acids containing predominantly palmitic and stearic acid. <i>The mixture of esters obtained from the reaction of 2-decyltetradecanol with a mixture of fatty acids, containing predominantly palmitic acid and stearic acid.</i>	skin cond. agent – emol.
Ethylhexyl Adipate/Palmitate/ Stearate	a mixture of esters formed by the reaction of 2-ethylhexyl alcohol with adipic, palmitic, and stearic acids.	skin cond. agent-emol.
Ethylhexyl C10-40 Isoalkyl Acidate	the ester of C10-40 Isoalkyl Acid and 2-ethylhexyl alcohol. <i>The mixture of esters obtained from the reaction of 2-ethylhexyl alcohol with branched-chain acids, containing 10 to 40 carbons in the alkyl chain.</i>	skin cond. agent-misc.; visc. incr. agent-nonaq.
Ethylhexyl Cocoate 91052-62-9; 92044-87-6	the ester of 2-ethylhexanol and Coconut Acid that conforms to the formula. <i>The mixture of esters obtained from the reaction of 2-ethylhexyl alcohol with the fatty acids derived from coconut acid.</i>	skin cond. agent-emol.
Ethylhexyl Hydroxystearate 29383-26-4; 29710-25-6	the ester of 2-ethylhexyl alcohol and 12-hydroxystearic acid. <i>The ester obtained from the reaction of 2-ethylhexyl alcohol with 12-hydroxystearic acid.</i>	skin cond. agent-emol.

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Ingredient/CAS No.	Definition³⁷ (italicized text generated by CIR)	Function³⁷
Ethylhexyl Isononanoate 70969-70-9; 71566-49-9	the ester of 2-ethylhexyl alcohol and a branched chain nonanoic acid. <i>The mixture of esters obtained from the reaction of 2-ethylhexyl alcohol with branched-chain nonanoic acids.</i>	skin cond. agent-emol.
Ethylhexyl Isopalmitate 93843-32-4	the ester of 2-ethylhexanol and a branched chain 16 carbon aliphatic acid. <i>The mixture of esters obtained from the reaction of 2-ethylhexanol with branched-chain palmitic acids.</i>	skin cond. agent-emol.
Ethylhexyl Isostearate 81897-25-8; 85186-76-1	the ester of 2-ethylhexyl alcohol and isostearic acid. <i>The mixture of esters obtained from the reaction of 2-ethylhexyl alcohol with branched-chain stearic acids.</i>	skin cond. agent-emol.
Ethylhexyl Laurate 20292-08-4	the ester of 2-ethylhexyl alcohol and lauric acid. <i>The ester obtained from the reaction of 2-ethylhexyl alcohol with lauric acid.</i>	skin cond. agent-emol.
Ethylhexyl Myristate 29806-75-5	the ester of 2-ethylhexyl alcohol and myristic acid. <i>The ester obtained from the reaction of 2-ethylhexyl alcohol with myristic acid.</i>	skin cond. agent-emol.
Ethylhexyl Neopentanoate	ester of 2-ethylhexanol and neopentanoic acid. <i>The ester obtained from the reaction of 2-ethylhexanol with neopentanoic acid.</i>	skin cond. agent-emol.
Ethylhexyl Oleate 26399-02-0	the ester of oleic acid and 2-ethyl hexyl alcohol. <i>The ester obtained from the reaction of 2-ethylhexyl alcohol with oleic acid.</i>	skin cond. agent-emol.
Ethylhexyl Olivatate	the ester of ethylhexyl alcohol and the fatty acids derived from Olea Europaea (Olive) Oil. <i>The mixture of esters obtained from the reaction of 2-ethylhexyl alcohol with the fatty acids derived from Olea Europaea (Olive) Oil.</i>	skin cond. agent-oc.
Ethylhexyl Palmitate 29806-73-3	the ester of 2-ethylhexyl alcohol and palmitic acid. <i>The ester obtained from the reaction of 2-ethylhexyl alcohol with palmitic acid.</i>	skin cond. agent-emol.; fragrance ingr.
Ethylhexyl Pelargonate 59587-44-9	the ester of 2-ethylhexyl alcohol and Pelargonic Acid. <i>The ester obtained from the reaction of 2-ethylhexyl alcohol with pelargonic acid.</i>	skin cond. agent-emol.
Ethylhexyl Stearate 22047-49-0	the ester of 2-ethylhexyl alcohol and stearic acid. <i>The ester obtained from the reaction of 2-ethylhexyl alcohol with stearic acid.</i>	skin cond. agent-emol.
Erucyl Arachidate	the ester of erucyl alcohol and Arachidic Acid. <i>The ester obtained from the reaction of erucyl alcohol with arachidic acid.</i>	skin cond. agent-misc.
Erucyl Erucate 27640-89-7; 84605-12-9	the ester of erucyl alcohol and erucic acid. <i>The ester obtained from the reaction of erucyl alcohol with erucic acid.</i>	skin cond. agent-misc.
Erucyl Oleate 85617-81-8	the ester of erucyl alcohol and oleic acid that conforms to the formula. <i>The ester obtained from the reaction of erucyl alcohol with oleic acid.</i>	skin cond. agent-misc.
Heptyl Undecylenate 68141-27-5	the organic compound that conforms to the formula. <i>The ester obtained from the reaction of heptyl alcohol with 10-undecenoic acid.</i>	skin cond. agent-emol.
Heptylundecyl Hydroxystearate 74659-69-1	the organic compound that conforms to the formula. <i>The ester obtained from the reaction of 2-heptylundecyl alcohol with 12-hydroxystearate.</i>	skin cond. agent-emol.
Hexyldecyl Hexyldecanoate	the ester that conforms to the formula. <i>The ester obtained from the reaction of 2-hexyldecanol with 2-hexyldecanoic acid.</i>	skin cond. agent-emol.
Hexyldecyl Isostearate 69247-84-3	the ester of hexyldecyl alcohol and isostearic acid. <i>The mixture of esters obtained from the reaction of 2-hexyldecyl alcohol with branched-chain stearic acids.</i>	skin cond. agent-oc.
Hexyldecyl Laurate 34362-27-1; 227450-65-9	the ester of hexyldecanol and lauric acid. <i>The ester obtained from the reaction of 2-hexyldecanol with lauric acid.</i>	skin cond. agent-emol.; skin cond. agent-oc.
Hexyldecyl Oleate 94278-07-6	the ester of Hexyldecanol and oleic acid. <i>The ester obtained from the reaction of 2-hexyldecanol with oleic acid.</i>	skin cond. agent-oc.
Hexyldecyl Palmitate 69275-02-1	the ester of Hexyldecanol and palmitic acid that conforms to the formula. <i>The ester obtained from the reaction of 2-hexyldecanol with palmitic acid.</i>	skin cond. agent-oc.
Hexyldecyl Stearate 17618-45-0	the ester of Stearic Acid and Hexyldecanol. <i>The ester obtained from the reaction of 2-hexyldecanol with stearic acid.</i>	skin cond. agent-emol.; skin cond. agent-oc.
Hexyldodecyl/Octyldecyl Hydroxystearate	the product formed by the reaction of Hexyldodecanol and Octyldecanol with Hydroxystearic Acid. <i>The mixture of esters obtained from the reaction of a mixture of 2-hexyldodecanol and 2-octyldecanol with 12-hydroxystearic acid.</i>	skin cond. agent-emol.
Hexyl Isostearate 94247-25-3	the ester of hexyl alcohol and isostearic acid that conforms to the formula. <i>The mixture of esters obtained from the reaction of hexyl alcohol with branched-chain stearic acids.</i>	skin cond. agent-emol.
Hexyl Laurate 34316-64-8	the ester of hexyl alcohol and lauric acid. <i>The ester obtained from the reaction of hexyl alcohol with lauric acid.</i>	skin cond. agent-emol.
Hydrogenated Castor Oil Behenyl Esters	the hydrogenation product of the esters formed by the reaction of castor oil and behenyl alcohol. <i>The hydrogenation product of the mixture of esters obtained from the reaction of behenyl alcohol with castor oil.</i>	hair cond. agent; binder; emul. stab.
Hydrogenated Castor Oil Cetyl Esters	the hydrogenation product of the esters formed by the reaction of castor oil with cetyl alcohol. <i>The hydrogenation product of the mixture of esters obtained from the reaction of cetyl alcohol with castor oil.</i>	skin cond. agent-misc.; hair cond. agent; binder; emul. stab.
Hydrogenated Castor Oil Stearyl Esters	the hydrogenation product of the esters formed by the reaction of castor oil and stearyl alcohol. <i>The hydrogenation product of the mixture of esters obtained from the reaction of stearyl alcohol with castor oil.</i>	skin cond. agent-misc.; hair cond. agent; binder; emul. stab.
Hydrogenated Ethylhexyl Olivatate	a mixture of esters produced by the reaction of ethylhexanol and Hydrogenated Olive Oil. <i>The mixture of esters obtained from the reaction of 2-ethylhexyl alcohol with hydrogenated olive oil.</i>	skin cond. agent-emol.
Hydrogenated Ethylhexyl Sesamate	the product of the transesterification of 2-ethylhexyl alcohol and sesame seed oil that has been hydrogenated. <i>The mixture of esters obtained from the reaction of 2-ethylhexyl alcohol with hydrogenated sesame seed oil.</i>	skin cond. agent-emol.; binder

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Hydrogenated Isocetyl Olivete	the end-product of the controlled hydrogenation of the mixture of esters formed by the reaction of isocetyl alcohol with olive acid. <i>The hydrogenation product of the mixture of esters obtained from the reaction of branched-chain cetyl alcohols with the fatty acids derived from olive acid.</i>	skin cond. agent-misc.; binder; disp. agent; humectant
Hydrogenated Isopropyl Jojobate	the end-product of the controlled hydrogenation of Isopropyl Jojobate. <i>The hydrogenation product of the mixture of esters obtained from the reaction of isopropyl alcohol with the fatty acids derived from Simmondsia Chinensis (Jojoba) Oil.</i>	skin cond. agent-oc.
Hydroxycetyl Isostearate	the ester of hydroxycetyl alcohol and isostearic acid. <i>The mixture of esters obtained from the reaction of cetyl glycol with branched-chain stearic acids.</i>	skin cond. agent-emol.
Hydroxyoctacosanyl Hydroxystearate 93840-71-2	the ester of hydroxyoctacosanyl alcohol and hydroxystearic acid. <i>The ester obtained from the reaction of 2-hydroxyoctacosanyl alcohol with 12-hydroxystearic acid.</i>	skin cond. agent-emol.; visc. incr. agent
Isoamyl Laurate 6309-51-9	the ester of isoamyl alcohol and lauric acid. <i>The ester obtained from the reaction of isoamyl alcohol with lauric acid.</i>	skin cond. agent-emol.; fragrance ingr.
Isobutyl Myristate 25263-97-2	the ester of isobutyl alcohol and myristic acid. <i>The ester obtained from the reaction of isobutyl alcohol with myristic acid.</i>	skin cond. agent-emol.
Isobutyl Palmitate 110-34-9	the ester of isobutyl alcohol and palmitic acid. <i>The ester obtained from the reaction of isobutyl alcohol with palmitic acid.</i>	skin cond. agent-emol.; fragrance ingr.
Isobutyl Pelargonate 30982-03-7	the ester of isobutyl alcohol and Pelargonic Acid. <i>The ester obtained from the reaction of isobutyl alcohol with nonanoic acid.</i>	skin cond. agent-emol.; fragrance ingr.
Isobutyl Stearate 646-13-9	the ester of isobutyl alcohol and stearic acid. <i>The ester obtained from the reaction of isobutyl alcohol with stearic acid</i>	skin cond. agent-emol.
Isobutyl Tallowate 68526-50-1	the ester of isobutyl alcohol and Tallow Acid. <i>The mixture of esters obtained from the reaction of isobutyl alcohol with the fatty acids derived from tallow acid.</i>	skin cond. agent-emol.
Isocetyl Behenate 94247-28-6	the ester of Isocetyl Alcohol and behenic acid. <i>The mixture of esters obtained from the reaction of branched-chain cetyl alcohols with behenic acid.</i>	skin cond. agent-oc.
Isocetyl Isodecanoate 129588-05-2	the mixture of esters obtained from the reaction of isocetyl alcohol with a branched, fatty acid, containing 10 carbons in the alkyl chain. <i>The mixture of esters obtained from the reaction of branched-chain cetyl alcohols with branched-chain decanoic acids.</i>	skin cond. agent-emol.
Isocetyl Isostearate 52006-45-8	the ester of isocetyl alcohol and isostearic acid. <i>The mixtures of esters obtained from the reaction of branched-chain cetyl alcohols with branched-chain stearic acids.</i>	skin cond. agent-emol.
Isocetyl Laurate 89527-28-6	the ester of isocetyl alcohol and lauric acid. <i>The mixture of esters obtained from the reaction of branched-chain cetyl alcohols with lauric acid.</i>	skin cond. agent-emol.
Isocetyl Myristate 83708-66-1	the ester of Isocetyl Alcohol and myristic acid. <i>The mixture of esters obtained from the reaction of branched-chain cetyl alcohols with myristic acid.</i>	skin cond. agent-oc.
Isocetyl Palmitate 127770-27-8	the ester of Isocetyl Alcohol and palmitic acid. <i>The mixture of esters obtained from the reaction of branched-chain cetyl alcohols with palmitic acid.</i>	skin cond. agent-emol.
Isocetyl Stearate 25339-09-7	the ester of isocetyl alcohol and stearic acid. <i>The mixture of esters obtained from the reaction of branched-chain cetyl alcohols with stearic acid.</i>	skin cond. agent-emol.
Isodecyl Cocoate	the ester of branched chain decyl alcohols and coconut acid. <i>The mixture of esters obtained from the reaction of branched-chain decyl alcohols with the fatty acids derived from coconut acid.</i>	skin cond. agent-emol.
Isodecyl Hydroxystearate 29383-27-5; 59231-36-6	the ester of branched chain decyl alcohols and 12-hydroxystearic acid. <i>The mixture of esters obtained from the reaction of branched-chain decyl alcohols with 12-hydroxystearic acid.</i>	skin cond. agent-emol.
Isodecyl Isononanoate 41395-89-5; 59231-35-5	the ester of branched chain decyl alcohols and a branched chain nonanoic acid. <i>The mixture of esters obtained from the reaction of branched-chain decyl alcohols with branched-chain nonanoic acids.</i>	skin cond. agent-emol.
Isodecyl Laurate 14779-93-2; 94247-10-6	the ester of branched chain decyl alcohols and lauric acid. <i>The mixture of esters obtained from the reaction of branched-chain decyl alcohols with lauric acid.</i>	skin cond. agent-emol.
Isodecyl Myristate 17670-91-6; 51473-24-6	the ester of branched chain decyl alcohols and myristic acid. <i>The mixture of esters obtained from the reaction of branched-chain decyl alcohols with myristic acid.</i>	skin cond. agent-emol.
Isodecyl Neopentanoate 60209-82-7	the ester of branched chain decyl alcohols and neopentanoic acid. <i>The mixture of esters obtained from the reaction of branched-chain decyl alcohols with neopentanoic acid.</i>	skin cond. agent-emol.
Isodecyl Oleate 59231-34-4	the ester of branched chain decyl alcohols and oleic acid. <i>The mixture of esters obtained from the reaction of branched-chain decyl alcohols with oleic acid.</i>	skin cond. agent-emol.
Isodecyl Palmitate 14779-95-4; 59231-33-3	the ester of branched chain decyl alcohols and palmitic acid. <i>The mixture of esters obtained from the reaction of branched-chain decyl alcohols with palmitic acid.</i>	skin cond. agent-emol.
Isodecyl Stearate 31565-38-5	the ester of branched decyl alcohols and stearic acid. <i>The mixture of esters obtained from the reaction of branched-chain decyl alcohols with stearic acid.</i>	skin cond. agent-emol.
Isohexyl Caprate	the ester of capric acid and a branched chain, 6-carbon alcohol. <i>The mixture of esters obtained from the reaction of branched-chain hexyl alcohols with capric acid.</i>	skin cond. agent-emol.
Isohexyl Laurate 59219-73-7	the ester of a branched chain hexyl alcohol and lauric acid. <i>The mixture of esters obtained from the reaction of branched-chain hexyl alcohols with lauric acid.</i>	skin cond. agent-emol.
Isohexyl Neopentanoate 131141-70-3; 150588-62-8	the ester of isohexyl alcohol and neopentanoic acid that conforms to the formula. <i>The mixture of esters obtained from the reaction of branched-chain hexyl alcohols with neopentanoic acid.</i>	skin cond. agent-emol.
Isohexyl Palmitate 55194-91-7; 59219-72-6	the ester of a branched chain hexyl alcohol and palmitic acid. <i>The mixture of esters obtained from the reaction of branched-chain hexyl alcohols with palmitic acid.</i>	skin cond. agent-emol.

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Ingredient/CAS No.	Definition³⁷ (italicized text generated by CIR)	Function³⁷
Isolauryl Behenate	the ester of branched chain dodecyl alcohols and behenic acid. <i>The mixture of esters obtained from the reaction of branched-chain lauryl alcohols with behenic acid.</i>	skin cond. agent-oc.
Isononyl Isononanoate 42131-25-9; 59219-71-5	the ester of a branched chain nonyl alcohol with a branched chain nonanoic acid. <i>The mixture of esters obtained from the reaction of branched-chain nonyl alcohols with branched-chain nonanoic acids.</i>	skin cond. agent-emol.
Isooctyl Caprylate/Caprates	the ester of a branched chain octyl alcohol with a mixture of caprylic and capric acids. <i>The mixture of esters obtained from the reaction of branched-chain octyl alcohols with a mixture of caprylic and capric acids.</i>	skin cond. agent-emol.; antioxidant
Isooctyl Tallate	the organic compound that conforms to the formula. <i>The mixture of esters obtained from the reaction of branched-chain octyl alcohols with the fatty acids derived from tall oil.</i>	skin cond. agent-emol.; plasticizer; solvent
Isopropyl Arachidate 26718-90-1	the ester of isopropyl alcohol and Arachidic Acid that conforms to the formula. <i>The ester obtained from the reaction of isopropyl alcohol with arachidic acid.</i>	skin cond. agent-emol.
Isopropyl Avocadate 90990-05-9	the ester of isopropyl alcohol and the fatty acids derived from avocado oil. <i>The mixture of esters obtained from the reaction of isopropyl alcohol with the fatty acids derived from avocado oil.</i>	skin cond. agent-emol.
Isopropyl Babassuate	the ester of isopropyl alcohol and the fatty acids derived from Orbignya Oleifera (Babassu) Oil. <i>The mixture of esters obtained from the reaction of isopropyl alcohol with the fatty acids derived from Orbignya Oleifera (Babassu) Oil.</i>	skin cond. agent-emol.; binder; disp. agent-non-surf; emul. stab.
Isopropyl Behenate 26718-95-6	the ester of isopropyl alcohol and Behenic Acid. <i>The ester obtained from the reaction of isopropyl alcohol with behenic acid.</i>	skin cond. agent-emol.
Isopropyl Hydroxystearate	the ester of isopropyl alcohol and 12-hydroxystearic acid. <i>The ester obtained from the reaction of isopropyl alcohol with 12-hydroxystearic acid.</i>	skin cond. agent-emol.
Isopropyl Isostearate 31478-84-9; 68171-33-5	the ester of isopropyl alcohol and isostearic acid. <i>The mixture of esters obtained from the reaction of isopropyl alcohol with branched-chain stearic acids.</i>	skin cond. agent-emol.; binder
Isopropyl Jojobate	the ester of isopropyl alcohol and the acids derived from Simmondsia Chinensis (Jojoba) Oil. <i>The mixture of esters obtained from the reaction of isopropyl alcohol with the fatty acids derived from Simmondsia Chinensis (Jojoba) Oil.</i>	skin cond. agent-emol.
Isopropyl Laurate 10233-13-3	the ester of isopropyl alcohol and lauric acid. <i>The ester obtained from the reaction of isopropyl alcohol with lauric acid.</i>	skin cond. agent-emol.; binder; fragrance ingr.
Isopropyl Linoleate 22882-95-7	the ester of isopropyl alcohol and linoleic acid. <i>The ester obtained from the reaction of isopropyl alcohol with linoleic acid.</i>	skin cond. agent-emol.
Isopropyl Myristate 110-27-0	the ester of isopropyl alcohol and myristic acid. <i>The ester obtained from the reaction of isopropyl alcohol with myristic acid.</i>	skin cond. agent-emol.; binder; fragrance ingr.
Isopropyl Oleate 112-11-8; 17364-07-7	the ester of isopropyl alcohol and oleic acid. <i>The ester obtained from the reaction of isopropyl alcohol with oleic acid.</i>	skin cond. agent-emol.; binder
Isopropyl Palmitate 142-91-6	the ester of isopropyl alcohol and palmitic acid. <i>The ester obtained from the reaction of isopropyl alcohol with myristic acid.</i>	skin cond. agent-emol.; binder; fragrance ingr.
Isopropyl Ricinoleate 71685-99-9	the ester of isopropyl alcohol and ricinoleic acid. <i>The ester obtained from the reaction of isopropyl alcohol with ricinoleic acid.</i>	skin cond. agent-emol.
Isopropyl Sorbate 44987-75-9; 55584-26-4	the ester of isopropyl alcohol and sorbic acid. <i>The ester obtained from the reaction of isopropyl alcohol with sorbic acid.</i>	preservative
Isopropyl Stearate 112-10-7	the ester of isopropyl alcohol and stearic acid. <i>The ester obtained from the reaction of isopropyl alcohol with stearic acid.</i>	skin cond. agent-emol.; binder
Isopropyl Tallowate	the ester of isopropyl alcohol and Tallow Acid. <i>The mixture of esters obtained from the reaction of isopropyl alcohol with the fatty acids derived from tallow acid.</i>	skin cond. agent-emol.; binder
Isostearyl Avocadate 90990-06-0	the ester of Isostearyl Alcohol and the acids derived from avocado oil. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with the fatty acids derived from avocado oil.</i>	skin cond. agent-emol.
Isostearyl Behenate 125804-16-2	the ester of Isostearyl Alcohol and Behenic Acid. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with behenic acid.</i>	skin cond. agent-oc.
Isostearyl Erucate 84605-10-7	the ester of Isostearyl Alcohol and erucic acid. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with erucic acid.</i>	skin cond. agent-oc.
Isostearyl Hydroxystearate 162888-05-3; 338450-67-2	the ester of isostearyl alcohol and hydroxystearic acid. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with 12-hydroxystearic acid.</i>	skin cond. agent-emol.
Isostearyl Isononanoate 90967-66-1; 163564-45-2	the ester of isostearyl alcohol and isononanoic acid. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with branched-chain nonanoic acids.</i>	skin cond. agent-emol.
Isostearyl Isostearate 41669-30-1	the ester of Isostearyl Alcohol and Isostearic Acid. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with branched-chain stearic acids.</i>	skin cond. agent-emol.; binder
Isostearyl Laurate	the ester of isostearyl alcohol and lauric acid. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with lauric acid.</i>	skin cond. agent-emol.
Isostearyl Linoleate 127358-80-9	the ester of isostearyl alcohol and linoleic acid. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with linoleic acid.</i>	skin cond. agent-emol.
Isostearyl Myristate 72576-81-9	the ester of isostearyl alcohol and myristic acid. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with myristic acid.</i>	skin cond. agent-emol.; binder
Isostearyl Neopentanoate 58958-60-4	the ester of isostearyl alcohol and neopentanoic acid. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with neopentanoic acid.</i>	skin cond. agent-emol.; binder
Isostearyl Palmitate 69247-83-2; 72576-80-8	the ester of Isostearyl Alcohol and palmitic acid. <i>The mixture of esters obtained from the reaction of branched-chain stearyl alcohols with palmitic acid.</i>	skin cond. agent-emol.; binder

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Ingredient/CAS No.	Definition³⁷ (italicized text generated by CIR)	Function³⁷
Isotridecyl Isononanoate 42131-27-1; 59231-37-7	the ester of isotridecyl alcohol and isononanoic acid. <i>The mixture of esters obtained from the reaction of branched-chain tridecyl alcohols with branched-chain nonanoic acids.</i>	skin cond. agent-emol.
Isotridecyl Laurate 94134-83-5	the ester of Isotridecyl Alcohol and lauric acid that conforms generally to the formula. <i>The mixture of esters obtained from the reaction of branched-chain tridecyl alcohols with lauric acid.</i>	skin cond. agent-oc.; hair cond. agent
Isotridecyl Myristate 96518-24-0	The ester of myristic acid and isotridecyl alcohol. <i>The mixture of esters obtained from the reaction of branched-chain tridecyl alcohols with myristic acid.</i>	skin cond. agent-oc.; hair cond. agent
Isotridecyl Stearate 31565-37-4	the monoester of isotridecyl alcohol and stearic acid that conforms to the formula. <i>The mixture of esters obtained from the reaction of branched-chain tridecyl alcohols with stearic acid.</i>	skin cond. agent-emol.
Lauryl Behenate 42233-07-8	the ester of lauryl alcohol and behenic acid. <i>The ester obtained from the reaction of lauryl alcohol with behenic acid.</i>	skin cond. agent-oc.
Lauryl Cocoate	the ester of lauryl alcohol and the fatty acids derived from coconut oil. <i>The mixture of esters obtained from the reaction of lauryl alcohol with the fatty acids derived from coconut oil.</i>	skin cond. agent-emol.; skin cond. agent-oc.
Lauryl Isostearate 93803-85-1	the ester of lauryl alcohol and Isostearic Acid. <i>The mixture of esters obtained from the reaction of lauryl alcohol with branched-chain stearic acids.</i>	skin cond. agent-emol.
Lauryl Laurate 13945-76-1	the ester of Lauryl Alcohol and Lauric Acid. <i>The ester obtained from the reaction of lauryl alcohol with lauric acid.</i>	skin cond. agent-misc.; binder; emul. stab.; hair cond. agent; opacifying agent
Lauryl Myristate 2040-64-4	the ester of lauryl alcohol and myristic acid. <i>The ester obtained from the reaction of lauryl alcohol with myristic acid.</i>	skin cond. agent-oc.; hair cond. agent
Lauryl Oleate 36078-10-1	ester of lauryl alcohol and oleic acid that conforms to the formula. <i>The ester obtained from the reaction of lauryl alcohol with oleic acid.</i>	skin cond. agent-oc.
Lauryl Palmitate 42232-29-1	the ester of lauryl alcohol and palmitic acid. <i>The ester obtained from the reaction of lauryl alcohol with palmitic acid.</i>	skin cond. agent-oc.
Lauryl Stearate 5303-25-3	the ester of lauryl alcohol and stearic acid. <i>The ester obtained from the reaction of lauryl alcohol with stearic acid.</i>	skin cond. agent-oc.
Lignoceryl Erucate	the ester of lignoceryl alcohol and erucic acid. <i>The ester obtained from the reaction of lignoceryl alcohol with erucic acid.</i>	skin cond. agent-emol.
Myristyl Isostearate 94247-26-4	the ester of myristyl alcohol and isostearic acid. <i>The mixture of esters obtained from the reaction of myristyl alcohol with branched-chain stearic acids.</i>	skin cond. agent-emol.
Myristyl Laurate 22412-97-1	the ester of myristyl alcohol and lauric acid. <i>The ester obtained from the reaction of myristyl alcohol with lauric acid.</i>	surf-emulsifying agent
Myristyl Myristate 3234-85-3	the ester of myristyl alcohol and myristic acid. <i>The ester obtained from the reaction of myristyl alcohol with myristic acid.</i>	skin cond. agent-oc.
Myristyl Neopentanoate 144610-93-5	the ester of myristyl alcohol and neopentanoic acid. <i>The ester obtained from the reaction of myristyl alcohol with neopentanoic acid.</i>	skin cond. agent-emol.
Myristyl Stearate 17661-50-6	the ester of myristyl alcohol and stearic acid. <i>The ester obtained from the reaction of myristyl alcohol and stearic acid.</i>	skin cond. agent-oc.
Octyldecyl Oleate	the ester of octyldecanol and oleic acid. <i>The ester obtained from the reaction of 2-octyldecanol with oleic acid.</i>	skin cond. agent-emol.
Octyldodecyl Avocadoate	the ester of Octyldodecanol and the fatty acids derived from avocado oil. <i>The mixture of esters obtained from the reaction of 2-octyldodecanol with the fatty acids derived from avocado oil.</i>	skin cond. agent-emol.
Octyldodecyl Beeswax	the ester of Octyldodecanol and Beeswax Acid. <i>The mixture of esters obtained from the reaction of 2-octyldodecanol with a mixture of straight-chain fatty acids, containing 24 to 36 carbons in alkyl chain length (beeswax acid).</i>	skin cond. agent-emol.
Octyldodecyl Behenate 125804-08-2	the ester of Octyldodecanol and behenic acid that conforms to the formula. <i>The ester obtained from the reaction of 2-octyldodecanol with behenic acid.</i>	skin cond. agent-oc.
Octyldodecyl Cocoate	the ester of octyldodecanol and coconut acid. <i>The mixture of esters obtained from the reaction of 2-octyldodecanol and the fatty-acids derived from coconut acid.</i>	skin cond. agent-emol.
Octyldodecyl Erucate 88103-59-7	the ester of octyldodecanol and erucic acid. <i>The ester obtained from the reaction of 2-octyldodecanol with erucic acid.</i>	skin cond. agent-oc.
Octyldodecyl Hydroxystearate 308122-33-0	the ester of Octyldodecanol and 12-hydroxystearic acid. <i>The ester obtained from the reaction of 2-octyldodecanol and 12-hydroxystearic acid.</i>	skin cond. agent-oc.
Octyldodecyl Isostearate 93803-87-3	the ester of Octyldodecanol and isostearic acid. <i>The mixture of esters obtained from the reaction of 2-octyldodecanol with isostearic acid.</i>	skin cond. agent-oc.
Octyldodecyl Meadowfoamate	the ester of Octyldodecanol and the fatty acids derived from Limnanthes Alba (Meadowfoam) Seed Oil. <i>The mixture of esters obtained from the reaction of 2-octyldodecanol with the fatty acids derived from Limnanthes Alba (Meadowfoam) Seed Oil.</i>	skin cond. agent-oc.
Octyldodecyl Myristate 22766-83-2; 83826-43-1	the ester of octyldodecanol and myristic acid. <i>The ester obtained from the reaction of 2-octyldodecanol with myristic acid.</i>	skin cond. agent-oc.
Octyldodecyl Neodecanoate 1004272-41-6	the ester of Octyldodecanol and neodecanoic acid. <i>The ester obtained from the reaction of 2-octyldodecanol with neodecanoic acid.</i>	skin cond. agent-emol.
Octyldodecyl Neopentanoate 158567-66-9	the ester of Octyldodecanol and neopentanoic acid. <i>The ester obtained from the reaction of 2-octyldodecanol with neopentanoic acid.</i>	skin cond. agent-emol.
Octyldodecyl Octyldodecanoate	the ester of Octyldodecanol and octyldodecanoic acid. <i>The ester obtained from the reaction of 2-octyldecanol with 2-octyldodecanoic acid.</i>	skin cond. agent-oc.

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Octyldodecyl Oleate 22801-45-2	the ester of Octyldodecanol and oleic acid. <i>The ester obtained from the reaction of 2-octyldodecanol with oleic acid.</i>	skin cond. agent-oc.
Octyldodecyl Olivatate 22801-45-2	the ester of Octyldodecanol and the fatty acids derived from Olea Europaea (Olive) Oil. <i>The ester obtained from the reaction of 2-octyldodecanol with the fatty acids derived from Olea Europaea (Olive) Oil.</i>	skin cond. agent-emol.; skin cond. agent-oc.; binder; film former; hair cond. agent; slip modifier
Octyldodecyl Ricinoleate 79490-62-3; 125093-27-8	the ester of octyldodecanol and ricinoleic acid. <i>The ester obtained from the reaction of 2-octyldodecanol with ricinoleic acid.</i>	hair cond. agent; shampoo
Octyldodecyl Safflowerate	the ester of Octyldodecanol and the fatty acids derived from Carthamus Tinctorius (Safflower) Oil. <i>The ester obtained from the reaction of 2-octyldodecanol with the fatty acids derived from Carthamus Tinctorius (Safflower) Oil.</i>	skin cond. agent-emol.
Octyldodecyl Stearate 22766-82-1	the ester of octyldodecanol and stearic acid. <i>The ester obtained from the reaction of 2-octyldodecanol with stearic acid.</i>	skin cond. agent-oc.
Oleyl Arachidate 22393-96-0; 156952-79-3	the ester of oleyl alcohol and Arachidic Acid. <i>The ester obtained from the reaction of oleyl alcohol with arachidic acid.</i>	skin cond. agent-oc.
Oleyl Erucate 17673-56-2; 143485-69-2	the ester of Oleyl Alcohol and erucic acid. <i>The ester obtained from the reaction of oleyl alcohol with erucic acid.</i>	skin cond. agent-oc.
Oleyl Linoleate 17673-59-5	the ester of Oleyl Alcohol and Linoleic Acid. <i>The ester obtained from the reaction of oleyl alcohol with linoleic acid.</i>	skin cond. agent-oc.; hair cond. agent
Oleyl Myristate 22393-93-7	the ester of oleyl alcohol and myristic acid. <i>The ester obtained from the reaction of oleyl alcohol with myristic acid.</i>	skin cond. agent-oc.; hair cond. agent
Oleyl Oleate 3687-45-4; 17363-94-9	the ester of Oleyl Alcohol and oleic acid. <i>The ester obtained from the reaction of oleyl alcohol with oleic acid.</i>	skin cond. agent-emol.; skin cond. agent-emol.
Oleyl Stearate 33057-39-5; 17673-50-6	the ester of oleyl alcohol and stearic acid. <i>The ester obtained from the reaction of oleyl alcohol with stearic acid.</i>	skin cond. agent-oc.; hair cond. agent
Propylheptyl Caprylate 868839-23-0	the organic compound that conforms to the formula. <i>The ester obtained from the reaction of 2-propylheptanol with caprylic acid.</i>	skin cond. agent-emol.
Stearyl Beeswax 42233-11-4	the ester of Stearyl Alcohol and Beeswax Acid. <i>The mixture of esters obtained from the reaction of stearyl alcohol with a mixture of straight-chain fatty acids, containing 24 to 36 carbons in alkyl chain length (beeswax acid).</i>	skin cond. agent-oc.
Stearyl Behenate 24271-12-3	the ester of stearyl alcohol and behenic acid. <i>The ester obtained from the reaction of stearyl alcohol with behenic acid.</i>	skin cond. agent-oc.
Stearyl Caprylate 18312-31-7	the ester of stearyl alcohol and caprylic acid. <i>The ester obtained from the reaction of stearyl alcohol with caprylic acid.</i>	skin cond. agent-oc.
Stearyl Erucate 86601-84-5; 96810-34-3	the ester of stearyl alcohol and erucic acid. <i>The ester obtained from the reaction of stearyl alcohol with erucic acid.</i>	visc. incr. agent-nonaq.
Stearyl Heptanoate 66009-41-4	the ester of stearyl alcohol and heptanoic acid. <i>The ester obtained from the reaction of stearyl alcohol with heptanoic acid.</i>	skin cond. agent-oc.
Stearyl Linoleate 17673-53-9	the ester of stearyl alcohol and linoleic acid that conforms to the formula. <i>The ester obtained from the reaction of stearyl alcohol with linoleic acid.</i>	skin cond. agent-oc.; visc. incr. agent-nonaq.
Stearyl Olivatate	the ester of stearyl alcohol and the fatty acids derived from Olea Europaea (Olive) Oil. <i>The ester obtained from the reaction of stearyl alcohol with the fatty acids derived from Olea Europaea (Olive) Oil.</i>	skin cond. agent-emol.; surf-emulsifying agent
Stearyl Palmitate 2598-99-4	the ester of stearyl alcohol and palmitic acid. <i>The ester obtained from the reaction of stearyl alcohol with palmitic acid.</i>	skin cond. agent-misc.; hair cond. agent; binder; emul. stab; humectant; film former; opacifying agent
Stearyl Stearate 2778-96-3	the ester of stearyl alcohol and stearic acid. <i>The ester obtained from the reaction of stearyl alcohol with stearic acid.</i>	skin cond. agent-oc.; visc. incr. agent-nonaq.
Tetradecyleicosyl Stearate	the ester of Myristyleicosanol and stearic acid. <i>The ester obtained from the reaction of myristyleicosanol with stearic acid.</i>	skin cond. agent-oc.
Tetradecyloctadecyl Behenate	the ester of Tetradecyloctadecanol and Behenic Acid. <i>The ester obtained from the reaction of tetradecyloctadecanol with behenic acid.</i>	skin cond. agent-oc.; binder; emul. stab; film former; opacifying agent
Tetradecyloctadecyl Hexyldecanoate 93982-00-4	the organic compound that conforms to the formula. <i>The ester obtained from the reaction of 2-tetradecyloctyldecanol with 2-hexyldecanoic acid.</i>	skin cond. agent-emol.
Tetradecyloctadecyl Myristate	the ester of tetradecyloctadecanol and myristic acid. <i>The ester obtained from the reaction of 2-tetradecyloctyldecanol with myristic acid.</i>	skin cond. agent-oc.; binder; emul. stab; film former; opacifying agent
Tetradecyloctadecyl Stearate	the ester of Tetradecyloctadecanol and stearic acid. <i>The ester obtained from the reaction of 2-tetradecyloctadecanol with stearic acid.</i>	skin cond. agent-oc.; binder; emul. stab; film former; opacifying agent
Tetradecylpropionates	an isomeric mixture of esters consisting chiefly of 2-tetradecylpropionate, 3-tetradecylpropionate, and 4-tetradecylpropionate. <i>The mixture of esters obtained from the reaction of a mixture of 2-, 3-, and 4-tetradecanols with propionic acid.</i>	skin cond. agent-emol.; solvent
Tridecyl Behenate 42233-08-9	the ester of Tridecyl Alcohol and Behenic Acid. <i>The ester obtained from the reaction of tridecyl alcohol with behenic acid.</i>	skin cond. agent-oc.
Tridecyl Cocoate	the ester of tridecyl alcohol and coconut acid. <i>The mixture of esters obtained from the reaction of tridecyl alcohol with the fatty acids derived from coconut acid.</i>	skin cond. agent-oc.
Tridecyl Erucate 131154-74-0; 221048-36-8	the ester of Tridecyl Alcohol and erucic acid. <i>The ester obtained from the reaction of tridecyl alcohol with erucic acid.</i>	skin cond. agent-oc.
Tridecyl Isononanoate 125804-18-4	the ester of Tridecyl Alcohol and isononanoic acid that conforms to the formula. <i>The ester of tridecyl alcohol and branched-chain nonanoic acids.</i>	skin cond. agent-emol.
Tridecyl Laurate 36665-67-5	the ester of tridecyl alcohol and lauric acid that conforms to the formula. <i>The ester obtained from the reaction of tridecyl alcohol with lauric acid.</i>	skin cond. agent-oc.

Table 5. Definitions and functions

Ingredient/CAS No.	Definition³⁷ (italicized text generated by CIR)	Function³⁷
Tridecyl Myristate 36617-27-3	the ester of tridecyl alcohol and myristic acid. <i>The ester obtained from the reaction of tridecyl alcohol with myristic acid.</i>	skin cond. agent-oc.
Tridecyl Neopentanoate 106436-39-9; 105859-93-6	the ester of Tridecyl Alcohol and neopentanoic acid. <i>The ester obtained from the reaction of tridecyl alcohol with neopentanoic acid.</i>	skin cond. agent-emol.
Tridecyl Stearate 31556-45-3	the ester of Tridecyl Alcohol and stearic acid. <i>The ester obtained from the reaction of tridecyl alcohol with stearic acid.</i>	skin cond. agent-emol.

Abbreviations: cond. – conditioning; disp. – dispersing; emol. – emollient; emul. – emulsion; incr. – increasing; ingr. – ingredient; misc. – miscellaneous; nonaq. – non-aqueous; nonsurf – non-surfactant; oc. – occlusive; solub. – solubilizing; stab. – stabilizer; surf. – surfactant; visc. – viscosity

Table 6. Methods of Manufacture

Ingredient	Method of Manufacture	Reference
Arachidyl Propionate	manufactured as a mixture of the esters of the C ₁₈ – C ₂₈ fatty alcohols, of which C ₂₀ fatty alcohol ester is the major constituent	13
Butyl Oleate	reaction of butanol and oleic acid in the presence of dihydrogen phosphate prepared from <i>n</i> -butanol and oleic acid by heating, with sulfuric acid as a catalyst esterification of oleic acid with butyl alcohol in <i>n</i> -hexane in the presence of the macroporous sulfonic resin K2411 synthesized with <i>Candida antarctica</i> lipase catalyst or using a sodium alcoholate catalyst esterification of oleic acid with butanol in the presence of <i>p</i> -toluene sulfonic acid lipase-catalyzed oleic acid esterification by <i>n</i> -butyl alcohol in almost non-aqueous media without an organic solvent	68 69,70 71 35 72 73
Butyl Myristate	derived from the esterification of myristic acid and butyl alcohol in the presence of an acid catalyst	14
Butyl Stearate	the esterification of stearic acid with butyl alcohol; the reaction products are refined either by catalyst neutralization, vacuum distillation, or various decolorization-deodorization techniques to remove traces of alcohol	11
Cetyl Behenate	esterification of behenic acid with cetyl alcohol using <i>n</i> -butyl benzene as the solvent and tetra <i>n</i> -butyl titanate as the catalyst	74
Cetyl Oleate	cetyl alcohol and oleic acid were dissolved in benzene and heated, using sulfuric acid as a catalyst; the mixture was then washed, the benzene filtered and removed by vacuum distillation, and the ester separated twice by distillation esterification of oleic acid with cetyl alcohol in <i>n</i> -hexane in the presence of <i>p</i> -toluene sulfonic acid lipase-catalyzed oleic acid esterification by cetyl alcohol in almost non-aqueous media without an organic solvent	47 71 73
Cetyl Stearate	the esterification of stearic acid with cetyl alcohol; the reaction products are refined either by catalyst neutralization, vacuum distillation, or various decolorization-deodorization techniques to remove traces of alcohol	11
Ethylhexyl Laurate	co-produced by the lipase-catalyzed acylation of racemic alcohol and vinyl laurate in the production of (R)-2-ethylhexanol	75
Ethylhexyl Oleate	synthesized with <i>Candida antarctica</i> lipase catalyst or using a sodium alcoholate catalyst	35
Ethylhexyl Stearate	the esterification of stearic acid with octyl alcohol; the reaction products are refined either by catalyst neutralization, vacuum distillation, or various decolorization-deodorization techniques to remove traces of alcohol	11
Isobutyl Stearate	the esterification of stearic acid with isobutyl alcohol; the reaction products are refined either by catalyst neutralization, vacuum distillation, or various decolorization-deodorization techniques to remove traces of alcohol	11
Isocetyl Myristate	the esterification of isocetyl alcohol and myristic acid	16
Isocetyl Stearate	the esterification of stearic acid with isocetyl alcohol; the reaction products are refined either by catalyst neutralization, vacuum distillation, or various decolorization-deodorization techniques to remove traces of alcohol can be made by heating with or without acid catalyst	11
Isopropyl Arachidate	arachidic acid was treated with isopropyl alcohol in large molar excess, <i>p</i> -toluene sulfonic acid was the catalyst	76
Isopropyl Laurate	lauric acid was treated with isopropyl alcohol in large molar excess, <i>p</i> -toluene sulfonic acid was the catalyst	76
Isopropyl Myristate	commercially produced by distillation, which is preceded by the esterification of myristic acid and isopropanol, in the presence of an acid catalyst	10
Isopropyl Oleate	esterification of oleic acid with isopropyl alcohol in <i>n</i> -hexane in the presence of K2411 synthesized with <i>Candida antarctica</i> lipase catalyst or using a sodium alcoholate catalyst	71 35
Isopropyl Stearate	the esterification of stearic acid with isopropyl alcohol; the reaction products are refined either by catalyst neutralization, vacuum distillation, or various decolorization-deodorization techniques to remove traces of alcohol	11
Isostearyl Neopentanoate	prepared by esterifying isostearyl alcohol with neopentanoic acid in the presence of a catalyst	12
Lauryl Behenate	esterification of behenic acid with lauryl alcohol using <i>n</i> -butyl benzene as the solvent and tetra <i>n</i> -butyl titanate as the catalyst	74
Lauryl Oleate	esterification of oleic acid with lauryl alcohol in <i>n</i> -hexane in the presence of <i>p</i> -toluene sulfonic acid synthesized with <i>Candida antarctica</i> lipase catalyst or using a sodium alcoholate catalyst	71
Lauryl Palmitate	lipase-catalyzed esterification of palmitic acid and lauryl alcohol using Novozym 435 as the biocatalyst	77
Myristyl Laurate	the fatty acid chloride was reacted with myristic acid in the presence of pyridine, using diethyl ether as the solvent	78
Myristyl Myristate	produced by the esterification of myristic acid and myristyl alcohol in the presence of an acid catalyst	10
Myristyl Stearate	the esterification of stearic acid with myristyl alcohol; the reaction products are refined either by catalyst neutralization, vacuum distillation, or various decolorization-deodorization techniques to remove traces of alcohol	11
Octyldodecyl Myristate	the esterification of myristic acid with 2-octyl dodecanol, manufactured from vegetable sources	16
Oleyl Arachidate	the fatty acid chloride was reacted with oleic acid in the presence of pyridine, using diethyl ether as the solvent	78
Oleyl Oleate	the fatty acid chloride was reacted with oleic acid in the presence of pyridine, using diethyl ether as the solvent lipase-catalyzed oleic acid esterification by oleyl alcohol in almost non-aqueous media without an organic solvent synthesized with <i>Candida antarctica</i> lipase catalyst or using a sodium alcoholate catalyst	78 73 35
Oleyl Stearate	the fatty acid chloride was reacted with oleic acid in the presence of pyridine, using diethyl ether as the solvent	78

Table 7. Chemical and physical properties

Property	Description	Reference
Arachidyl Behenate		
molecular weight	621.12	79
boiling point	648.7°C (760 Torr) (calculated)	79
density	0.856 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	20.146 (25°C) (calculated)	79
Arachidyl Erucate		
molecular weight	619.10	79
boiling point	608.3°C (760 Torr) (calculated)	79
density	0.898 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	16.353 (25°C) (calculated)	79
Arachidyl Propionate		
characteristics	soft, waxy, amber-colored solid with a slight characteristic odor	13
melting point	36-38°C	13
boiling point	224°C	13
specific gravity	0.83	13
solubility	soluble in mineral oil insoluble in water	13
Batyl Stearate		
molecular weight	611.03	79
boiling point	656.9°C (760 Torr) (calculated)	79
density	0.856 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	20.146 (25°C) (calculated)	79
pKa	14.08 (most acidic temperature: 25°C) (calculated)	79
Behenyl Behenate		
molecular weight	649.18	80
Behenyl Erucate		
molecular weight	647.15	79
boiling point	669.1°C (760 Torr) (calculated)	79
density	0.860 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	20.755 (25°C) (calculated)	79
Butyl Myristate		
form	colorless oily liquid	14
boiling point	167-197°C (5 mm Hg)	14
specific gravity	0.850 – 0.858 (25°C)	14
solubility	soluble in acetone, castor oil, chloroform, methanol, mineral oil, and toluene insoluble in water	14
Butyl Oleate		
appearance and form	mobile, yellow, oily liquid	
molecular weight	338.57	68
melting point	-31.7°C	35
	-35.5°C	72
boiling point	235-45 °C	68
density	0.870 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	9.547 (25°C) (calculated)	79
Butyl Stearate		
characteristics	stable, colorless, oily liquid	11
molecular weight	340.57	11
melting point	16-20.5°C	11
boiling point	212-216°C	11
specific gravity	0.851-0.861 (20°/20°C)	11
refractive index	1.441 (25°C)	11
saponification value	146-177	11
solubility	soluble in acetone, chloroform, ether, alcohol, ketones, ethyl acetate, aromatic and aliphatic hydrocarbons, fats, waxes, mineral oils, and many plasticizers insoluble in water	11
Caprylyl Butyrate		
molecular weight	200.32	79,80
melting point	-55.6°C	81
boiling point	244.1°C	81
water solubility	5.81 mg/l (25°C) (estimated)	81
density	0.870 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	4.861 (25°C) (calculated)	79
Caprylyl Caprylate		
molecular weight	256.42	79,80
melting point	-18.1°C	81
boiling point	306.8°C	81
water solubility	0.112 mg/l (25°C) (estimated)	81
density	0.865 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	6.899 (25°C) (calculated)	79
Cetearyl Isononanoate		
form	yellowish liquid	19
melting point	<15°C	19
refractive index	1.445 – 1.450	19
density	0.854 – 8.858 g/ml	19

Table 7. Chemical and physical properties

Property	Description	Reference
saponification value	140-146	19
solubility	insoluble in water	19
Cetyl Behenate		
molecular weight	565.01	79
melting point	65°C	74
boiling point	569.4°C (760 Torr) (calculated)	79
density	0.857 g/cm ³ (20°C; 760 Torr) (calculated)	79
specific gravity	0.8178 – 0.804 (70 - 100°C, respectively)	74
refractive index	1.441 – 1.433 (70 - 90°C, respectively)	74
log P	18.108 (25°C) (calculated)	79
Cetyl Caprylate		
form	liquid	53
molecular weight	368.64	79,80
boiling point	414.2°C (760 Torr) (calculated)	79
density	0.860 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	10.975 (25°C) (calculated)	79
Cetyl Esters		
characteristics	white to off-white, somewhat translucent solid with a crystalline structure and a faint odor	82
melting range	43-47°C	82
specific gravity	0.820-0.840 (50°C)	82
saponification value	109 - 120	82
solubility	soluble in boiling alcohol, ether, chloroform, and fixed oils insoluble in water and cold alcohol	82
composition	mixture consisting of esters of primarily saturated fatty alcohols (C ₁₄ to C ₁₈) and saturated fatty acids (C ₁₄ to C ₁₈)	82
Cetyl Isononanoate		
molecular weight	382.66	19
log P	0.28 (calculated)	19
Cetyl Laurate		
molecular weight	424.74	79
melting point	40-41°C	83
boiling point	462.2°C (760 Torr) (calculated)	79
density	0.860 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	113.013 (25°C) (calculated)	79
Cetyl Myristoleate		
molecular weight	450.78	79
boiling point	519.6°C (calculated)	79
log P	14.005 (25°C) (calculated)	79
Cetyl Oleate		
molecular weight	506.89	80
melting point	25.5°C	84
saponification value	110.7	47
Cetyl Palmitate		
molecular weight	481	9
characteristics	white, crystalline, wax-like substance	9
melting point	46 - 54°C	9
specific gravity	0.832 (25°C)	9
refractive index	1.4398 (n _D 70)	9
solubility	soluble in alcohol and ether insoluble in water	9
C32-36 Isoalkyl Stearate		
molecular weight	761.38	80
Decyl Cocoate		
characteristics	almost odorless light yellow liquid	17
specific gravity	0.85 g/cm ³ (25°C)	17
saponification value	155 - 170	17
Decyl Laurate		
molecular weight	340.58	80
boiling point	388.9°C (760 Torr) (calculated)	79
log P	9.956 (25°C) (calculated)	79
Decyl Oleate		
characteristics	light yellow liquid	36
molecular weight	422	36
specific gravity	0.855 – 0.865	36
saponification value	103-142	36
solubility	soluble in alcohol insoluble in water	36
Decyl Palmitate		
molecular weight	396.69	79,80
melting point	30°C	85
boiling point	438.7°C (760 Torr) (calculated)	79
density	0.860 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	11.994 (25°C) (calculated)	79

Table 7. Chemical and physical properties

Property	Description	Reference
Ethylhexyl Hydroxystearate		
characteristics	clear to slightly opalescent, yellow, oily liquid with a slight fatty odor	82
boiling point	490.6°C (760 Torr) (calculated)	79
specific gravity	0.889-0.895 (25°/25°C)	82
saponification value	140-160	82
solubility	soluble in ethyl alcohol and corn oil insoluble in water and propylene glycol	82
log P	9.776 (25°C) (calculated)	79
Ethylhexyl Isononanoate		
molecular weight	270.45	19
log P	5.91 (calculated)	19
Ethylhexyl Isopalmitate		
form	liquid	53
Ethylhexyl Laurate		
molecular weight	312.53	79,80
melting point	-30°C	57
boiling point	>250°C (1013 hPa)	57
	124-126°C (0.1 mm Hg)	75
water solubility	1 mg/l (20°C)	57
density	0.86 g/cm ³ (20°C)	57
log P	8.781 (25°C) (calculated)	79
Ethylhexyl Oleate		
molecular weight	394.67	79
melting point	-2.9°C	35
boiling point	465.8°C (760 Torr) (calculated)	79
density	0.867 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	11.429 (25°C) (calculated)	79
Ethylhexyl Palmitate		
molecular weight	388	9
characteristics	clear, colorless, practically odorless liquid	9
specific gravity	0.850 – 0.865 (25°C)	9
refractive index	1.445 – 1.4465 (25°C)	9
solubility	soluble in acetone, castor oil, corn oil, chloroform, ethanol, and mineral oil insoluble in water, glycerin, and propylene glycol	9
Ethylhexyl Pelargonate		
molecular weight	270.45	19
density	0.864 ± 0.06 g/cm ³ (20°C)	19
log P	7.432 (calculated)	19
Ethylhexyl Stearate		
molecular weight	396	11
Erucyl Erucate		
molecular weight	645.14	79
boiling point	668.1°C (760 Torr) (calculated)	79
density	0.865 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	20.346 (25°C) (calculated)	79
Erucyl Oleate		
molecular weight	589.03	79
boiling point	631.3	79
density	0.866 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	18.308 (25°C) (calculated)	79
Heptyl Undecylenate		
molecular weight	282.46	79,80
boiling point	351.0°C (760 Torr) (calculated)	79
density	0.871 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	7.510 (25°C) (calculated)	79
Heptylundecyl Hydroxystearate		
molecular weight	552.96	79
boiling point	607.3°C (760 Torr) (calculated)	79
density	0.885 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	14.870 (25°C) (calculated)	79
pKa	15.40 (most acidic temp: 25°C)	79
Hexyldecyl Laurate		
molecular weight	424.74	80
Hexyldecyl Oleate		
molecular weight	506.89	79,80
boiling point	563.6°C (760 Torr) (calculated)	79
density	0.863 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	15.505 (25°C) (calculated)	79
Hexyldecyl Palmitate		
molecular weight	480.85	80

Table 7. Chemical and physical properties

Property	Description	Reference
Hexyl Laurate		
molecular weight	284.48	79,80
melting point	-3.4°C	86
boiling point	130°C	86
density	0.864 g/cm ³ (20°C; 760 Torr) (calculated)	79
refractive index	1.4382	86
log P	7.918 (25°C) (calculated)	79
Hydroxyoctacosanyl Hydroxystearate		
molecular weight	709.22	79,80
boiling point	311.8°C (760 Torr) (calculated)	79
density	0.864 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	7.253 (25°C) (calculated)	79
Isoamyl Laurate		
molecular weight	270.45	79,80
boiling point	631.3	79
density	0.866 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	18.308 (25°C) (calculated)	79
Isobutyl Palmitate		
molecular weight	312.53	79,80
boiling point	354.6°C (760 Torr) (calculated)	79
density	0.862 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	8.781 (25°C) (calculated)	79
Isobutyl Pelargonate		
molecular weight	214.34	19
density	0.867 ± 0.06 g/cm ³ (20°C)	19
log P	5.307 (calculated)	19
Isobutyl Stearate		
characteristics	a paraffinlike crystal substance a low temperature; a liquid at room temperature	11
molecular weight	340.57	11
melting point	20°C	11
saponification value	170-180	11
Isocetyl Myristate		
characteristics	oily liquid with practically no odor	16
density	0.862	16
solubility	soluble in most organic solvents insoluble in water	16
Isocetyl Isostearate		
form	liquid	53
molecular weight	508.9	80
Isocetyl Palmitate		
form	liquid	53
Isocetyl Stearate		
characteristics	an oily, colorless or yellow liquid with practically no odor	11
molecular weight	508	11
specific gravity	0.8520-0.858 (25°/25°C)	11
refractive index	1.451-1.453 (25°C)	11
saponification value	110-118	11
solubility	soluble in ethanol, isopropanol, mineral oil, castor oil, acetone, and ethyl acetate insoluble in water, glycerin, and propylene glycol	11
Isodecyl Isononanoate		
molecular weight	298.5	19
refractive index	1.437 – 1.439 (25°C)	19
specific gravity	0.852 – 0.858 (25°/25°C)	19
saponification value	175 – 192	19
log P	6.68 (calculated)	19
Isodecyl Laurate		
form	colorless or pale yellow liquid	58
molecular weight	340.58	79
boiling point	374.2°C (760 Torr) (calculated)	79
density	0.860 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	9.644 (25°C) (calculated)	79
Isodecyl Neopentanoate		
molecular weight	242.40	80
Isodecyl Oleate		
molecular weight	422	36
saponification value	130-145	36
Isodecyl Palmitate		
molecular weight	396.69	79,80
boiling point	425.2°C (760 Torr) (calculated)	79
density	0.858 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	11.682 (25°C) (calculated)	79
Isodecyl Stearate		
molecular weight	424.74	80

Table 7. Chemical and physical properties

Property	Description	Reference
Isohexyl Caprate		
molecular weight	256.42	79
boiling point	296.8°C (760 Torr) (calculated)	79
density	0.864 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	6.743 (25°C) (calculated)	79
Isohexyl Laurate		
characteristics	pale yellow liquid with a coconut-like odor	82
molecular weight	284.48	79
boiling point	326.5°C (760 Torr) (calculated)	79
refractive index	1.439 - 1.442 (20°C)	82
specific gravity	0.843 -0.853 (25°/25°C)	82
saponification value	130 - 145	82
solubility	soluble in most organic solvents insoluble in water	82
free fatty acid content	0.1% (max.) (as lauric acid)	82
log P	7.762 (25°C) (calculated)	79
Isohexyl Neopentanoate		
molecular weight	186.29	79
boiling point	193.2°C (760 Torr) (calculated)	79
density	0.870 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	3.941 (25°C) (calculated)	79
Isohexyl Palmitate		
characteristics	light yellow liquid with a fatty-type odor	82
molecular weight	340.58	79
boiling point	381.5°C (760 Torr) (calculated)	79
refractive index	1.4433 - 1.4443 (20°C)	82
specific gravity	0.850 -0.860 (25°/25°C)	82
saponification value	165-171	82
solubility	soluble in alcohol and mineral oil insoluble in water and lower glycols and glycerin	82
log P	9.800 (25°C) (calculated)	79
Isononyl Isononanoate		
molecular weight	284.48	19
refractive index	1.430 – 1.436 (25°C)	19
specific gravity	0.849 – 0.855 (25°/25°C)	19
saponification value	192 - 202	19
log P	6.27 (calculated)	19
Isopropyl Arachidate		
form	white crystal	76
molecular weight	354.61	79
melting point	53-55°C	76
boiling point	394.4°C (760 Torr) (calculated)	79
density	0.860 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	10.310 (25°C) (calculated)	79
Isopropyl Behenate		
molecular weight	382.66	79
boiling point	419.6°C (760 Torr) (calculated)	79
density	0.859 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	11.329 (25°C) (calculated)	79
Isopropyl Isostearate		
form	liquid	2
specific gravity	0.853 – 0.859 (25°C)	2
solubility	soluble in acetone, ethyl acetate, isopropyl alcohol, and mineral oil	2
Isopropyl Laurate		
form	yellow oil	76
molecular weight	242.40	79
boiling point	196°C	81
specific gravity	0.851-0.857	87
refractive index	1.427-1.433 (20°C)	87
solubility	insoluble in water solubility in 95% ethanol, 1 ml in 1 ml	87
log P	6.234 (25°C) (calculated)	79
Isopropyl Linoleate		
molecular weight	322.53	79
boiling point	399.0°C (760 Torr) (calculated)	79
density	0.880 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	8.478 (25°C) (calculated)	79
Isopropyl Myristate		
characteristics	colorless, almost odorless liquid with a bland taste	10
boiling point	192.6°C (20 mm Hg)	10
specific gravity	0.847 – 0.853 (25°C)	10
refractive index	1.432 – 1.430 (25°C)	10
solubility	soluble in acetone, castor oil, chloroform, cottonseed oil, ethanol, ethyl acetate, mineral oil, and toluene insoluble in water, glycerol, sorbitan, and propylene glycol	10

Table 7. Chemical and physical properties

Property	Description	Reference
Isopropyl Oleate		
molecular weight	324.54	80
melting point	-33.4°C	35
boiling point	369.8°C (760 Torr) (calculated)	79
density	0.870 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	8.881 (25°C) (calculated)	79
Isopropyl Palmitate		
molecular weight	318	9
characteristics	colorless, almost odorless, mobile liquid mixture of isopropyl esters consisting of a minimum of 60% isopropyl palmitate	9
melting point	11°C	9
specific gravity	0.850 – 0.855 (25°C)	9
refractive index	1.4355 – 1.4375 (25°C)	9
solubility	soluble in acetone, castor oil, chloroform, cottonseed oil, ethyl acetate, ethanol, and mineral oil insoluble in water, glycerin, and propylene glycol	9
Isopropyl Stearate		
form	liquid at room temperature	11
molecular weight	326	11
Isopropyl Sorbate		
molecular weight	154.21	79
boiling point	200.0°C (760 Torr) (calculated)	79
density	0.916 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	2.770 (25°C) (calculated)	79
Isostearyl Hydroxystearate		
molecular weight	552.96	79
boiling point	607.3°C (760 Torr) (calculated)	79
density	0.885 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	14.870 (25°C) (calculated)	79
Isostearyl Isononanoate		
molecular weight	410.72	19
log P	10.02 (calculated)	19
Isostearyl Isostearate		
molecular weight	536.96	80
log P	17.399 (calculated)	52
Isostearyl Neopentanoate		
form	clear, slightly yellow liquid	12
molecular weight	348-390	12
refractive index	1.4485 – 1.4515 (25°C)	12
specific gravity	0.858 – 0.870 (25°C)	12
saponification value	144 – 161	12
solubility	soluble in mineral oil, 95% ethanol, propylene glycol, isopropyl myristate, oleyl alcohol, peanut oil insoluble in water, 80% ethanol,	12
Isotridecyl Isononanoate		
molecular weight	340.58	19
refractive index	1.433 – 1.445 (25°C)	19
specific gravity	0.859 – 0.861 (25°/25°C)	19
saponification value	155 - 162	19
log P	7.94 (calculated)	19
Isotridecyl Laurate		
molecular weight	382.66	79
boiling point	419.6°C (760 Torr) (calculated)	79
density	0.859 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	11.329 (25°C) (calculated)	79
Isotridecyl Stearate		
molecular weight	466.82	80
Lauryl Behenate		
molecular weight	508.90	79
melting point	53°C	74
boiling point	528.4°C (760 Torr) (calculated)	79
specific gravity	0.8295 – 0.8137 (60 - 90°C, respectively)	74
refractive index	1.443 – 1.433 (60 - 80°C, respectively)	74
log P	16.070 (25°C) (calculated)	79
Lauryl Laurate		
molecular weight	368.64	79
melting point	27°C	88
boiling point	226°C	88
density	0.860 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	10.975 (25°C) (calculated)	79
Lauryl Oleate		
molecular weight	485.75	79
melting point	14.5°C	89
	18.4°C	35
boiling point	519.6°C (760 Torr) (calculated)	79

Table 7. Chemical and physical properties

Property	Description	Reference
density	0.865g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	13.623 (25°C) (calculated)	79
Lauryl Palmitate		
molecular weight	424.74	79
boiling point	462.2°C (760 Torr) (calculated)	79
density	0.859 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	13.013 (25°C) (calculated)	79
Lauryl Stearate		
molecular weight	452.08	79
boiling point	484.9°C (760 Torr) (calculated)	79
density	0.858 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	14.032 (25°C) (calculated)	79
Myristyl Laurate		
molecular weight	396.69	79
boiling point	438.7°C (760 Torr) (calculated)	79
density	0.860 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	11.994 (25°C) (calculated)	79
Myristyl Myristate		
melting point	37-39°C	10
saponification value	119 - 129	10
Myristyl Neopentanoate		
molecular weight	298.50	79
boiling point	332.3°C (760 Torr) (calculated)	79
density	0.863 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	8.173 (25°C) (calculated)	79
Myristyl Laurate		
melting point	40-40.4°C	78
Myristyl Stearate		
molecular weight	480.85	79
form	waxy solid at room temperature	11
Octyldodecyl Behenate		
molecular weight	621.12	79
boiling point	603.0°C (760 Torr) (calculated)	79
density	0.855 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	19.990 (25°C) (calculated)	79
Octyldodecyl Erucate		
molecular weight	619.10	79
boiling point	646.0°C (760 Torr) (calculated)	79
density	0.860 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	19.581 (25°C) (calculated)	79
Octyldodecyl Myristate		
characteristics	colorless odorless liquid	16
saponification value	105 - 111	16
Octyldodecyl Neopentanoate		
molecular weight	382.66	79
boiling point	405.6°C (760 Torr) (calculated)	79
density	0.859 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	11.074 (25°C) (calculated)	79
Octyldodecyl Oleate		
molecular weight	562.99	79
boiling point	608.2°C (760 Torr) (calculated)	79
density	0.861 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	17.543 (25°C) (calculated)	79
Octyldodecyl Stearate		
molecular weight	565.01	79
boiling point	563.8°C (760 Torr) (calculated)	79
density	0.856 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	17.952 (25°C) (calculated)	79
Oleyl Arachidate		
molecular weight	562.99	79
melting point	39.5-40°C	78
boiling point	617.5°C (760 Torr) (calculated)	79
density	0.862 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	17.699 (25°C) (calculated)	79
Oleyl Erucate		
molecular weight	589.03	79
boiling point	637.7°C (760 Torr) (calculated)	79
density	0.866 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	18.308 (25°C) (calculated)	79
Oleyl Linoleate		
molecular weight	530.91	79
boiling point	595.5°C (760 Torr) (calculated)	79
density	0.874 g/cm ³ (20°C; 760 Torr) (calculated)	79

Table 7. Chemical and physical properties

Property	Description	Reference
log P	15.867 (25°C) (calculated)	79
Oleyl Oleate		
molecular weight	532.92	79
melting point	-4.0 to -3.5°C	78
	-1.5°C	35
boiling point	596.5°C (760 Torr) (calculated)	79
density	0.868 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	16.270 (25°C) (calculated)	79
Oleyl Stearate		
molecular weight	534.94	79
melting point	34.0-34.5°C	78
boiling point	595.8°C (760 Torr) (calculated)	79
density	0.862 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	16.680 (25°C) (calculated)	79
Propylheptyl Caprylate		
molecular weight	284.48	79
purity	>80%	56
melting point	-38.9°C	56
boiling point	319.0°C (101.3 kPa)	56
water solubility	<0.01 mg/l (20°C)	56
density	0.863 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	7.963 (25°C) (calculated)	79
Stearyl Erucate		
molecular weight	591.05	79
boiling point	627.8°C (760 Torr) (calculated)	79
density	0.861 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	18.718 (25°C) (calculated)	79
Stearyl Linoleate		
molecular weight	532.92	79
boiling point	590.8°C (760 Torr) (calculated)	79
density	0.868 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	16.276 (25°C) (calculated)	79
Tetradecyloctadecyl Hexyldecanoate		
molecular weight	705.27	79
boiling point	653.7°C (760 Torr) (calculated)	79
density	0.854 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	22.891 (25°C) (calculated)	79
Tridecyl Behenate		
molecular weight	522.93	79
boiling point	538.8°C (760 Torr) (calculated)	79
density	0.857 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	16.579 (25°C) (calculated)	79
Tridecyl Erucate		
molecular weight	520.91	79
boiling point	573.1°C (760 Torr) (calculated)	79
density	0.863 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	16.170 (25°C) (calculated)	79
Tridecyl Laurate		
molecular weight	382.66	79
boiling point	426.6°C (760 Torr) (calculated)	79
density	0.860 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	11.485 (25°C) (calculated)	79
Tridecyl Isononanoate		
molecular weight	340.58	19
log P	8.02 (calculated)	19
Tridecyl Stearate		
molecular weight	466.82	79
boiling point	496.0°C (760 Torr) (calculated)	79
density	0.858 g/cm ³ (20°C; 760 Torr) (calculated)	79
log P	14.541 (25°C) (calculated)	79

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)	
	Arachidyl Behenate		Arachidyl Propionate		Behenyl Beeswax	
	2012 ³⁸	2012 ³⁹	2012 ³⁸	2005 ⁷	2012 ³⁹	1987 ¹³ / 2006 ⁷
Totals*	20	0.3-4	48	47	0.0003-14.2	≤10
Duration of Use						
Leave-On	20	0.3-4	39	44	0.002-14.2	≤10
Rinse-Off	NR	NR	9	3	0.0003-14.1	0.002
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	5	3	3	NR	3-14	5
Incidental Ingestion	2	3-4	6	8	8-15	≤10
Incidental Inhalation-Spray	NR	NR	NR	1 ^b	14 ^a 0.0002 (spray)	≤5 ^b
Incidental Inhalation-Powder	NR	NR	NR	NR	14	NR
Dermal Contact	18	0.3-3	37	35	0.002-14.2	≤5
Deodorant (underarm)	NR	NR	NR	NR	14.1 (not a spray)	NR
Hair - Non-Coloring	NR	NR	5	4	0.0003- 0.003	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	0.05-0.09	0.04
Mucous Membrane	2	3-4	7	8	8-15	≤10
Baby Products	NR	NR	NR	NR	NR	NR
	Behenyl Behenate		Behenyl Erucate		Behenyl Oliviate	
	2012 ³⁸	2012 ³⁹	2012 ³⁸	2012 ³⁹	2012 ³⁸	2012 ³⁹
Totals*	5	0.4-5	9	0.5	NR	0.5
Duration of Use						
Leave-On	5	0.4-5	9	0.5	NR	0.5
Rinse Off	NR	NR	NR	NR	NR	NR
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	2	0.6-5	NR	NR	NR	NR
Incidental Ingestion	NR	4	9	0.5	NR	NR
Incidental Inhalation-Spray	NR	NR	NR	NR	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR
Dermal Contact	5	0.4-2	NR	NR	NR	0.5
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	NR	NR	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR
Mucous Membrane	NR	4	9	0.5	NR	NR
Baby Products	NR	NR	NR	NR	NR	NR
	Butyl Avocadate		Butyl Myristate		Butyl Stearate	
	2012 ³⁸	2012 ³⁹	2012 ³⁸	2007 ¹⁶	2012 ³⁹	2008 ¹⁶
Totals*	10	1	4	26	5	NR
Duration of Use						
Leave-On	6	1	4	26	5	NR
Rinse-Off	4	NR	NR	NR	NR	NR
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	NR	NR	NR	NR	NR	NR
Incidental Ingestion	NR	NR	NR	16	NR	NR
Incidental Inhalation-Spray	1 ^a	NR	NR	NR	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR
Dermal Contact	6	1	4	10	NR	NR
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	4	NR	NR	NR	5	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR
Mucous Membrane	NR	NR	NR	16	NR	NR
Baby Products	NR	NR	NR	NR	NR	NR

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)			
	C20-40 Alkyl Stearate		Caprylyl Caprylate		Caprylyl Eicosenoate			
	2012 ³⁸	2012 ³⁹	2012 ³⁸	2012 ³⁹	2012 ³⁸	2012 ³⁹		
Totals*	11	NR	11	NR	2	0.3		
Duration of Use								
Leave-On	11	NR	11	NR	2	0.3		
Rinse-Off	NR	NR	NR	NR	NR	NR		
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR		
Exposure Type								
Eye Area	NR	NR	1	NR	NR	NR		
Incidental Ingestion	8	NR	NR	NR	NR	NR		
Incidental Inhalation-Spray	NR	NR	NR	NR	NR	NR		
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	0.3		
Dermal Contact	NR	NR	11	NR	2	0.3		
Deodorant (underarm)	NR	NR	NR	NR	NR	NR		
Hair - Non-Coloring	3	NR	NR	NR	NR	NR		
Hair-Coloring	NR	NR	NR	NR	NR	NR		
Nail	NR	NR	NR	NR	NR	NR		
Mucous Membrane	8	NR	NR	NR	NR	NR		
Baby Products	NR	NR	NR	NR	NR	NR		
	Cetearyl Behenate		Cetearyl Candelillate		Cetearyl Isononanoate			
	2012 ³⁸	2012 ³⁹	2012 ³⁸	2012 ³⁹	2012 ³⁸	2009 ¹⁹	2012 ³⁹	2009 ¹⁹
Totals*	3	7-15	2	6	162	123	0.2-40	0.05-50
Duration of Use								
Leave-On	3	7-15	2	6	140	108	0.2-40	0.05-50
Rinse-Off	NR	NR	NR	NR	22	15	1-4	2-3
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR	NR	NR
Exposure Type								
Eye Area	1	NR	NR	NR	18	15	NR	0.05
Incidental Ingestion	NR	7	1	6	1	1	5	NR
Incidental Inhalation-Spray	NR	NR	1 ^a	NR	8 ^a	7 ^{a,b}	40 (spray) 6 (pump spray)	27-50 ^b
Incidental Inhalation-Powder	NR	NR	NR	NR	1	2	NR	0.05-11
Dermal Contact	3	14-15	1	NR	158	120	0.2-40	0.05-50
Deodorant (underarm)	NR	NR	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	NR	NR	3	NR	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	1	2	NR	NR
Mucous Membrane	NR	7	1	6	3	3	5	NR
Baby Products	NR	NR	NR	NR	NR	NR	NR	NR
	Cetearyl Nonanoate				Cetearyl Olivatate		Cetearyl Stearate	
	2012 ³⁸	2009 ¹⁹	2012 ³⁹	2009 ¹⁹	2012 ³⁸	2012 ⁴⁰	2012 ³⁸	2012 ⁴⁰
Totals*	NR	NR	NR	3	146	0.3-3	3	NR
Duration of Use								
Leave-On	NR	NR	NR	3	114	0.3-3	3	NR
Rinse-Off	NR	NR	NR	NR	32	0.4-2	NR	NR
Diluted for (Bath) Use	NR	NR	NR	NR	NR	2 ^a	NR	NR
Exposure Type								
Eye Area	NR	NR	NR	NR	14	1-3	NR	NR
Incidental Ingestion	NR	NR	NR	NR	NR	NR	NR	NR
Incidental Inhalation-Spray	NR	NR	NR	NR	2 ^a	2 ^a	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	1	NR	NR	NR
Dermal Contact	NR	NR	NR	3	141	0.3-3	3	NR
Deodorant (underarm)	NR	NR	NR	NR	1 ^b	NR	NR	NR
Hair - Non-Coloring	NR	NR	NR	NR	3	2	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR	NR	NR
Mucous Membrane	NR	NR	NR	NR	3	NR	NR	NR
Baby Products	NR	NR	NR	NR	1	NR	NR	NR

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses		Max Conc of Use (%)		# of Uses		Max Conc of Use (%)		# of Uses		Max Conc of Use (%)	
	Cetyl Babassuate				Cetyl Caprate				Cetyl Caprylate			
	2012 ³⁸		2012 ³⁹		2012 ³⁸		2012 ³⁹		2012 ³⁸		2012 ³⁹	
Totals*	2		NR		NR		0.5		14		2-4	
Duration of Use												
Leave-On	2		NR		NR		0.5		12		2-4	
Rinse-Off	NR		NR		NR		NR		2		NR	
Diluted for (Bath) Use	NR		NR		NR		NR		NR		NR	
Exposure Type												
Eye Area	NR		NR		NR		NR		1		NR	
Incidental Ingestion	NR		NR		NR		0.5		NR		NR	
Incidental Inhalation-Spray	NR		NR		NR		NR		NR		NR	
Incidental Inhalation-Powder	NR		NR		NR		NR		1		NR	
Dermal Contact	2		NR		NR		NR		12		2-4	
Deodorant (underarm)	NR		NR		NR		NR		NR		NR	
Hair - Non-Coloring	NR		NR		NR		NR		NR		NR	
Hair-Coloring	NR		NR		NR		NR		NR		NR	
Nail	NR		NR		NR		NR		NR		NR	
Mucous Membrane	NR		NR		NR		0.5		NR		NR	
Baby Products	NR		NR		NR		NR		1		NR	
	Cetyl Esters				Cetyl Isononanoate				Cetyl Laurate			
	2012 ³⁸	1995 ¹	2012 ⁴⁰	1995 ¹	2012 ³⁸	2009 ¹⁹	2012 ³⁹	2009 ¹⁹	2012 ³⁸	2012 ³⁹		
Totals*	452	210	0.7 – 30	7	NR	NR	NR	1-5	1	NR		
Duration of Use												
Leave-On	228	168	0.8-30	7	NR	NR	NR	1-5	1	NR		
Rinse-Off	224	42	0.7-5	7	NR	NR	NR	NR	NR	NR		
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
Exposure Type												
Eye Area	28	9	3-4	NS	NR	NR	NR	1	NR	NR		
Incidental Ingestion	8	26	3-11.5	NS	NR	NR	NR	NR	NR	NR		
Incidental Inhalation-Spray	5 ^a	6 ^a	NR	NS	NR	NR	NR	NR	NR	NR		
Incidental Inhalation-Powder	1	NR	NR	NS	NR	NR	NR	NR	NR	NR		
Dermal Contact	170	156	0.8-5	NS	NR	NR	NR	1-5	1	NR		
Deodorant (underarm)	1 ^b	5 ^b	NR	NS	NR	NR	NR	NR	NR	NR		
Hair - Non-Coloring	269	11	0.7-5	NS	NR	NR	NR	1	NR	NR		
Hair-Coloring	5	15	NR	NS	NR	NR	NR	NR	NR	NR		
Nail	NR	1	NR	NS	NR	NR	NR	NR	NR	NR		
Mucous Membrane	11	30	NR	NS	NR	NR	NR	NR	NR	NR		
Baby Products	1	NR	NR	NS	NR	NR	NR	NR	NR	NR		
	Cetyl Myristate				Cetyl Palmitate				Cetyl Ricinoleate			
	2012 ⁹⁰	2007 ¹⁶	2012 ³⁹	2008 ¹⁶	2012 ³⁸	2001 ⁵	2012 ³⁹	1976 ⁹ /2001 ⁵	2012 ³⁸	2002 ²⁰	2012 ³⁹	2004 ²⁰
Totals*	4	7	NR	6	474	236	0.002-11	0.01-11	130	55	0.3-16	0.1 - 10
Duration of Use												
Leave-On	4	7	NR	6	431	208	0.002-11	0.0-11	121	50	0.3-15.2	0.1-10
Rinse-Off	NR	NR	NR	NR	43	28	0.006-5	0.02-1	9	5	0.3	0.1-0.5
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Exposure Type												
Eye Area	1	1	NR	NR	47	54	3-11	0.2-11	12	NR	0.3-5	NR
Incidental Ingestion	NR	NR	NR	NR	22	10	2-7	10	32	26	2-15.2	0.5-10
Incidental Inhalation-Spray	NR	NR	NR	NR	16 ^a	13 ^{a,b}	0.4 ^a -6; 8 (pump spray)	2 ^a	1 ^a	1 ^a	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR	0.8	NR	4	NR	NR	NR
Dermal Contact	4	7	NR	6	442	213	0.002-11	0.02-11	89	29	0.3-6	0.1-4
Deodorant (underarm)	NR	NR	NR	NR	2 ^b	NR	NR	0.3 ^b	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	NR	NR	10	12	2	1	NR	NR	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR	0.8	0.2	NR	NR	NR	NR
Nail	NR	NR	NR	NR	2	NR	2-7	NR	NR	NR	NR	NR
Mucous Membrane	NR	NR	NR	NR	26	10	0.006-7	0.02-10	32	26	2-15.2	0.5-10
Baby Products	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses Max Conc of Use (%)				# of Uses Max Conc of Use (%)				# of Uses Max Conc of Use (%)			
	Cetyl Stearate				Cetyl Tallowate				Coco-Caprylate			
	2012 ³⁸	2002 ⁵	2012 ³⁹	1985 ¹¹ / 2003 ⁵	2012 ³⁸		2012 ³⁹		2012 ³⁸		2012 ³⁹	
Totals	5	2	1-4	0.3-15	1		NR		5		NR	
Duration of Use												
Leave-On	5	2	4	0.3-15	1		NR		5		NR	
Rinse Off	NR	NR	1	0.6-3	NR		NR		NR		NR	
Diluted for (Bath) Use	NR	NR	NR	NR	NR		NR		NR		NR	
Exposure Type												
Eye Area	2	NR	NR	0.6-10	NR		NR		1		NR	
Incidental Ingestion	NR	2	NR	NR	NR		NR		NR		NR	
Incidental Inhalation-Spray	NR	NR	NR	NR	NR		NR		NR		NR	
Incidental Inhalation-Powder	NR	NR	NR	>1-5	NR		NR		NR		NR	
Dermal Contact	5	NR	NR	0.3-15	1		NR		NR		NR	
Deodorant (underarm)	NR	NR	NR	NR	NR		NR		NR		NR	
Hair - Non-Coloring	NR	NR	1-4	2-3	NR		NR		NR		NR	
Hair-Coloring	NR	NR	NR	NR	NR		NR		NR		NR	
Nail	NR	NR	NR	NR	NR		NR		NR		NR	
Mucous Membrane	NR	2	NR	NR	NR		NR		NR		NR	
Baby Products	NR	NR	NR	NR	NR		NR		NR		NR	
	Coco-Caprylate/Caprates				Decyl Cocoate				Decyl Oleate			
	2012 ³⁸		2012 ³⁹		2012 ³⁸	2007 ¹⁷	2012 ³⁹	2008 ¹⁷	2012 ³⁸	2001 ⁴	2012 ³⁹	1976 ³⁶ / 2001 ⁴
Totals	232		0.5-62		5	NR	NR	NR	200	147	0.5-20	≤0.1-88
Duration of Use												
Leave-On	204		0.5-35		3	NR	NR	NR	185	121	0.5-4	0.5-88
Rinse Off	22		1-62		2	NR	NR	NR	15	25	2-20	≤0.1-25
Diluted for (Bath) Use	6		NR		NR	NR	NR	NR	NR	1	NR	>5-25
Exposure Type												
Eye Area	26		0.7-35		NR	NR	NR	NR	6	NR	20	>1- >50
Incidental Ingestion	2		0.5-9		NR	NR	NR	NR	NR	1	NR	8
Incidental Inhalation-Spray	15 ^a		2-6 ^a		NR	NR	NR	NR	1	3	2 (pump spray)	>0.1-1 (spray); >1-88 ^{a,b}
Incidental Inhalation-Powder	1		4-16		NR	NR	NR	NR	NR	1	NR	NR
Dermal Contact	229		0.5-62		5	NR	NR	NR	189	137	0.5-20	≤0.1-88
Deodorant (underarm)	NR		NR		NR	NR	NR	NR	1 ^b	1 ^b	NR	NR
Hair - Non-Coloring	1		30		NR	NR	NR	NR	10	6	2-3	>0.1-1
Hair-Coloring	NR		NR		NR	NR	NR	NR	NR	NR	2	3
Nail	NR		NR		NR	NR	NR	NR	1	3	NR	>5-10
Mucous Membrane	9		0.5-9		NR	NR	NR	NR	NR	1	NR	>5-88
Baby Products	NR		NR		NR	NR	NR	NR	NR	NR	NR	>1-5
	Decyl Olivates				Ethylhexyl Cocoate				Ethylhexyl Hydroxystearate			
	2012 ³⁸		2012 ³⁹		2012 ³⁸	2007 ¹⁷	2012 ³⁹	2008 ¹⁷	2012 ³⁸		2012 ³⁹	
Totals*	1		NR		89	18	0.0006-41	0.01-41	253		0.09-18	
Duration of Use												
Leave-On	1		NR		77	17	0.0006-41	0.01-41	228		0.1-18	
Rinse-Off	NR		NR		12	1	5-9	3-5	25		0.09-3	
Diluted for (Bath) Use	NR		NR		NR	NR	6	6	NR		3	
Exposure Type												
Eye Area	NR		NR		10	5	12	0.02-2	16		2-8	
Incidental Ingestion	NR		NR		4	NR	8	0.01-19	79		2-18	
Incidental Inhalation-Spray	NR		NR		11 ^a	1	NR	4-10 ^a	3 ^a		NR	
Incidental Inhalation-Powder	NR		NR		NR	NR	NR	NR	1		NR	
Dermal Contact	1		NR		80	16	2-41	0.02-41	150		0.1-9	
Deodorant (underarm)	NR		NR		NR	NR	NR	5 ^b	NR		NR	
Hair - Non-Coloring	NR		NR		2	2	NR	NR	4		0.09-2	
Hair-Coloring	NR		NR		NR	NR	NR	NR	NR		NR	
Nail	NR		NR		3	NR	0.0006	NR	NR		NR	
Mucous Membrane	NR		NR		5	NR	8	0.01-19	91		0.2-18	
Baby Products	NR		NR		NR	NR	NR	5	NR		NR	

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses Max Conc of Use (%)				# of Uses Max Conc of Use (%)				# of Uses Max Conc of Use (%)			
	Ethylhexyl Isononanoate				Ethylhexyl Isopalmitate				Ethylhexyl Isostearate			
	2012 ³⁸	2009 ¹⁹	2012 ³⁹	2009 ¹⁹	2012 ³⁸	2012 ³⁹			2012 ³⁸	2012 ³⁹		
Totals*	137	116	0.02-75	0.02-74	6	NR			6	27-40		
Duration of Use												
Leave-On	134	112	0.02-75	0.02-74	6	NR			6	27-40		
Rinse-Off	3	4	0.3-20	0.8-1	NR	NR			NR	NR		
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR			NR	NR		
Exposure Type												
Eye Area	6		0.8-20	0.8-65	1	NR			6	27-40		
Incidental Ingestion	1	9	2	NR	NR	NR			NR	NR		
Incidental Inhalation-Spray	4	27 ^{a,b}	0.02-0.1 ^a ; 2; 4 (pump spray)	18 0.03-7 ^{a,b}	1 ^a	NR			NR	NR		
Incidental Inhalation-Powder	2	NR	NR	3	NR	NR			NR	NR		
Dermal Contact	131	102	0.02-75	0.02-74	6	NR			1	27-40		
Deodorant (underarm)	NR	NR	3 (not spray)	NR	NR	NR			NR	NR		
Hair - Non-Coloring	5	4	8	0.8-8	NR	NR			NR	NR		
Hair-Coloring	NR	NR	NR	NR	NR	NR			NR	NR		
Nail	NR	NR	NR	NR	NR	NR			NR	NR		
Mucous Membrane	2	10	2	NR	NR	NR			NR	NR		
Baby Products	NR	NR	NR	NR	NR	NR			NR	NR		
Ethylhexyl Laurate												
	2012 ³⁸		2012 ³⁹		2012 ³⁸	2007 ¹⁶	2012 ³⁹	2008 ¹⁶	2012 ³⁸		2012 ³⁹	
Totals*	1		NR		2	NR	NR	NR	2		NR	
Duration of Use												
Leave-On	1		NR		1	NR	NR	NR	2		NR	
Rinse-Off	NR		NR		1	NR	NR	NR	NR		NR	
Diluted for (Bath) Use	NR		NR		NR	NR	NR	NR	NR		NR	
Exposure Type												
Eye Area	NR		NR		NR	NR	NR	NR	1		NR	
Incidental Ingestion	NR		NR		NR	NR	NR	NR	NR		NR	
Incidental Inhalation-Spray	NR		NR		NR	NR	NR	NR	NR		NR	
Incidental Inhalation-Powder	NR		NR		NR	NR	NR	NR	NR		NR	
Dermal Contact	1		NR		2	NR	NR	NR	2		NR	
Deodorant (underarm)	NR		NR		NR	NR	NR	NR	NR		NR	
Hair - Non-Coloring	NR		NR		NR	NR	NR	NR	NR		NR	
Hair-Coloring	NR		NR		NR	NR	NR	NR	NR		NR	
Nail	NR		NR		NR	NR	NR	NR	NR		NR	
Mucous Membrane	NR		NR		NR	NR	NR	NR	NR		NR	
Baby Products	NR		NR		NR	NR	NR	NR	NR		NR	
Ethylhexyl Palmitate												
	2012 ³⁸	2001 ⁵	2012 ³⁹	1976 ⁹ /2001 ⁵	2012 ³⁸	2009 ¹⁹	2012 ³⁹	2009 ¹⁹	2012 ³⁸	2002 ⁵	2012 ³⁹	1985 ¹¹ /2003 ⁵
Totals	1298	417	0.0003-78	0.1 - >50	3	3	2-4	2-25	318	31	0.0004-38	>0.1-25
Duration of Use												
Leave-On	1246	407	0.0003-78	0.1 - >50	2	2	2	3-25	286	27	0.0004-38	>0.1-25
Rinse Off	50	10	0.05-50	2-21	1	1	3-4	2-5	27	2	0.1-29	NR
Diluted for (Bath) Use	2	NR	10	6-23	NR	NR	NR	NR	5	2	NR	>0.1-5
Exposure Type												
Eye Area	281	141	0.01-50	0.2 - >50	NR	NR	NR	2	39	5	0.003-38	0.8-11
Incidental Ingestion	210	100	NR	4-42	NR	NR	NR	NR	6	1	19-27.1	NR
Incidental Inhalation-Spray	51 ^a	2 ^b	3-16; 4-45 (aerosol); 0.4 (pump spray)	21 (spray) 0.5- >50 ^{a,b}	NR	NR	NR	NR	16 ^a	5 ^{a,b}	2-10 ^a	NR
Incidental Inhalation-Powder	67	13	0.3-10	0.3-22	NR	NR	NR	NR	9	2	6	0.5
Dermal Contact	1264	314	0.003-78	0.1 - >50	3	3	2	2-25	303	31	0.0004-38	>0.1-25
Deodorant (underarm)	6	1	1 (aerosol)	2 ^b	NR	NR	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	18	NR	2-4	2-17	NR	NR	NR	NR	9	NR	5	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR	3-4	5	NR	NR	29	NR
Nail	15	3	5-50	5-28	NR	NR	NR	NR	NR	NR	NR	NR
Mucous Membrane	216	100	1-10	4-42	NR	NR	NR	NR	15	3	5-27.1	>0.1-5
Baby Products	2	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses	Max Conc of Use (%)	# of Uses	Max Conc of Use (%)	# of Uses	Max Conc of Use (%)
	Heptyl Undecylenate		Heptylundecyl Hydroxystearate		Hexyl Isostearate	
	2012³⁸	2012³⁹	2012³⁸	2012³⁹	2012³⁸	2012³⁹
Totals*	3	0.01-26	10	20	NR	0.008-0.04
Duration of Use						
<i>Leave-On</i>	3	0.01-26	10	20	NR	0.008-0.04
<i>Rinse-Off</i>	NR	0.01-0.1	NR	NR	NR	NR
<i>Diluted for (Bath) Use</i>	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	3	26	8	NR	NR	NR
Incidental Ingestion	NR	NR	2	20	NR	NR
Incidental Inhalation-Spray	NR	0.01 (pump spray)	NR	NR	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR
Dermal Contact	3	10-26	8	NR	NR	0.008
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	0.01-0.1	NR	NR	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	0.04
Mucous Membrane	NR	NR	2	20	NR	NR
Baby Products	NR	NR	NR	NR	NR	NR
	Hexyl Laurate		Hexyldecyl Isostearate		Hexyldecyl Laurate	
	2012³⁸	2012³⁹	2012³⁸	2012³⁹	2012³⁸	2012³⁹
Totals*	182	0.07-3	NR	0.2-2	39	1-2
Duration of Use						
<i>Leave-On</i>	179	0.07-3	NR	2	33	2
<i>Rinse-Off</i>	3	2	NR	0.2-7	6	2
<i>Diluted for (Bath) Use</i>	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	16	0.3-3	NR	NR	2	NR
Incidental Ingestion	15	0.1-2	NR	NR	NR	NR
Incidental Inhalation-Spray	12 ^a	0.07-0.1	NR	NR	NR	NR
Incidental Inhalation-Powder	1	2	NR	NR	NR	NR
Dermal Contact	177	0.07-3	NR	0.2-2	36	1-2
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	2	2-3	NR	0.7-2	5	2
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	1	2	NR	NR	NR	NR
Mucous Membrane	15	0.1-2	NR	NR	NR	NR
Baby Products	3	NR	NR	NR	NR	NR
	Hexyldecyl Stearate		Hydrogenated Ethylhexyl Olivat		Hydroxyoctacosanyl Hydroxystearate	
	2012³⁸	2012³⁹	2012³⁸	2012³⁹	2012³⁸	2012³⁹
Totals	32	0.5-13	7	0.05-15.5	5	NR
Duration of Use						
<i>Leave-On</i>	23	0.5-13	6	4-15.5	5	NR
<i>Rinse Off</i>	9	3	1	0.05	NR	NR
<i>Diluted for (Bath) Use</i>	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	2	3	2	4	1	NR
Incidental Ingestion	NR	0.9	NR	NR	NR	NR
Incidental Inhalation-Spray	NR	NR	NR	15.5 (pump spray)	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR
Dermal Contact	32	0.5-13	6	4-7	5	NR
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	1	0.05-15.5	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR
Mucous Membrane	NR	NR	NR	NR	NR	NR
Baby Products	NR	NR	NR	NR	NR	NR

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses		Max Conc of Use (%)		# of Uses		Max Conc of Use (%)		# of Uses		Max Conc of Use (%)	
	Isoamyl Laurate				Isobutyl Myristate				Isobutyl Stearate			
Totals	2012 ³⁸		2012 ³⁹		2012 ³⁸	2007 ¹⁶	2012 ³⁹	2008 ¹⁶	2012 ³⁸	2002 ⁵	2012 ³⁹	2003 ⁵
Duration of Use	NR		1-2		NR	NR	NR	3-30	NR	3	NR	7
Leave-On	NR		1		NR	NR	NR	3-30	NR	2	NR	7
Rinse Off	NR		2		NR	NR	NR	10	NR	1	NR	NR
Diluted for (Bath) Use	NR		NR		NR	NR	NR	NR	NR	NR	NR	NR
Exposure Type												
Eye Area	NR		NR		NR	NR	NR	NR	NR	NR	NR	NR
Incidental Ingestion	NR		NR		NR	NR	NR	NR	NR	NR	NR	NR
Incidental Inhalation-Spray	NR		NR		NR	NR	NR	3 ^a	NR	NR	NR	NR
Incidental Inhalation-Powder	NR		NR		NR	NR	NR	NR	NR	NR	NR	NR
Dermal Contact	NR		NR		NR	NR	NR	3-30	NR	3	NR	7
Deodorant (underarm)	NR		1-2		NR	NR	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR		NR		NR	NR	NR	NR	NR	NR	NR	NR
Hair-Coloring	NR		NR		NR	NR	NR	NR	NR	NR	NR	NR
Nail	NR		NR		NR	NR	NR	NR	NR	NR	NR	NR
Mucous Membrane	NR		NR		NR	NR	NR	NR	NR	1	NR	NR
Baby Products	NR		NR		NR	NR	NR	NR	NR	NR	NR	NR
	Isocetyl Myristate				Isocetyl Palmitate				Isocetyl Stearate			
	2012 ³⁸	2007 ¹⁶	2012 ³⁹	2008 ¹⁶	2012 ³⁸	2012 ³⁹			2012 ³⁸	2002 ⁵	2012 ³⁹	1985 ¹¹ / 2003 ⁵
Totals	10	6	0.4-37	NR	5	NR			202	84	0.1-34	0.02-30
Duration of Use												
Leave-On	9	NR	0.4-36.5	NR	5	NR			189	77	0.1-34	0.1-30
Rinse Off	1	NR	NR	NR	NR	NR			13	7	0.6-5	0.02-30
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR			NR	NR	NR	NR
Exposure Type												
Eye Area	3	NR	NR	NR	NR	NR			2	2	0.1-16	30
Incidental Ingestion	NR	NR	NR	NR	NR	NR			14	4	0.3-24	0.1-24
Incidental Inhalation-Spray	NR	NR	NR	NR	NR	NR			3 ^a	NR	0.6 ^a	10
											34 (pump spray)	
Incidental Inhalation-Powder	1	NR	0.4-2	NR	NR	NR			4	NR	NR	>1-25
Dermal Contact	10	NR	0.4-36.5	NR	5	NR			188	79	0.1-34	0.02-30
Deodorant (underarm)	NR	NR	NR	NR	NR	NR			NR	NR	NR	3
Hair - Non-Coloring	NR	NR	NR	NR	NR	NR			8	NR	0.5-1	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR			NR	NR	0.6	NR
Nail	NR	NR	NR	NR	NR	NR			NR	1	NR	>1-5
Mucous Membrane	NR	NR	NR	NR	NR	NR			15	4	0.3-24	0.1-30
Baby Products	NR	NR	NR	NR	NR	NR			NR	NR	NR	NR
	Isodecyl Cocoate				Isodecyl Isononanoate				Isodecyl Laurate			
	2012 ³⁸	2007 ¹⁷	2012 ³⁹	2008 ¹⁷	2012 ³⁸	2009 ¹⁹	2012 ³⁹	2009 ¹⁹	2012 ³⁸	2012 ³⁹		
Totals*	NR	NR	2	NR	36	26	1-43.5	0.05-59	4	NR		
Duration of Use												
Leave-On	NR	NR	2	NR	33	24	1-43.5	0.05-59	2	NR		
Rinse-Off	NR	NR	NR	NR	3	2	10	2-10	2	NR		
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
Exposure Type												
Eye Area	NR	NR	NR	NR	8	2	1-40	6-21	2	NR		
Incidental Ingestion	NR	NR	NR	NR	4	NR	40-43.5	0.05-18	NR	NR		
Incidental Inhalation-Spray	NR	NR	NR	NR	2 ^a	2 ^a	NR	5 ^a	NR	NR		
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
Dermal Contact	NR	NR	2	NR	32	25	1-40	2-59	4	NR		
Deodorant (underarm)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
Hair - Non-Coloring	NR	NR	NR	NR	NR	1	NR	2	NR	NR		
Hair-Coloring	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
Nail	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
Mucous Membrane	NR	NR	NR	NR	4	NR	40-43.5	0.05-18	NR	NR		
Baby Products	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses Max Conc of Use (%)				# of Uses Max Conc of Use (%)				# of Uses Max Conc of Use (%)			
	Isodecyl Myristate				Isodecyl Neopentanoate				Isodecyl Oleate			
	2012 ³⁸	2007 ¹⁶	2012 ³⁹	2008 ¹⁶	2012 ³⁸	2012 ³⁹	2012 ³⁸	2001 ⁴	2012 ³⁹	1976 ³⁶ / 2001 ⁴		
Totals*	1	1	NR	NR	126	0.05-17	15	44	0.07-4	>0.1 - 25		
Duration of Use												
Leave-On	1	1	NR	NR	121	0.05-17	14	37	0.07-4	>1 - 25		
Rinse-Off	NR	NR	NR	NR	5	0.1-2	1	7	2-3	>1 - 25		
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR	NR	NR	NR	>0.1 - 10		
Exposure Type												
Eye Area	1	NR	NR	NR	25	1-17	NR	1	2	>1 - 5		
Incidental Ingestion	NR	NR	NR	NR	8	0.6-5	NR	22	0.07	4-8		
Incidental Inhalation-Spray	NR	NR	NR	NR	7 ^a	3 0.5 (aerosol) 0.3 (pump spray)	3	1	4 (aerosol) 2 (pump spray)	3 ^a		
Incidental Inhalation-Powder	NR	NR	NR	NR	4	2	NR	NR	NR	NR		
Dermal Contact	1	1	NR	NR	116	0.05-17	4	17	2-3	>0.1-25		
Deodorant (underarm)	NR	NR	NR	NR	NR	NR	NR	NR	NR	>1-5		
Hair - Non-Coloring	NR	NR	NR	NR	1	0.3-2	10	4	2-4	2		
Hair-Coloring	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
Nail	NR	NR	NR	NR	NR	NR	1	1	NR	NR		
Mucous Membrane	NR	NR	NR	NR	8	0.6-5	NR	22	0.07	>0.1-10		
Baby Products	NR	NR	NR	NR	NR	3	NR	NR	NR	NR		
	Isohexyl Caprate				Isononyl Isononanoate				Isopropyl Hydroxystearate			
	2012 ³⁸		2012 ³⁹		2012 ³⁸	2009 ¹⁹	2012 ³⁹	2009 ¹⁹	2012 ³⁸		2012 ³⁹	
Totals*	3		NR		611	343	0.07-53	0.03-64	NR		8	
Duration of Use												
Leave-On	3		NR		588	328	0.07-53	0.04-64	NR		8	
Rinse-Off	NR		NR		23	15	0.3-25	0.03	NR		NR	
Diluted for (Bath) Use	NR		NR		NR	NR	15	15	NR		NR	
Exposure Type												
Eye Area	NR		NR		80	47	0.8-53	2-26	NR		8	
Incidental Ingestion	NR		NR		47	28	5-47	8-50	NR		NR	
Incidental Inhalation-Spray	NR		NR		32 ^a	20 ^{a,b}	0.1-6 ^a , 26-45 0.4 (pump spray)	0.4-6; 0.08-21 ^a , 21-46 ^b	NR		NR	
Incidental Inhalation-Powder	NR		NR		28	12	4-9	2-15	NR		NR	
Dermal Contact	3		NR		559	314	0.07-53	0.04-64	NR		8	
Deodorant (underarm)	NR		NR		1 ^b	1 ^b	7 (not spray) 7 (aerosol)	3 ^b	NR		NR	
Hair - Non-Coloring	NR		NR		3	1	0.4-1	0.08-7	NR		NR	
Hair-Coloring	NR		NR		NR	NR	NR	33	NR		NR	
Nail	NR		NR		2	NR	6	0.4-5	NR		NR	
Mucous Membrane	NR		NR		48	29	5-47	8-50	NR		NR	
Baby Products	NR		NR		NR	NR	3	NR	NR		NR	
	Isopropyl Isostearate				Isopropyl Jojobate				Isopropyl Linoleate			
	2012 ³⁸	2005 ⁸	2012 ³⁹	1989 ²¹ / 2007 ⁸	2012 ³⁸		2012 ³⁹		2012 ³⁸	1988 ¹⁵	2012 ³⁹	1988 ¹⁵
Totals	225	69	0.5-19	≤0.1-65	22		0.3-6		NR	21^c	0.1	>0.1-10^c
Duration of Use												
Leave-On	212	63	0.5-19	≤0.1-30	22		0.3-6		NR	NS	0.1	NS
Rinse Off	13	6	0.7-6	2-65	NR		NR		NR	NS	0.1	NS
Diluted for (Bath) Use	NR	NR	NR	NR	NR		NR		NR	NS	NR	NS
Exposure Type												
Eye Area	59	9	0.8-10	0.6-8	2		0.7		NR	NS	NR	NS
Incidental Ingestion	18	NR	15-17	12-24	3		NR		NR	NS	NR	NS
Incidental Inhalation-Spray	7 ^a	NR	0.6 (pump spray)	NR	1 ^a		NR		NR	NS	NR	NS
Incidental Inhalation-Powder	16	2	2-19	0.6-30	NR		NR		NR	NS	0.1	NS
Dermal Contact	203	68	0.5-19	≤0.1-30	19		0.7-6		NR	NS	0.1	NS
Deodorant (underarm)	NR	NR	NR	5	NR		NR		NR	NS	NR	NS
Hair - Non-Coloring	3	1	0.5-0.8	65	NR		NR		NR	NS	0.1	NS
Hair-Coloring	NR	NR	NR	NR	NR		NR		NR	NS	NR	NS
Nail	NR	NR	NR	NR	NR		NR		NR	NS	NR	NS
Mucous Membrane	19	NR	15-17	12-24	3		NR		NR	NS	NR	NS
Baby Products	2	2	NR	NR	NR		NR		NR	NS	NR	NS

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses Max Conc of Use (%)				# of Uses Max Conc of Use (%)				# of Uses Max Conc of Use (%)			
	Isopropyl Myristate				Isopropyl Palmitate				Isopropyl Ricinoleate			
	2012 ³⁸	2007 ¹⁶	2012 ³⁹	2008 ¹⁶	2012 ³⁸	2001 ⁵	2012 ³⁹	1976 ⁹ /2001 ⁵	2012 ³⁸	2002 ²⁰	2012 ³⁹	2004 ²⁰
Totals	1149	1057	0.000005-77.3	0.001-82	999	535	0.0001-60	0.000002 - >50	NR	NR	2	NR
Duration of Use												
Leave-On	932	874	0.0002-77.3	0.001-82	888	434	0.0001-60	0.00001 - >50	NR	NR	2	NR
Rinse Off	202	160	0.000005-67	0.4-60	85	81	0.0003-31	0.000002-11	NR	NR	NR	NR
Diluted for (Bath) Use	15	23	1-22	2-23	26	20	0.001-60	0.3-60	NR	NR	NR	NR
Exposure Type												
Eye Area	130	99	0.9-31	0.04-20	72	19	0.1-34	0.25-10	NR	NR	NR	NR
Incidental Ingestion	53	49	2-18	1-26	104	80	1-34	5-25	NR	NR	2	NR
Incidental Inhalation-Spray	72 ^a	55	0.6-36 ^a 0.02-76.6 (aerosol)	0.02-10 1-58 ^b	47 ^a	43 ^{a,b}	0.4-5 ^a , 9-60 ^b 0.8-17 (aero- sol); 3-20 (pump spray)	0.2-60 ^{a,b}	NR	NR	NR	NR
Incidental Inhalation-Powder	24	19	0.7-3	0.3-4	33	12	3-18	0.00001 - 14	NR	NR	NR	NR
Dermal Contact	923	893	0.0003-60	0.001-82	829	415	0.0001-60	0.000002 - >50	NR	NR	NR	NR
Deodorant (underarm)	20 ^b	10	0.0003-23 (not spray) 0.03-23 (aer- osol) 8 (pump spray)	0.08-51	15	1 ^b	0.5-17 (not spray) 3-5 (aerosol)	0.0023-17 ^b	NR	NR	NR	NR
Hair - Non-Coloring	143	107	0.000005-77.3	0.02-48	33	17	0.0003-20	0.00005 - 12	NR	NR	NR	NR
Hair-Coloring	21	5	30-68	22-30 (11-22 after dilution)	NR	16	44	>0.1 - 1	NR	NR	NR	NR
Nail	9	7	0.05-38	3-38	14	6	0.5-12	0.06-10	NR	NR	NR	NR
Mucous Membrane	111	91	1-22	1-60	139	91	0.05-34	0.00001 - 60	NR	NR	2	NR
Baby Products	6	4	17	3	4	4	2-11	5	NR	NR	NR	NR
	Isopropyl Stearate				Isostearyl Avocateate				Isostearyl Behenate			
	2012 ³⁸	2002 ⁵	2012 ³⁹	1985 ¹¹ / 2003 ⁵	2012 ³⁸	2012 ³⁹			2012 ³⁸	2012 ³⁹		
Totals*	10	16	0.9-16	0.5-87	1	NR			7	4		
Duration of Use												
Leave-On	9	12	1-16	0.5-50	1	NR			7	4		
Rinse-Off	1	4	0.9-9	6-87	NR	NR			NR	NR		
Diluted for (Bath) Use	NR	NR	7	>5-10	NR	NR			NR	NR		
Exposure Type												
Eye Area	1	3	2	5-76	NR	NR			NR	NR		
Incidental Ingestion	NR	NR	16	87	NR	NR			NR	NR		
Incidental Inhalation-Spray	NR	NR	NR	>25-50 ^b	NR	NR			NR	NR		
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR			NR	NR		
Dermal Contact	10	16	1-9	0.5-76	1	NR			7	4		
Deodorant (underarm)	1 ^b	NR	NR	3	NR	NR			NR	NR		
Hair - Non-Coloring	NR	NR	NR	6-8	NR	NR			NR	NR		
Hair-Coloring	NR	NR	NR	NR	NR	NR			NR	NR		
Nail	NR	NR	0.9	10	NR	NR			NR	NR		
Mucous Membrane	NR	NR	16	87	NR	NR			NR	NR		
Baby Products	NR	NR	NR	NR	NR	NR			NR	NR		

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)	
	Isoctearyl Hydroxystearate		Isoctearyl Isononanoate		Isoctearyl Isostearate	
	2012³⁸	2012³⁹	2012³⁸	2009¹⁹	2012³⁸	2012³⁹
Totals*	21	0.01-3	4	NR	NR	NR
Duration of Use						
<i>Leave-On</i>	21	0.01-3	3	NR	NR	NR
<i>Rinse-Off</i>	NR	NR	1	NR	NR	NR
<i>Diluted for (Bath) Use</i>	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	7	3	NR	NR	NR	NR
Incidental Ingestion	NR	NR	NR	NR	NR	NR
Incidental Inhalation-Spray	NR	NR	NR	NR	NR	NR
Incidental Inhalation-Powder	3	0.01	NR	NR	NR	NR
Dermal Contact	14	0.01-3	NR	NR	NR	NR
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	NR	NR	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	9	NR	NR	NR
Mucous Membrane	7	NR	NR	NR	NR	NR
Baby Products	NR	NR	NR	NR	NR	NR
	Isoctearyl Laurate		Isoctearyl Linoleate		Isoctearyl Myristate	
	2012³⁸	2012³⁹	2012³⁸	2012³⁹	2012³⁸	2012³⁹
Totals*	NR	0.4	2	2-3	1	NR
Duration of Use						
<i>Leave-On</i>	NR	NR	2	2-3	1	NR
<i>Rinse-Off</i>	NR	0.4	NR	NR	NR	NR
<i>Diluted for (Bath) Use</i>	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	NR	NR	NR	NR	NR	NR
Incidental Ingestion	NR	NR	NR	2	NR	NR
Incidental Inhalation-Spray	NR	NR	NR	NR	NR	NR
Incidental Inhalation-Powder	NR	NR	1	NR	NR	NR
Dermal Contact	NR	0.4	2	2-3	1	NR
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	NR	NR	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR
Mucous Membrane	NR	NR	NR	2	NR	NR
Baby Products	NR	NR	NR	NR	NR	NR
	Isoctearyl Neopentanoate				Isoctearyl Palmitate	
	2012³⁸	2002⁶	2012³⁹	1981¹² 2003⁶	2012³⁸	2012³⁹
Totals	225	71	0.5-46	0.2-50	48	0.2-17
Duration of Use						
<i>Leave-On</i>	210	66	0.5-46	0.2-50	41	0.2-17
<i>Rinse Off</i>	15	4	5-16	>5-25	7	0.5-8
<i>Diluted for (Bath) Use</i>	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	78	7	3-30	1-25	7	0.2-5
Incidental Ingestion	8	3	4-19	9-14	3	5-8
Incidental Inhalation-Spray	4 ^a	6 ^{a,b}	0.5 (pump spray)	2-4 ^a	3 ^a	NR
Incidental Inhalation-Powder	34	3	1-16	3-6	8	1-16
Dermal Contact	211	68	0.5-46	0.2-50	39	0.2-17
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	13	NR	16	NR	6	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	1	NR	NR	NR	NR	1
Mucous Membrane	8	3	4-19	9-14	3	0.5-8
Baby Products	NR	NR	NR	NR	NR	NR

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)	
	Isotridecyl Stearate		Lauryl Laurate		Lauryl Palmitate	
	2012³⁸	2012³⁹	2012³⁸	2012³⁹	2012³⁸	2012³⁹
Totals*	1	NR	30	0.1-16	2	NR
Duration of Use						
<i>Leave-On</i>	1	NR	30	0.1-16	1	NR
<i>Rinse-Off</i>	NR	NR	NR	NR	1	NR
<i>Diluted for (Bath) Use</i>	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	1	NR	2	0.8-16	NR	NR
Incidental Ingestion	NR	NR	1	NR	NR	NR
Incidental Inhalation-Spray	NR	NR	3	NR	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	0.1	NR	NR
Dermal Contact	1	NR	27	0.1-16	1	NR
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	1	NR	1	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	1	NR	NR	NR
Mucous Membrane	NR	NR	1	NR	NR	NR
Baby Products	NR	NR	NR	NR	NR	NR
	Myristyl Laurate		Myristyl Myristate		Myristyl Neopentanoate	
	2012³⁸	2012³⁹	2012³⁸	2007¹⁶	2012³⁹	2008¹⁶
Totals*	10	0.1-2	402	304	0.5-17	0.3-17
Duration of Use						
<i>Leave-On</i>	9	0.2-2	360	271	0.5-17	0.4-17
<i>Rinse-Off</i>	1	0.1-0.7	38	28	0.5-4	0.3-2
<i>Diluted for (Bath) Use</i>	NR	NR	4	5	1-2	NR
Exposure Type						
Eye Area	1	0.4-2	58	34	1-12	0.4-13
Incidental Ingestion	1	2	30	18	1-12	6-9
Incidental Inhalation-Spray	NR	0.2 ^a	15 ^a	9 ^{a,b}	0.5-0.8 ^a , 2-17	2-17 ^{a,b}
Incidental Inhalation-Powder	NR	NR	6	NR	2-5	NR
Dermal Contact	9	0.1-2	354	269	0.5-17	0.3-17
Deodorant (underarm)	NR	NR	14 ^b	6 ^b	2 (not a spray)	2 ^b
Hair - Non-Coloring	NR	0.4-0.5	17	13	0.5-8	2
Hair-Coloring	NR	NR	NR	NR	1	NR
Nail	NR	NR	1	4	1-7	2-3
Mucous Membrane	1	2	35	23	1-12	3-9
Baby Products	NR	NR	4	15	2-3	1-2
	Myristyl Stearate		Octyldodecyl Erucate		Octyldodecyl Hydroxystearate	
	2012³⁸	2002⁵	2012³⁹	1985¹¹/ 2003⁵	2012³⁸	2012³⁹
Totals*	2	NR	NR	>1-5	1	0.01-10
Duration of Use						
<i>Leave-On</i>	2	NR	NR	>1-5	1	0.01-10
<i>Rinse-Off</i>	NR	NR	NR	NR	NR	0.01-0.1
<i>Diluted for (Bath) Use</i>	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	NR	NR	NR	NR	NR	0.01-0.2
Incidental Ingestion	NR	NR	NR	NR	NR	10
Incidental Inhalation-Spray	NR	NR	NR	NR	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	0.1
Dermal Contact	2	NR	NR	>1-5	1	0.1-1
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	NR	NR	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	4	NR	0.01
Mucous Membrane	NR	NR	NR	NR	NR	10
Baby Products	NR	NR	NR	NR	NR	NR

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)	
	Octyldodecyl Isostearate		Octyldodecyl Myristate		Octyldodecyl Neopentanoate	
	2012 ³⁸	2012 ³⁹	2012 ³⁸	2007 ¹⁶	2012 ³⁹	2008 ¹⁶
Totals*	1	2	142	95	0.05-32	0.007-21
Duration of Use						
Leave-On	1	2	130	88	0.05-32	0.07-21
Rinse-Off	NR	NR	12	7	0.4-3	NR
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	NR	2	16	7	0.05-2	0.3-2
Incidental Ingestion	1	NR	19	10	0.08-21	0.07-21
Incidental Inhalation-Spray	NR	NR	11 ^a	7 ^a	NR	1 ^a
						20 (pump spray)
Incidental Inhalation-Powder	NR	NR	3	2	NR	NR
Dermal Contact	NR	2	138	83	0.05-32	0.007-12
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	2	1	3	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR
Mucous Membrane	1	NR	19	10	0.08-21	0.07-21
Baby Products	NR	NR	2	2	NR	NR
	Octyldodecyl Octyldodecanoate		Octyldodecyl Olivatate		Octyldodecyl Ricinoleate	
	2012 ³⁸	2012 ³⁹	2012 ³⁸	2012 ³⁹	2012 ³⁸	2002 ²⁰
Totals	1	4	11	2	11	NR
Duration of Use						
Leave-On	1	4	11	2	6	NR
Rinse Off	NR	NR	NR	NR	5	NR
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	NR	NR	2	NR	NR	NR
Incidental Ingestion	NR	NR	NR	NR	NR	NR
Incidental Inhalation-Spray	NR	NR	NR	NR	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR
Dermal Contact	1	4	11	2	3	NR
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	NR	NR	8	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR
Mucous Membrane	NR	NR	NR	NR	NR	NR
Baby Products	NR	NR	NR	NR	NR	NR
	Octyldodecyl Stearate		Oleyl Erucate		Oleyl Linoleate	
	2012 ³⁸	2012 ³⁹	2012 ³⁸	2012 ³⁹	2012 ³⁸	2012 ³⁹
Totals	29	3-19	44	1-12	NR	10-11
Duration of Use						
Leave-On	29	3-19	40	1-12	NR	10-11
Rinse Off	NR	NR	4	NR	NR	10
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR
Exposure Type						
Eye Area	21	4-19	1	12	NR	NR
Incidental Ingestion	2	9	16	NR	NR	10
Incidental Inhalation-Spray	NR	NR	8 ^a	NR	NR	NR
Incidental Inhalation-Powder	1	NR	NR	11	NR	NR
Dermal Contact	27	3-19	27	1-12	NR	10
Deodorant (underarm)	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	1	NR	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR
Mucous Membrane	2	9	17	NR	NR	11
Baby Products	NR	NR	NR	NR	NR	NR

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses		Max Conc of Use (%)		# of Uses		Max Conc of Use (%)		# of Uses		Max Conc of Use (%)	
	Oleyl Oleate				Propylheptyl Caprylate				Stearyl Beeswax			
	2012 ³⁸		2012 ³⁹		2012 ³⁸		2012 ³⁹		2012 ³⁸		2012 ³⁹	
Totals	11		0.4-9		24		1-13		10		0.4	
Duration of Use												
Leave-On	10		0.4-9		23		2-13		9		0.4	
Rinse Off	1		1		1		1		1		NR	
Diluted for (Bath) Use	NR		NR		NR		NR		NR		NR	
Exposure Type												
Eye Area	3		NR		NR		NR		NR		0.4	
Incidental Ingestion	4		9		9		13		NR		NR	
Incidental Inhalation-Spray	NR		NR		2 ^a		5		NR		NR	
Incidental Inhalation-Powder	3		NR		NR		NR		NR		NR	
Dermal Contact	7		0.4-3		14		2-6		10		0.4	
Deodorant (underarm)	NR		NR		NR		NR		NR		NR	
Hair - Non-Coloring	NR		NR		1		1		NR		NR	
Hair-Coloring	NR		NR		NR		NR		NR		NR	
Nail	NR		NR		NR		NR		NR		NR	
Mucous Membrane	4		9		9		13		NR		NR	
Baby Products	NR		NR		NR		NR		NR		NR	
	Stearyl Behenate				Stearyl Caprylate				Stearyl Heptanoate			
	2012 ³⁸	2010 ¹⁸	2012 ³⁹	2010 ¹⁸	2012 ³⁸	2010 ¹⁸	2012 ³⁹	2010 ¹⁸	2012 ³⁸	2010 ¹⁸	2012 ³⁹	1993 ³ / 2010 ¹⁸
Totals	NR	NR	NR	0.02	28	20	0.3-5	0.1-1	95	102	0.6-11	0.07-25
Duration of Use												
Leave-On	NR	NR	NR	0.02	27	19	0.3-5	0.3-1	91	99	0.6-11	0.07-25
Rinse Off	NR	NR	NR	NR	1	1	NR	0.1-0.6	4	3	2-7	0.7-3
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Exposure Type												
Eye Area	NR	NR	NR	0.02	5	2	0.3-1	≤1	18	NR	0.6-11	0.5-8
Incidental Ingestion	NR	NR	NR	NR	2	2	0.5	NR	11	8	2-11	5-25
Incidental Inhalation-Spray	NR	NR	NR	NR	NR	NR	0.5 ^a	NR	1	1	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	2	NR
Dermal Contact	NR	NR	NR	NR	26	20	0.3-5	≤1	82	92	0.6-11	0.07-25
Deodorant (underarm)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0.07 ^b
Hair - Non-Coloring	NR	NR	NR	NR	NR	NR	3	NR	2	2	2-3	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mucous Membrane	NR	NR	NR	NR	3	3	0.5	NR	14	8	2-11	5-25
Baby Products	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Stearyl Olivatate				Stearyl Palmitate				Stearyl Stearate			
	2012 ³⁸	2010 ¹⁸	2012 ³⁹	2010 ¹⁸	2012 ³⁸	2010 ¹⁸	2012 ³⁹	2010 ¹⁸	2012 ³⁸	2010 ¹⁸	2012 ³⁹	2010 ¹⁸
Totals	3	1	NR	NR	NR	NR	0.02-0.6	3	26	22	0.02-3	0.02-4
Duration of Use												
Leave-On	1	NR	NR	NR	NR	NR	0.02-0.6	3	24	20	0.02-3	0.02-4
Rinse Off	2	1	NR	NR	NR	NR	NR	NR	2	2	2	2
Diluted for (Bath) Use	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Exposure Type												
Eye Area	NR	NR	NR	NR	NR	NR	0.02-0.6	3	5	5	0.2	≤1
Incidental Ingestion	NR	NR	NR	NR	NR	NR	NR	NR	5	5	0.3-0.9	≤1
Incidental Inhalation-Spray	NR	NR	NR	NR	NR	NR	NR	NR	2	1	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dermal Contact	3	1	NR	NR	NR	NR	NR	NR	19	16	0.02-2	≤4
Deodorant (underarm)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	NR	NR	NR	NR	NR	NR	2	1	3	3
Hair-Coloring	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	2	NR
Nail	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mucous Membrane	1	NR	NR	NR	NR	NR	NR	NR	7	7	0.3-2	≤2
Baby Products	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

Table 8. Frequency and concentration of use (historical and current) according to duration and type of exposure

	# of Uses Max Conc of Use (%)		# of Uses Max Conc of Use (%)				# of Uses Max Conc of Use (%)	
	Tetradecyloctadecyl Stearate		Tridecyl Isononanoate				Tridecyl Neopentanoate	
	2012³⁸	2012³⁹	2012³⁸	2009¹⁹	2012³⁹	2009¹⁹	2012³⁸	2012³⁹
Totals	1	NR	1	1	NR	9	16	2-41
Duration of Use								
<i>Leave-On</i>	1	NR	1	1	NR	9	15	2-41
<i>Rinse Off</i>	NR	NR	NR	NR	NR	NR	1	5
<i>Diluted for (Bath) Use</i>	NR	NR	NR	NR	NR	NR	NR	NR
Exposure Type								
Eye Area	NR	NR	NR	NR	NR	NR	10	5-41
Incidental Ingestion	NR	NR	NR	NR	NR	NR	2	2.5
Incidental Inhalation-Spray	NR	NR	NR	NR	NR	NR	NR	NR
Incidental Inhalation-Powder	NR	NR	NR	NR	NR	NR	NR	5
Dermal Contact	1	NR	1	1	NR	9	14	2-41
Deodorant (underarm)	NR	NR	NR	NR	NR	NR	NR	NR
Hair - Non-Coloring	NR	NR	NR	NR	NR	NR	NR	NR
Hair-Coloring	NR	NR	NR	NR	NR	NR	NR	NR
Nail	NR	NR	NR	NR	NR	NR	NR	NR
Mucous Membrane	NR	NR	NR	NR	NR	NR	2	2-5
Baby Products	NR	NR	NR	NR	NR	NR	NR	NR
Tridecyl Stearate								
	2012³⁸	2012³⁹						
Totals	85	0.2-18						
Duration of Use								
<i>Leave-On</i>	69	0.2-16						
<i>Rinse Off</i>	15	2-18						
<i>Diluted for (Bath) Use</i>	1	NR						
Exposure Type								
Eye Area	NR	0.3						
Incidental Ingestion	10	3-16						
Incidental Inhalation-Spray	1 ^a	2						
		0.4 (pump spray)						
Incidental Inhalation-Powder	1	NR						
Dermal Contact	68	0.2-18						
Deodorant (underarm)	NR	NR						
Hair - Non-Coloring	7	0.4-7						
Hair-Coloring	NR	NR						
Nail	NR	NR						
Mucous Membrane	11	3-16						
Baby Products	1	NR						

*Because each ingredient may be used in cosmetics with multiple exposure types, the sum of all exposure types may not equal the sum of total uses.

^aIncludes suntan products, in that it is now known whether or not the reported product is a spray.

^bIt is not known whether or not the product is a spray.

^cProduct categories generic, giving no indication of duration of use or exposure type.

NR – no reported uses

NS – not specified

Table 9. Ingredients not reported to be in current use

Arachidyl Erucate	Decyl Myristate	Isopropyl Behenate
Batyl Isostearate	Decyl Palmitate	Isopropyl Laurate
Batyl Stearate	Decyltetradecyl Cetearate	Isopropyl Oleate
Behenyl Isostearate	Ethylhexyl Adipate/Palmitate/Stearate	Isopropyl Sorbate
Behenyl/Isostearyl Beeswax	Ethylhexyl C10-40 Isoalkyl Acidate	Isopropyl Tallowate
Butyl Babassuate	Ethylhexyl Neopentanoate	Isostearyl Erucate
Butyl Isostearate	Ethylhexyl Oleate	Isotridecyl Laurate
Butyl Oleate	Erucyl Arachidate	Isotridecyl Myristate
Butyloctyl Beeswax	Erucyl Erucate	Lauryl Behenate
Butyloctyl Behenate	Erucyl Oleate	Lauryl Cocoate
Butyloctyl Candelillate	Hexyldecyl Hexyldecanoate	Lauryl Isostearate
Butyloctyl Cetearate	Hexyldecyl Oleate	Lauryl Myristate
Butyloctyl Oleate	Hexyldecyl Palmitate	Lauryl Oleate
Butyloctyl Palmitate	Hexyldodecyl/Octyldecyl Hydroxystearate	Lauryl Stearate
C14-30 Alkyl Beeswax	Hydrogenated Castor Oil Behenyl Esters	Lignoceryl Erucate
C18-38 Alkyl Beeswax	Hydrogenated Castor Oil Cetyl Esters	Myristyl Isostearate
C30-50 Alkyl Beeswax	Hydrogenated Castor Oil Stearyl Esters	Octyldecyl Oleate
C20-40 Alkyl Behenate	Hydrogenated Ethylhexyl Sesamate	Octyldodecyl Avocadoate
C18-38 Alkyl C24-54 Acid Ester	Hydrogenated Isocetyl Olivat	Octyldodecyl Beeswax
C16-36 Alkyl Stearate	Hydrogenated Isopropyl Jojobate	Octyldodecyl Behenate
C30-50 Alkyl Stearate	Hydroxycetyl Isostearate	Octyldodecyl Cocoate
C40-60 Alkyl Stearate	Isobutyl Myristate	Octyldodecyl Hydroxystearate
Caprylyl Butyrate	Isobutyl Palmitate	Octyldodecyl Meadowfoamate
Cetearyl Nonanoate	Isobutyl Pelargonate	Octyldodecyl Neodecanoate
Cetearyl Palmate	Isobutyl Stearate	Octyldodecyl Oleate
Cetearyl Palmitate	Isobutyl Tallowate	Octyldodecyl Safflowerate
Cetearyl Rice Branate	Isocetyl Behenate	Oleyl Arachidate
Cetyl Behenate	Isocetyl Isodecanoate	Oleyl Myristate
Cetyl Dimethyloctanoate	Isocetyl Isostearate	Oleyl Stearate
Cetyl Isononanoate	Isocetyl Laurate	Stearyl Behenate
Cetyl Myristoleate	Isodecyl Hydroxystearate	Stearyl Erucate
Cetyl Oleate	Isodecyl Palmitate	Stearyl Linoleate
Chimyl Isostearate	Isodecyl Stearate	Tetradecyleicosyl Stearate
Chimyl Stearate	Isohexyl Laurate	Tetradecyloctadecyl Behenate
C10-40 Isoalkyl Acid Octyldodecanol Esters	Isohexyl Neopentanoate	Tetradecyloctadecyl Hexyldecanoate
C4-5 Isoalkyl Cocoate	Isohexyl Palmitate	Tetradecyloctadecyl Myristate
C32-36 Isoalkyl Stearate	Isolauryl Behenate	Tetradecylpropionates
Coco-Rapeseedate	Isooctyl Caprylate/Caprates	Tridecyl Behenate
Decyl Castorate	Isooctyl Tallate	Tridecyl Cocoate
Decyl Isostearate	Isopropyl Arachidate	Tridecyl Erucate
Decyl Jojobate	Isopropyl Avocadoate	Tridecyl Laurate
Decyl Laurate	Isopropyl Babassuate	Tridecyl Myristate

Table 10. Examples of non-cosmetic uses

Ingredient	Non-Cosmetic Use	Reference
Behenyl Behenate	used in mold releasing agents in methyl acrylamide polymer	⁷⁴
Butyl Oleate	indirect food additive as a plasticizer in rubber articles	21CFR177.2600
	biodiesel additive; polyvinylchloride plasticizer; water-resisting agent; in hydraulic fluids	⁹¹
Ethylhexyl Laurate	lubricant for friction and in paper industry; activity enhancer for pesticides	⁷⁵
Isoamyl Laurate	direct food additive as a synthetic flavoring substance and adjuvant	21CFR172.515
Isobutyl Palmitate	indirect food additive used in fiber finishing or in textile fibers	21CFR177.2260; 21CFR177.2800
Isooctyl Tallate	indirect food additive as a plasticizer in rubber articles	21CFR177.2600
Isopropyl Laurate	indirect food additive as a lubricant in the manufacture of metallic articles; use level not to exceed 10% by wt.	21CFR178.3910
Isopropyl Oleate	indirect food additive as a lubricant in the manufacture of metallic articles or in mineral oil lubricants with incidental food contact	21CFR178.3910; 21CFR178.3570

Table 11. Irritation and sensitization studies

Test Article	Concentration/Dose	Test Population	Procedure	Results	Reference
DERMAL IRRITATION					
NON-HUMAN					
<i>Propylheptyl Caprylate</i>					
propylheptyl caprylate	applied neat; amount applied was not specified	SPF albino rabbits, 3 females	4-h semi-occlusive patch; man scores were calculated on the bases of 24, 48, and 72-h scores, with a maximum value of 3	moderately irritating erythema: scores were 2, 2, and 2.33 edema: scores were 0.33, 1, and 0	56
<i>Isopropyl Palmitate</i>					
cream formulation consisting of 10% isopropyl palmitate, carbomers, sorbitan oleate, paraffin liquid, propylene glycol, trometamol, and purified water	5 mg cream/cm ² applied 2x/day	hairless guinea pigs, 15 males	tolerance test; open applications were made on each side of the dorsal trunk for 4 days; test sites were scored immediately prior to each application and at the end of the study on scale of 0-4 for erythema and 0-3 for both scaling and fissures for a total possible score of 10 cream without isopropyl palmitate served as the negative vehicle control; cream consisting of glyceryl stearate, PEG-100 stearate, cetostearyl alcohol, paraffin oil, propylene glycol, citric acid monohydrate, sodium citrate was used as a positive vehicle control	cream with 10% isopropyl palmitate, but not without it, caused a moderate degree of irritation the clinical scores as assessed by the AUC (given as the mean, study days were plotted on the x-axis and average clinical score on the y-axis) were 1.10, 7.25, and 9.10 for the negative control, the cream containing isopropyl palmitate, and the positive control, respectively	50
<i>Ethylhexyl Laurate</i>					
ethylhexyl laurate	0.5 g	rabbits, number not specified	OECD Guideline 404 for "acute dermal irritation/corrosion" testing: a semi-occlusive patch is applied to an approximately 6 cm ² area for 4 h; erythema and edema are each scored on a scale of 0-4	slightly irritating using OECD guidelines non-irritating according to the EC classification	57
<i>Isodecyl Laurate</i>					
isodecyl laurate	30 in liquid paraffin 500 mg/dose	unclear whether rats or rabbits were used	applications were made to two 4 cm x 4 cm intact and abraded test sites; details were not provided	not irritating	58
HUMAN					
<i>Propylheptyl Caprylate</i>					
propylheptyl caprylate	undiluted and 10, 25, or 50% in mineral oil 47.6 mg/cm ²	22 subjects	single 48-h occlusive application ; approximately 0.2 ml of each test material was applied using a 1.9 cm x 1.9 cm patch	no dermal effects at any concentration	56
<i>Isopropyl Myristate</i>					
isopropyl myristate	not specified	244 subjects with contact dermatitis	patch testing occurred over a 3-yr period with a series of test materials (details were not provided)	three positive responses to isopropyl myristate	59
<i>Isopropyl Palmitate</i>					
cream containing 10% isopropyl palmitate (described earlier)	0.1 ml	20 subjects	human chamber scarification test; occlusive 23-h patch; test material was applied to the abraded skin of the volar forearm daily for 3 days paraffin oil was applied as the negative control and 0.5% aq. SLS was used as the positive control; positive and negative vehicle control creams (described previously) were also tested irritation was scored on a scale of 0-4 immediately prior to patch application and 1 h after removal of the final patch	the test material was well-tolerated clinical scores for the test material (2.71), the positive vehicle control (2.51), and the negative vehicle control (2.39) as assessed by AUC (given as the geometric mean; study days were plotted on the x-axis and average clinical score on the y-axis) were greater than that of the negative control (2.17), but the differences were not statistically significant clinical score of the positive control was 5.29	50

Table 11. Irritation and sensitization studies

Test Article	Concentration/Dose	Test Population	Procedure	Results	Reference
<i>Ethylhexyl Laurate</i>					
2-ethylhexyl esters of C8-14 fatty acids	50% and undiluted	10 subjects	open epicutaneous test; test substance was applied for 60 min (additional details were not provided.)	not irritating at either concentration	57
2-ethylhexyl esters of C8-14 fatty acids	25, 50, and 100%	20 subjects	closed epicutaneous test; applied for 24 h under an occlusive patch (additional details were not provided.)	25 and 50%: no reactions observed 100%: slight erythema, 3 incidences of moderate edema, and 1 of slight edema were observed	57
DERMAL SENSITIZATION NON-HUMAN					
<i>Propylheptyl Caprylate</i>					
propylheptyl caprylate	0, 2, 10, and 50% in corn oil	mouse	LLNA	not a sensitizer a lymphocyte proliferative response was not induced	56
<i>Ethylhexyl Laurate</i>					
ethylhexyl laurate	intradermal induction: 0.5% topical induction: 40% challenge: 20%	guinea pigs	GPMT (details were not provided)	not a sensitizer	57
<i>Isodecyl Laurate</i>					
isodecyl laurate	not specified	guinea pigs	GPMT (details were not provided)	not a sensitizer	58
HUMAN					
<i>Butyl Oleate</i>					
butyl oleate	not specified	25 subjects; 9 male and 16 female	maximization study; an occlusive patch was applied to the volar forearm of all subjects for 5 alternate-day 48-h periods an occlusive patch with 5% SLS was applied prior to patching sites were scored upon patch removal and 24 h later	not a sensitizer all challenge scores were 0	60
<i>Ethylhexyl Palmitate</i>					
body oil containing 77.9% ethylhexyl palmitate	applied neat	104 subjects	modified HRIPT; 24-h semi-occlusive patches with 150 µl of test material induction: 2 cm x 2 cm Webril pad was applied for 24-h, 3x/wk for 3 wks; sites were graded 24 or 48 h after patch removal challenge: after a 1-wk non-treatment period, two concurrent 24-h challenge patches were applied, one to the induction site and one to a previously untreated area on the back; these sites were graded immediately upon and 24 h after patch removal	not an irritant or a sensitizer no reactions were observed during induction or challenge	61
<i>Ethylhexyl Stearate</i>					
lip gloss formulation containing 25.9% ethylhexyl stearate	applied neat	104 subjects	modified HRIPT; 24-h semi-occlusive patches with 150 mg of test material induction: 2 cm x 2 cm Webril pad was applied for 24-h, 3x/wk for 3 wks; sites were graded 24 or 48 h after patch removal challenge: after a 1-wk non-treatment period, two concurrent 24-h challenge patches were applied, one to the induction site and one to a previously untreated area on the back; these sites were graded immediately upon and 24 h after patch removal	not an irritant or a sensitizer no reactions were observed during induction or challenge	62

Table 11. Irritation and sensitization studies

Test Article	Concentration/Dose	Test Population	Procedure	Results	Reference
eyebrow pencil formulation containing 38.8% ethylhexyl stearate	applied neat	642 subjects	HR IPT; 24-h semi-occlusive patches induction: patches applied 3x/wk for 3 wks; sites were graded for irritation 24 or 48 h after patch removal challenge: after a 2-wk non-treatment period, a 24-h challenge patch was applied to a previously untreated area on the back; this site was graded upon patch removal and at 48 and 72 h	not an irritant or a sensitizer no reactions were observed during induction or challenge	⁶³
<i>Isocetyl Myristate</i>					
concealer formulation containing 29.5% isocetyl myristate	applied neat	104 subjects	HR IPT; 24-h semi-occlusive patches; 0.2 g test material induction: 1" x 1" absorbent pad with clear adhesive dressing was applied 3x/wk for 3 wks; sites were graded for irritation 24 or 48 h after patch removal challenge: after a 2-wk non-treatment period, a 24-h challenge patch was applied to a previously untreated area on the back; this site was graded upon patch removal and at 72 h	not an irritant or a sensitizer no reactions were observed during induction or challenge	⁶⁴
<i>Cetyl Ricinoleate</i>					
lipstick formulation containing 15.2% cetyl ricinoleate	applied neat	621 subjects	HR IPT; 24-h semi-occlusive patches induction: patches applied 3x/wk for 3 wks; sites were graded for irritation 24 or 48 h after patch removal challenge: after a 2-wk non-treatment period, a 24-h challenge patch was applied to a previously untreated area on the back; this site was graded upon patch removal and at 48 and 72 h	not an irritant or a sensitizer no reactions were observed during induction or challenge	⁶⁵

Abbreviations: AUC = area under the curve; EC = European Commission; GPMT – guinea pig maximization test; HR IPT = human repeated insult patch test; LLNA = local lymph node assay; OECD = Organisation for Economic Co-operation and Development; SLS = sodium lauryl sulfate

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ARACHIDYL BEHENATE	5	03B - Eyeliner
ARACHIDYL BEHENATE	8	07C - Foundations
ARACHIDYL BEHENATE	2	07E - Lipstick
ARACHIDYL BEHENATE	1	07I - Other Makeup Preparations
ARACHIDYL BEHENATE	2	12C - Face and Neck (exc shave)
ARACHIDYL BEHENATE	2	12G - Night
ARACHIDYL PROPIONATE	1	03D - Eye Lotion
ARACHIDYL PROPIONATE	2	03G - Other Eye Makeup Preparations
ARACHIDYL PROPIONATE	2	05A - Hair Conditioner
ARACHIDYL PROPIONATE	3	05G - Tonics, Dressings, and Other Hair Grooming Aids
ARACHIDYL PROPIONATE	2	07C - Foundations
ARACHIDYL PROPIONATE	6	07E - Lipstick
ARACHIDYL PROPIONATE	1	07F - Makeup Bases
ARACHIDYL PROPIONATE	1	10A - Bath Soaps and Detergents
ARACHIDYL PROPIONATE	1	11A - Aftershave Lotion
ARACHIDYL PROPIONATE	1	11E - Shaving Cream
ARACHIDYL PROPIONATE	3	11G - Other Shaving Preparation Products
ARACHIDYL PROPIONATE	2	12C - Face and Neck (exc shave)
ARACHIDYL PROPIONATE	4	12D - Body and Hand (exc shave)
ARACHIDYL PROPIONATE	6	12F - Moisturizing
ARACHIDYL PROPIONATE	3	12G - Night
ARACHIDYL PROPIONATE	2	12H - Paste Masks (mud packs)
ARACHIDYL PROPIONATE	8	12J - Other Skin Care Preps
BEHENYL BEESWAX	1	03F - Mascara
BEHENYL BEHENATE	2	03D - Eye Lotion
BEHENYL BEHENATE	1	12C - Face and Neck (exc shave)
BEHENYL BEHENATE	1	12F - Moisturizing
BEHENYL BEHENATE	1	12G - Night
BEHENYL ERUCATE	9	07E - Lipstick
BUTYL AVOCADATE	3	05F - Shampoos (non-coloring)
BUTYL AVOCADATE	1	05I - Other Hair Preparations
BUTYL AVOCADATE	1	07I - Other Makeup Preparations
BUTYL AVOCADATE	1	11G - Other Shaving Preparation Products
BUTYL AVOCADATE	2	12C - Face and Neck (exc shave)
BUTYL AVOCADATE	1	12F - Moisturizing
BUTYL AVOCADATE	1	13A - Suntan Gels, Creams, and Liquids
BUTYL MYRISTATE	1	07H - Makeup Fixatives
BUTYL MYRISTATE	2	07I - Other Makeup Preparations
BUTYL MYRISTATE	1	12F - Moisturizing
BUTYL STEARATE	1	03A - Eyebrow Pencil
BUTYL STEARATE	5	03B - Eyeliner
BUTYL STEARATE	2	03C - Eye Shadow
BUTYL STEARATE	2	03D - Eye Lotion
BUTYL STEARATE	2	03G - Other Eye Makeup Preparations
BUTYL STEARATE	1	05A - Hair Conditioner
BUTYL STEARATE	1	05F - Shampoos (non-coloring)
BUTYL STEARATE	1	05I - Other Hair Preparations
BUTYL STEARATE	1	07A - Blushers (all types)

BUTYL STEARATE	2	07B - Face Powders
BUTYL STEARATE	2	07C - Foundations
BUTYL STEARATE	17	07E - Lipstick
BUTYL STEARATE	1	07I - Other Makeup Preparations
BUTYL STEARATE	1	10A - Bath Soaps and Detergents
BUTYL STEARATE	3	10E - Other Personal Cleanliness Products
BUTYL STEARATE	4	12C - Face and Neck (exc shave)
BUTYL STEARATE	5	12F - Moisturizing
BUTYL STEARATE	1	12G - Night
BUTYL STEARATE	1	12J - Other Skin Care Preps
BUTYL STEARATE	1	13A - Suntan Gels, Creams, and Liquids
BUTYL STEARATE	1	13B - Indoor Tanning Preparations
C20-40 ALKYL STEARATE	3	05I - Other Hair Preparations
C20-40 ALKYL STEARATE	8	07E - Lipstick
CAPRYLYL CAPRYLATE	1	03D - Eye Lotion
CAPRYLYL CAPRYLATE	3	12C - Face and Neck (exc shave)
CAPRYLYL CAPRYLATE	3	12D - Body and Hand (exc shave)
CAPRYLYL CAPRYLATE	4	12F - Moisturizing
CAPRYLYL EICOSENOATE	1	12C - Face and Neck (exc shave)
CAPRYLYL EICOSENOATE	1	12F - Moisturizing
CETEARYL BEHENATE	1	03B - Eyeliner
CETEARYL BEHENATE	2	07I - Other Makeup Preparations
CETEARYL CANDELILLATE	1	07E - Lipstick
CETEARYL CANDELILLATE	1	13C - Other Suntan Preparations
CETEARYL ISONONANOATE	2	03B - Eyeliner
CETEARYL ISONONANOATE	5	03C - Eye Shadow
CETEARYL ISONONANOATE	4	03D - Eye Lotion
CETEARYL ISONONANOATE	2	03E - Eye Makeup Remover
CETEARYL ISONONANOATE	5	03G - Other Eye Makeup Preparations
CETEARYL ISONONANOATE	2	04E - Other Fragrance Preparation
CETEARYL ISONONANOATE	1	05E - Rinses (non-coloring)
		05G - Tonics, Dressings, and Other Hair Grooming
CETEARYL ISONONANOATE	2	Aids
CETEARYL ISONONANOATE	2	07A - Blushers (all types)
CETEARYL ISONONANOATE	1	07B - Face Powders
CETEARYL ISONONANOATE	3	07C - Foundations
CETEARYL ISONONANOATE	1	07E - Lipstick
CETEARYL ISONONANOATE	3	07F - Makeup Bases
CETEARYL ISONONANOATE	1	07G - Rouges
CETEARYL ISONONANOATE	3	07I - Other Makeup Preparations
CETEARYL ISONONANOATE	1	08G - Other Manicuring Preparations
CETEARYL ISONONANOATE	2	10E - Other Personal Cleanliness Products
CETEARYL ISONONANOATE	1	11A - Aftershave Lotion
CETEARYL ISONONANOATE	1	11D - Preshave Lotions (all types)
CETEARYL ISONONANOATE	14	12A - Cleansing
CETEARYL ISONONANOATE	24	12C - Face and Neck (exc shave)
CETEARYL ISONONANOATE	17	12D - Body and Hand (exc shave)
CETEARYL ISONONANOATE	1	12E - Foot Powders and Sprays
CETEARYL ISONONANOATE	33	12F - Moisturizing
CETEARYL ISONONANOATE	15	12G - Night
CETEARYL ISONONANOATE	2	12H - Paste Masks (mud packs)

CETEARYL ISONONANOATE	9	12J - Other Skin Care Preps
CETEARYL ISONONANOATE	4	13B - Indoor Tanning Preparations
CETEARYL ISONONANOATE	1	13C - Other Suntan Preparations
CETEARYL OLIVATE	1	01B - Baby Lotions, Oils, Powders, and Creams
CETEARYL OLIVATE	8	03D - Eye Lotion
CETEARYL OLIVATE	2	03F - Mascara
CETEARYL OLIVATE	4	03G - Other Eye Makeup Preparations
CETEARYL OLIVATE	2	05A - Hair Conditioner
CETEARYL OLIVATE	1	05I - Other Hair Preparations
CETEARYL OLIVATE	1	07C - Foundations
CETEARYL OLIVATE	3	07F - Makeup Bases
CETEARYL OLIVATE	1	07H - Makeup Fixatives
CETEARYL OLIVATE	1	07I - Other Makeup Preparations
CETEARYL OLIVATE	1	10B - Deodorants (underarm)
CETEARYL OLIVATE	3	10E - Other Personal Cleanliness Products
CETEARYL OLIVATE	2	11A - Aftershave Lotion
CETEARYL OLIVATE	6	11E - Shaving Cream
CETEARYL OLIVATE	18	12A - Cleansing
CETEARYL OLIVATE	14	12C - Face and Neck (exc shave)
CETEARYL OLIVATE	14	12D - Body and Hand (exc shave)
CETEARYL OLIVATE	42	12F - Moisturizing
CETEARYL OLIVATE	11	12G - Night
CETEARYL OLIVATE	3	12H - Paste Masks (mud packs)
CETEARYL OLIVATE	6	12J - Other Skin Care Preps
CETEARYL OLIVATE	1	13A - Suntan Gels, Creams, and Liquids
CETEARYL OLIVATE	1	13B - Indoor Tanning Preparations
CETEARYL STEARATE	1	07I - Other Makeup Preparations
CETEARYL STEARATE	1	12C - Face and Neck (exc shave)
CETEARYL STEARATE	1	12D - Body and Hand (exc shave)
CETYL BABASSUATE	1	07C - Foundations
CETYL BABASSUATE	1	12C - Face and Neck (exc shave)
CETYL CAPRYLATE	2	01B - Baby Lotions, Oils, Powders, and Creams
CETYL CAPRYLATE	1	03C - Eye Shadow
CETYL CAPRYLATE	2	12A - Cleansing
CETYL CAPRYLATE	5	12C - Face and Neck (exc shave)
CETYL CAPRYLATE	1	12D - Body and Hand (exc shave)
CETYL CAPRYLATE	3	12F - Moisturizing
CETYL ESTERS	1	01C - Other Baby Products
CETYL ESTERS	1	03A - Eyebrow Pencil
CETYL ESTERS	1	03C - Eye Shadow
CETYL ESTERS	20	03D - Eye Lotion
CETYL ESTERS	6	03G - Other Eye Makeup Preparations
CETYL ESTERS	192	05A - Hair Conditioner
CETYL ESTERS	1	05E - Rinses (non-coloring)
CETYL ESTERS	1	05F - Shampoos (non-coloring)
CETYL ESTERS	17	05G - Tonics, Dressings, and Other Hair Grooming Aids
CETYL ESTERS	58	05I - Other Hair Preparations
CETYL ESTERS	3	06A - Hair Dyes and Colors (all types requiring caution statements and patch tests)
CETYL ESTERS	2	06H - Other Hair Coloring Preparation
CETYL ESTERS	1	07B - Face Powders
CETYL ESTERS	7	07C - Foundations

CETYL ESTERS	8	07E - Lipstick
CETYL ESTERS	1	07F - Makeup Bases
CETYL ESTERS	5	07I - Other Makeup Preparations
CETYL ESTERS	2	10A - Bath Soaps and Detergents
CETYL ESTERS	1	10B - Deodorants (underarm)
CETYL ESTERS	1	10E - Other Personal Cleanliness Products
CETYL ESTERS	1	11E - Shaving Cream
CETYL ESTERS	14	12A - Cleansing
CETYL ESTERS	9	12C - Face and Neck (exc shave)
CETYL ESTERS	32	12D - Body and Hand (exc shave)
CETYL ESTERS	43	12F - Moisturizing
CETYL ESTERS	8	12G - Night
CETYL ESTERS	7	12H - Paste Masks (mud packs)
CETYL ESTERS	4	12J - Other Skin Care Preps
CETYL ESTERS	2	13A - Suntan Gels, Creams, and Liquids
CETYL ESTERS	3	13B - Indoor Tanning Preparations
CETYL LAURATE	1	12D - Body and Hand (exc shave)
CETYL MYRISTATE	1	03C - Eye Shadow
CETYL MYRISTATE	1	12D - Body and Hand (exc shave)
CETYL MYRISTATE	1	12F - Moisturizing
CETYL MYRISTATE	1	12J - Other Skin Care Preps
CETYL PALMITATE	7	03A - Eyebrow Pencil
CETYL PALMITATE	16	03B - Eyeliner
CETYL PALMITATE	3	03C - Eye Shadow
CETYL PALMITATE	8	03D - Eye Lotion
CETYL PALMITATE	2	03E - Eye Makeup Remover
CETYL PALMITATE	11	03G - Other Eye Makeup Preparations
CETYL PALMITATE	2	04B - Perfumes
CETYL PALMITATE	5	04E - Other Fragrance Preparation
CETYL PALMITATE	3	05A - Hair Conditioner
CETYL PALMITATE	1	05E - Rinses (non-coloring)
CETYL PALMITATE	4	05F - Shampoos (non-coloring)
		05G - Tonics, Dressings, and Other Hair Grooming
CETYL PALMITATE	2	Aids
CETYL PALMITATE	3	07A - Blushers (all types)
CETYL PALMITATE	8	07C - Foundations
CETYL PALMITATE	22	07E - Lipstick
CETYL PALMITATE	1	07F - Makeup Bases
CETYL PALMITATE	5	07I - Other Makeup Preparations
CETYL PALMITATE	1	08C - Nail Creams and Lotions
CETYL PALMITATE	1	08G - Other Manicuring Preparations
CETYL PALMITATE	2	10B - Deodorants (underarm)
CETYL PALMITATE	4	10E - Other Personal Cleanliness Products
CETYL PALMITATE	3	11A - Aftershave Lotion
CETYL PALMITATE	1	11E - Shaving Cream
CETYL PALMITATE	1	11G - Other Shaving Preparation Products
CETYL PALMITATE	23	12A - Cleansing
CETYL PALMITATE	60	12C - Face and Neck (exc shave)
CETYL PALMITATE	127	12D - Body and Hand (exc shave)
CETYL PALMITATE	94	12F - Moisturizing
CETYL PALMITATE	19	12G - Night
CETYL PALMITATE	4	12H - Paste Masks (mud packs)
CETYL PALMITATE	5	12I - Skin Fresheners
CETYL PALMITATE	17	12J - Other Skin Care Preps
CETYL PALMITATE	4	13A - Suntan Gels, Creams, and Liquids
CETYL PALMITATE	3	13B - Indoor Tanning Preparations
CETYL PALMITATE	2	13C - Other Suntan Preparations

CETYL RICINOLEATE	10	03D - Eye Lotion
CETYL RICINOLEATE	2	03G - Other Eye Makeup Preparations
CETYL RICINOLEATE	1	07A - Blushers (all types)
CETYL RICINOLEATE	4	07B - Face Powders
CETYL RICINOLEATE	4	07C - Foundations
CETYL RICINOLEATE	32	07E - Lipstick
CETYL RICINOLEATE	7	12A - Cleansing
CETYL RICINOLEATE	8	12C - Face and Neck (exc shave)
CETYL RICINOLEATE	5	12D - Body and Hand (exc shave)
CETYL RICINOLEATE	36	12F - Moisturizing
CETYL RICINOLEATE	11	12G - Night
CETYL RICINOLEATE	2	12H - Paste Masks (mud packs)
CETYL RICINOLEATE	7	12J - Other Skin Care Preps
CETYL RICINOLEATE	1	13B - Indoor Tanning Preparations
CETYL STEARATE	1	03A - Eyebrow Pencil
CETYL STEARATE	1	03C - Eye Shadow
CETYL STEARATE	1	12D - Body and Hand (exc shave)
CETYL STEARATE	2	12F - Moisturizing
CETYL TALLOWATE	1	12J - Other Skin Care Preps
COCO-CAPRYLATE	1	03G - Other Eye Makeup Preparations
COCO-CAPRYLATE	2	12C - Face and Neck (exc shave)
COCO-CAPRYLATE	2	12G - Night
COCO-CAPRYLATE/CAPRATE	6	02A - Bath Oils, Tablets, and Salts
COCO-CAPRYLATE/CAPRATE	1	03A - Eyebrow Pencil
COCO-CAPRYLATE/CAPRATE	1	03B - Eyeliner
COCO-CAPRYLATE/CAPRATE	13	03C - Eye Shadow
COCO-CAPRYLATE/CAPRATE	2	03D - Eye Lotion
COCO-CAPRYLATE/CAPRATE	9	03G - Other Eye Makeup Preparations
COCO-CAPRYLATE/CAPRATE	1	04E - Other Fragrance Preparation
COCO-CAPRYLATE/CAPRATE	1	05A - Hair Conditioner
COCO-CAPRYLATE/CAPRATE	3	07A - Blushers (all types)
COCO-CAPRYLATE/CAPRATE	1	07B - Face Powders
COCO-CAPRYLATE/CAPRATE	4	07C - Foundations
COCO-CAPRYLATE/CAPRATE	2	07E - Lipstick
COCO-CAPRYLATE/CAPRATE	2	07F - Makeup Bases
COCO-CAPRYLATE/CAPRATE	4	07I - Other Makeup Preparations
COCO-CAPRYLATE/CAPRATE	1	10E - Other Personal Cleanliness Products
COCO-CAPRYLATE/CAPRATE	2	11A - Aftershave Lotion
COCO-CAPRYLATE/CAPRATE	2	11D - Preshave Lotions (all types)
COCO-CAPRYLATE/CAPRATE	1	11G - Other Shaving Preparation Products
COCO-CAPRYLATE/CAPRATE	14	12A - Cleansing
COCO-CAPRYLATE/CAPRATE	25	12C - Face and Neck (exc shave)
COCO-CAPRYLATE/CAPRATE	57	12D - Body and Hand (exc shave)
COCO-CAPRYLATE/CAPRATE	42	12F - Moisturizing
COCO-CAPRYLATE/CAPRATE	10	12G - Night
COCO-CAPRYLATE/CAPRATE	3	12H - Paste Masks (mud packs)
COCO-CAPRYLATE/CAPRATE	2	12I - Skin Fresheners
COCO-CAPRYLATE/CAPRATE	9	12J - Other Skin Care Preps
COCO-CAPRYLATE/CAPRATE	1	13A - Suntan Gels, Creams, and Liquids
COCO-CAPRYLATE/CAPRATE	12	13B - Indoor Tanning Preparations
COCO-CAPRYLATE/CAPRATE	1	13C - Other Suntan Preparations

DECYL COCOATE	2	12A - Cleansing
DECYL COCOATE	3	12C - Face and Neck (exc shave)
DECYL OLEATE	4	03D - Eye Lotion
DECYL OLEATE	1	03G - Other Eye Makeup Preparations
DECYL OLEATE	1	04E - Other Fragrance Preparation
DECYL OLEATE	4	05A - Hair Conditioner
DECYL OLEATE	6	05G - Tonics, Dressings, and Other Hair Grooming Aids
DECYL OLEATE	1	07C - Foundations
DECYL OLEATE	2	07D - Leg and Body Paints
DECYL OLEATE	1	07F - Makeup Bases
DECYL OLEATE	1	07I - Other Makeup Preparations
DECYL OLEATE	1	08C - Nail Creams and Lotions
DECYL OLEATE	1	10B - Deodorants (underarm)
DECYL OLEATE	2	11A - Aftershave Lotion
DECYL OLEATE	7	12A - Cleansing
DECYL OLEATE	35	12C - Face and Neck (exc shave)
DECYL OLEATE	54	12D - Body and Hand (exc shave)
DECYL OLEATE	54	12F - Moisturizing
DECYL OLEATE	12	12G - Night
DECYL OLEATE	4	12H - Paste Masks (mud packs)
DECYL OLEATE	9	12J - Other Skin Care Preps
DECYL OLIVATE	1	12D - Body and Hand (exc shave)
ETHYLHEXYL COCOATE	1	03C - Eye Shadow
ETHYLHEXYL COCOATE	7	03D - Eye Lotion
ETHYLHEXYL COCOATE	2	03G - Other Eye Makeup Preparations
ETHYLHEXYL COCOATE	1	05A - Hair Conditioner
ETHYLHEXYL COCOATE	1	05G - Tonics, Dressings, and Other Hair Grooming Aids
ETHYLHEXYL COCOATE	4	07C - Foundations
ETHYLHEXYL COCOATE	4	07E - Lipstick
ETHYLHEXYL COCOATE	3	07F - Makeup Bases
ETHYLHEXYL COCOATE	2	08E - Nail Polish and Enamel
ETHYLHEXYL COCOATE	1	08G - Other Manicuring Preparations
ETHYLHEXYL COCOATE	1	10E - Other Personal Cleanliness Products
ETHYLHEXYL COCOATE	1	11A - Aftershave Lotion
ETHYLHEXYL COCOATE	8	12A - Cleansing
ETHYLHEXYL COCOATE	10	12C - Face and Neck (exc shave)
ETHYLHEXYL COCOATE	9	12D - Body and Hand (exc shave)
ETHYLHEXYL COCOATE	15	12F - Moisturizing
ETHYLHEXYL COCOATE	4	12G - Night
ETHYLHEXYL COCOATE	2	12H - Paste Masks (mud packs)
ETHYLHEXYL COCOATE	2	12J - Other Skin Care Preps
ETHYLHEXYL COCOATE	2	13A - Suntan Gels, Creams, and Liquids
ETHYLHEXYL COCOATE	9	13B - Indoor Tanning Preparations
ETHYLHEXYL HYDROXYSTEARATE	5	03B - Eyeliner
ETHYLHEXYL HYDROXYSTEARATE	6	03C - Eye Shadow
ETHYLHEXYL HYDROXYSTEARATE	4	03D - Eye Lotion
ETHYLHEXYL HYDROXYSTEARATE	1	03G - Other Eye Makeup Preparations
ETHYLHEXYL HYDROXYSTEARATE	3	05F - Shampoos (non-coloring)
ETHYLHEXYL HYDROXYSTEARATE	1	05G - Tonics, Dressings, and Other Hair Grooming Aids
ETHYLHEXYL HYDROXYSTEARATE	6	07A - Blushers (all types)
ETHYLHEXYL HYDROXYSTEARATE	1	07B - Face Powders
ETHYLHEXYL HYDROXYSTEARATE	6	07C - Foundations

ETHYLHEXYL HYDROXYSTEARATE	79	07E - Lipstick
ETHYLHEXYL HYDROXYSTEARATE	9	07G - Rouges
ETHYLHEXYL HYDROXYSTEARATE	28	07I - Other Makeup Preparations
ETHYLHEXYL HYDROXYSTEARATE	9	10A - Bath Soaps and Detergents
ETHYLHEXYL HYDROXYSTEARATE	3	10E - Other Personal Cleanliness Products
ETHYLHEXYL HYDROXYSTEARATE	8	12A - Cleansing
ETHYLHEXYL HYDROXYSTEARATE	3	12C - Face and Neck (exc shave)
ETHYLHEXYL HYDROXYSTEARATE	43	12D - Body and Hand (exc shave)
ETHYLHEXYL HYDROXYSTEARATE	2	12E - Foot Powders and Sprays
ETHYLHEXYL HYDROXYSTEARATE	25	12F - Moisturizing
ETHYLHEXYL HYDROXYSTEARATE	3	12G - Night
ETHYLHEXYL HYDROXYSTEARATE	2	12H - Paste Masks (mud packs)
ETHYLHEXYL HYDROXYSTEARATE	5	12J - Other Skin Care Preps
ETHYLHEXYL HYDROXYSTEARATE	1	13C - Other Suntan Preparations
ETHYLHEXYL ISONONANOATE	2	03D - Eye Lotion
ETHYLHEXYL ISONONANOATE	4	03G - Other Eye Makeup Preparations
ETHYLHEXYL ISONONANOATE	3	04E - Other Fragrance Preparation
ETHYLHEXYL ISONONANOATE	4	05G - Tonics, Dressings, and Other Hair Grooming Aids
ETHYLHEXYL ISONONANOATE	1	05I - Other Hair Preparations
ETHYLHEXYL ISONONANOATE	2	07A - Blushers (all types)
ETHYLHEXYL ISONONANOATE	2	07B - Face Powders
ETHYLHEXYL ISONONANOATE	2	07C - Foundations
ETHYLHEXYL ISONONANOATE	1	07E - Lipstick
ETHYLHEXYL ISONONANOATE	1	07H - Makeup Fixatives
ETHYLHEXYL ISONONANOATE	2	07I - Other Makeup Preparations
ETHYLHEXYL ISONONANOATE	1	10E - Other Personal Cleanliness Products
ETHYLHEXYL ISONONANOATE	6	11A - Aftershave Lotion
ETHYLHEXYL ISONONANOATE	1	11G - Other Shaving Preparation Products
ETHYLHEXYL ISONONANOATE	1	12A - Cleansing
ETHYLHEXYL ISONONANOATE	4	12C - Face and Neck (exc shave)
ETHYLHEXYL ISONONANOATE	39	12D - Body and Hand (exc shave)
ETHYLHEXYL ISONONANOATE	23	12F - Moisturizing
ETHYLHEXYL ISONONANOATE	9	12G - Night
ETHYLHEXYL ISONONANOATE	4	12J - Other Skin Care Preps
ETHYLHEXYL ISONONANOATE	1	13A - Suntan Gels, Creams, and Liquids
ETHYLHEXYL ISONONANOATE	23	13B - Indoor Tanning Preparations
ETHYLHEXYL ISONONANOATE	1	13C - Other Suntan Preparations
ETHYLHEXYL ISOPALMITATE	1	03C - Eye Shadow
ETHYLHEXYL ISOPALMITATE	1	07I - Other Makeup Preparations
ETHYLHEXYL ISOPALMITATE	1	12C - Face and Neck (exc shave)
ETHYLHEXYL ISOPALMITATE	3	12D - Body and Hand (exc shave)
ETHYLHEXYL ISOPALMITATE	1	13C - Other Suntan Preparations
ETHYLHEXYL ISOSTEARATE	2	03A - Eyebrow Pencil
ETHYLHEXYL ISOSTEARATE	4	03B - Eyeliner
Ethylhexyl Laurate:		
OCTYL LAURATE	1	12C - Face and Neck (exc shave)
ETHYLHEXYL MYRISTATE	1	12A - Cleansing
ETHYLHEXYL MYRISTATE	1	12F - Moisturizing
ETHYLHEXYL OLIVATE	1	03G - Other Eye Makeup Preparations
ETHYLHEXYL OLIVATE	1	12F - Moisturizing

ETHYLHEXYL PALMITATE	2	01B - Baby Lotions, Oils, Powders, and Creams
ETHYLHEXYL PALMITATE	1	02A - Bath Oils, Tablets, and Salts
ETHYLHEXYL PALMITATE	2	03A - Eyebrow Pencil
ETHYLHEXYL PALMITATE	13	03B - Eyeliner
ETHYLHEXYL PALMITATE	125	03C - Eye Shadow
ETHYLHEXYL PALMITATE	17	03D - Eye Lotion
ETHYLHEXYL PALMITATE	1	03F - Mascara
ETHYLHEXYL PALMITATE	30	03G - Other Eye Makeup Preparations
ETHYLHEXYL PALMITATE	1	04A - Cologne and Toilet waters
ETHYLHEXYL PALMITATE	8	04B - Perfumes
	1	04C - Powders (dusting and talcum, excluding aftershave talc)
ETHYLHEXYL PALMITATE	13	04E - Other Fragrance Preparation
ETHYLHEXYL PALMITATE	6	05A - Hair Conditioner
ETHYLHEXYL PALMITATE	4	05F - Shampoos (non-coloring)
	5	05G - Tonics, Dressings, and Other Hair Grooming Aids
ETHYLHEXYL PALMITATE	2	05I - Other Hair Preparations
ETHYLHEXYL PALMITATE	47	07A - Blushers (all types)
ETHYLHEXYL PALMITATE	58	07B - Face Powders
ETHYLHEXYL PALMITATE	39	07C - Foundations
ETHYLHEXYL PALMITATE	1	07D - Leg and Body Paints
ETHYLHEXYL PALMITATE	199	07E - Lipstick
ETHYLHEXYL PALMITATE	15	07F - Makeup Bases
ETHYLHEXYL PALMITATE	2	07H - Makeup Fixatives
ETHYLHEXYL PALMITATE	62	07I - Other Makeup Preparations
ETHYLHEXYL PALMITATE	1	08A - Basecoats and Undercoats
ETHYLHEXYL PALMITATE	3	08B - Cuticle Softeners
ETHYLHEXYL PALMITATE	2	08C - Nail Creams and Lotions
ETHYLHEXYL PALMITATE	1	08F - Nail Polish and Enamel Removers
ETHYLHEXYL PALMITATE	8	08G - Other Manicuring Preparations
ETHYLHEXYL PALMITATE	5	10B - Deodorants (underarm)
ETHYLHEXYL PALMITATE	4	10E - Other Personal Cleanliness Products
ETHYLHEXYL PALMITATE	3	11A - Aftershave Lotion
ETHYLHEXYL PALMITATE	4	11E - Shaving Cream
ETHYLHEXYL PALMITATE	17	12A - Cleansing
ETHYLHEXYL PALMITATE	58	12C - Face and Neck (exc shave)
ETHYLHEXYL PALMITATE	97	12D - Body and Hand (exc shave)
ETHYLHEXYL PALMITATE	2	12E - Foot Powders and Sprays
ETHYLHEXYL PALMITATE	170	12F - Moisturizing
ETHYLHEXYL PALMITATE	19	12G - Night
ETHYLHEXYL PALMITATE	6	12H - Paste Masks (mud packs)
ETHYLHEXYL PALMITATE	1	12I - Skin Fresheners
ETHYLHEXYL PALMITATE	35	12J - Other Skin Care Preps
ETHYLHEXYL PALMITATE	6	13A - Suntan Gels, Creams, and Liquids
ETHYLHEXYL PALMITATE	13	13B - Indoor Tanning Preparations
ETHYLHEXYL PALMITATE	4	13C - Other Suntan Preparations
OCTYL PALMITATE	1	02A - Bath Oils, Tablets, and Salts
OCTYL PALMITATE	1	03A - Eyebrow Pencil
OCTYL PALMITATE	84	03C - Eye Shadow
OCTYL PALMITATE	1	03E - Eye Makeup Remover
OCTYL PALMITATE	7	03G - Other Eye Makeup Preparations
OCTYL PALMITATE	1	05A - Hair Conditioner
OCTYL PALMITATE	8	07A - Blushers (all types)
OCTYL PALMITATE	6	07B - Face Powders
OCTYL PALMITATE	4	07C - Foundations
OCTYL PALMITATE	1	07D - Leg and Body Paints
OCTYL PALMITATE	11	07E - Lipstick
OCTYL PALMITATE	9	07I - Other Makeup Preparations
OCTYL PALMITATE	1	10B - Deodorants (underarm)
OCTYL PALMITATE	6	12A - Cleansing

OCTYL PALMITATE	7	12C - Face and Neck (exc shave)
OCTYL PALMITATE	10	12D - Body and Hand (exc shave)
OCTYL PALMITATE	12	12F - Moisturizing
OCTYL PALMITATE	5	12G - Night
OCTYL PALMITATE	6	12J - Other Skin Care Preps
OCTYL PALMITATE	1	13A - Suntan Gels, Creams, and Liquids
OCTYL PALMITATE	3	13B - Indoor Tanning Preparations
ETHYLHEXYL PELARGONATE	1	07A - Blushers (all types)
ETHYLHEXYL PELARGONATE	1	07C - Foundations
ETHYLHEXYL PELARGONATE	1	12A - Cleansing
ETHYLHEXYL STEARATE	5	02A - Bath Oils, Tablets, and Salts
ETHYLHEXYL STEARATE	7	03A - Eyebrow Pencil
ETHYLHEXYL STEARATE	3	03B - Eyeliner
ETHYLHEXYL STEARATE	12	03C - Eye Shadow
ETHYLHEXYL STEARATE	4	03D - Eye Lotion
ETHYLHEXYL STEARATE	1	03E - Eye Makeup Remover
ETHYLHEXYL STEARATE	11	03G - Other Eye Makeup Preparations
ETHYLHEXYL STEARATE	3	04B - Perfumes
ETHYLHEXYL STEARATE	3	04E - Other Fragrance Preparation
ETHYLHEXYL STEARATE	1	05B - Hair Spray (aerosol fixatives)
ETHYLHEXYL STEARATE	8	05G - Tonics, Dressings, and Other Hair Grooming Aids
ETHYLHEXYL STEARATE	4	07A - Blushers (all types)
ETHYLHEXYL STEARATE	9	07B - Face Powders
ETHYLHEXYL STEARATE	7	07C - Foundations
ETHYLHEXYL STEARATE	6	07E - Lipstick
ETHYLHEXYL STEARATE	1	07F - Makeup Bases
ETHYLHEXYL STEARATE	9	07I - Other Makeup Preparations
ETHYLHEXYL STEARATE	4	10E - Other Personal Cleanliness Products
ETHYLHEXYL STEARATE	3	11A - Aftershave Lotion
ETHYLHEXYL STEARATE	3	11E - Shaving Cream
ETHYLHEXYL STEARATE	12	12A - Cleansing
ETHYLHEXYL STEARATE	17	12C - Face and Neck (exc shave)
ETHYLHEXYL STEARATE	56	12D - Body and Hand (exc shave)
ETHYLHEXYL STEARATE	57	12F - Moisturizing
ETHYLHEXYL STEARATE	15	12G - Night
ETHYLHEXYL STEARATE	2	12H - Paste Masks (mud packs)
ETHYLHEXYL STEARATE	10	12J - Other Skin Care Preps
ETHYLHEXYL STEARATE	2	13A - Suntan Gels, Creams, and Liquids
ETHYLHEXYL STEARATE	6	13B - Indoor Tanning Preparations
OCTYL STEARATE	1	03G - Other Eye Makeup Preparations
OCTYL STEARATE	1	07C - Foundations
OCTYL STEARATE	1	07F - Makeup Bases
OCTYL STEARATE	4	12A - Cleansing
OCTYL STEARATE	3	12C - Face and Neck (exc shave)
OCTYL STEARATE	5	12D - Body and Hand (exc shave)
OCTYL STEARATE	11	12F - Moisturizing
OCTYL STEARATE	1	12H - Paste Masks (mud packs)
OCTYL STEARATE	3	12I - Skin Fresheners
OCTYL STEARATE	6	12J - Other Skin Care Preps
OCTYL STEARATE	1	13B - Indoor Tanning Preparations
HEPTYL UNDECYLENATE	3	03G - Other Eye Makeup Preparations
HEPTYLUNDECYL HYDROXYSTEARATE	8	03C - Eye Shadow
HEPTYLUNDECYL HYDROXYSTEARATE	2	07E - Lipstick

HEXYL LAURATE	3	01B - Baby Lotions, Oils, Powders, and Creams
HEXYL LAURATE	1	03C - Eye Shadow
HEXYL LAURATE	2	03D - Eye Lotion
HEXYL LAURATE	4	03F - Mascara
HEXYL LAURATE	9	03G - Other Eye Makeup Preparations
	2	05G - Tonics, Dressings, and Other Hair Grooming Aids
HEXYL LAURATE	5	07A - Blushers (all types)
HEXYL LAURATE	1	07B - Face Powders
HEXYL LAURATE	61	07C - Foundations
HEXYL LAURATE	2	07D - Leg and Body Paints
HEXYL LAURATE	15	07E - Lipstick
HEXYL LAURATE	15	07F - Makeup Bases
HEXYL LAURATE	1	07G - Rouges
HEXYL LAURATE	2	07H - Makeup Fixatives
HEXYL LAURATE	21	07I - Other Makeup Preparations
HEXYL LAURATE	1	08G - Other Manicuring Preparations
HEXYL LAURATE	1	11A - Aftershave Lotion
HEXYL LAURATE	1	12A - Cleansing
HEXYL LAURATE	8	12C - Face and Neck (exc shave)
HEXYL LAURATE	5	12F - Moisturizing
HEXYL LAURATE	2	12H - Paste Masks (mud packs)
HEXYL LAURATE	8	12J - Other Skin Care Preps
HEXYL LAURATE	4	13A - Suntan Gels, Creams, and Liquids
HEXYL LAURATE	7	13B - Indoor Tanning Preparations
HEXYL LAURATE	1	13C - Other Suntan Preparations
HEXYLDECYL LAURATE	2	03D - Eye Lotion
HEXYLDECYL LAURATE	1	05A - Hair Conditioner
HEXYLDECYL LAURATE	4	12A - Cleansing
HEXYLDECYL LAURATE	8	12C - Face and Neck (exc shave)
HEXYLDECYL LAURATE	14	12D - Body and Hand (exc shave)
HEXYLDECYL LAURATE	5	12F - Moisturizing
HEXYLDECYL LAURATE	3	12G - Night
HEXYLDECYL LAURATE	1	12H - Paste Masks (mud packs)
HEXYLDECYL LAURATE	1	12J - Other Skin Care Preps
HEXYLDECYL STEARATE	1	03D - Eye Lotion
HEXYLDECYL STEARATE	1	03G - Other Eye Makeup Preparations
HEXYLDECYL STEARATE	1	07C - Foundations
HEXYLDECYL STEARATE	1	11A - Aftershave Lotion
HEXYLDECYL STEARATE	7	12A - Cleansing
HEXYLDECYL STEARATE	1	12C - Face and Neck (exc shave)
HEXYLDECYL STEARATE	6	12D - Body and Hand (exc shave)
HEXYLDECYL STEARATE	6	12F - Moisturizing
HEXYLDECYL STEARATE	4	12G - Night
HEXYLDECYL STEARATE	2	12H - Paste Masks (mud packs)
HEXYLDECYL STEARATE	2	12J - Other Skin Care Preps
HYDROGENATED ETHYLHEXYL OLIVATE	2	03C - Eye Shadow
HYDROGENATED ETHYLHEXYL OLIVATE	1	05A - Hair Conditioner
HYDROGENATED ETHYLHEXYL OLIVATE	2	07C - Foundations
HYDROGENATED ETHYLHEXYL OLIVATE	1	12C - Face and Neck (exc shave)
HYDROGENATED ETHYLHEXYL OLIVATE	1	12G - Night
HYDROXYOCTACOSANYL HYDROXYSTEARAT	1	03G - Other Eye Makeup Preparations
HYDROXYOCTACOSANYL HYDROXYSTEARAT	1	12F - Moisturizing
HYDROXYOCTACOSANYL HYDROXYSTEARAT	3	12G - Night

ISOCETYL MYRISTATE	1	03C - Eye Shadow
ISOCETYL MYRISTATE	2	03D - Eye Lotion
ISOCETYL MYRISTATE	1	07B - Face Powders
ISOCETYL MYRISTATE	1	12C - Face and Neck (exc shave)
ISOCETYL MYRISTATE	1	12D - Body and Hand (exc shave)
ISOCETYL MYRISTATE	2	12F - Moisturizing
ISOCETYL MYRISTATE	1	12H - Paste Masks (mud packs)
ISOCETYL MYRISTATE	1	12J - Other Skin Care Preps
ISOCETYL PALMITATE	1	07A - Blushers (all types)
ISOCETYL PALMITATE	3	07C - Foundations
ISOCETYL PALMITATE	1	07I - Other Makeup Preparations
ISOCETYL STEARATE	1	03D - Eye Lotion
ISOCETYL STEARATE	1	03G - Other Eye Makeup Preparations
ISOCETYL STEARATE	2	04E - Other Fragrance Preparation
ISOCETYL STEARATE	8	05A - Hair Conditioner
ISOCETYL STEARATE	4	07A - Blushers (all types)
ISOCETYL STEARATE	4	07B - Face Powders
ISOCETYL STEARATE	8	07C - Foundations
ISOCETYL STEARATE	14	07E - Lipstick
ISOCETYL STEARATE	5	07I - Other Makeup Preparations
ISOCETYL STEARATE	1	10E - Other Personal Cleanliness Products
ISOCETYL STEARATE	2	11A - Aftershave Lotion
ISOCETYL STEARATE	4	12A - Cleansing
ISOCETYL STEARATE	4	12C - Face and Neck (exc shave)
ISOCETYL STEARATE	66	12D - Body and Hand (exc shave)
ISOCETYL STEARATE	68	12F - Moisturizing
ISOCETYL STEARATE	2	12G - Night
ISOCETYL STEARATE	7	12J - Other Skin Care Preps
ISOCETYL STEARATE	1	13B - Indoor Tanning Preparations
ISODECYL ISONONANOATE	1	03B - Eyeliner
ISODECYL ISONONANOATE	4	03C - Eye Shadow
ISODECYL ISONONANOATE	1	03D - Eye Lotion
ISODECYL ISONONANOATE	1	03E - Eye Makeup Remover
ISODECYL ISONONANOATE	1	03G - Other Eye Makeup Preparations
ISODECYL ISONONANOATE	4	07A - Blushers (all types)
ISODECYL ISONONANOATE	1	07C - Foundations
ISODECYL ISONONANOATE	4	07E - Lipstick
ISODECYL ISONONANOATE	3	07I - Other Makeup Preparations
ISODECYL ISONONANOATE	4	12C - Face and Neck (exc shave)
ISODECYL ISONONANOATE	6	12F - Moisturizing
ISODECYL ISONONANOATE	1	12G - Night
ISODECYL ISONONANOATE	2	12H - Paste Masks (mud packs)
ISODECYL ISONONANOATE	1	12J - Other Skin Care Preps
ISODECYL ISONONANOATE	1	13B - Indoor Tanning Preparations
ISODECYL ISONONANOATE	1	13C - Other Suntan Preparations
ISODECYL LAURATE	1	03E - Eye Makeup Remover
ISODECYL LAURATE	1	03G - Other Eye Makeup Preparations
ISODECYL LAURATE	1	12A - Cleansing
ISODECYL LAURATE	1	12H - Paste Masks (mud packs)
ISODECYL MYRISTATE	1	03D - Eye Lotion

ISODECYL NEOPENTANOATE	8	03B - Eyeliner
ISODECYL NEOPENTANOATE	8	03C - Eye Shadow
ISODECYL NEOPENTANOATE	3	03D - Eye Lotion
ISODECYL NEOPENTANOATE	1	03F - Mascara
ISODECYL NEOPENTANOATE	5	03G - Other Eye Makeup Preparations
ISODECYL NEOPENTANOATE	1	05H - Wave Sets
ISODECYL NEOPENTANOATE	3	07A - Blushers (all types)
ISODECYL NEOPENTANOATE	4	07B - Face Powders
ISODECYL NEOPENTANOATE	14	07C - Foundations
ISODECYL NEOPENTANOATE	8	07E - Lipstick
ISODECYL NEOPENTANOATE	1	07F - Makeup Bases
ISODECYL NEOPENTANOATE	1	07G - Rouges
ISODECYL NEOPENTANOATE	7	07I - Other Makeup Preparations
ISODECYL NEOPENTANOATE	1	11A - Aftershave Lotion
ISODECYL NEOPENTANOATE	1	11G - Other Shaving Preparation Products
ISODECYL NEOPENTANOATE	2	12A - Cleansing
ISODECYL NEOPENTANOATE	11	12C - Face and Neck (exc shave)
ISODECYL NEOPENTANOATE	12	12D - Body and Hand (exc shave)
ISODECYL NEOPENTANOATE	19	12F - Moisturizing
ISODECYL NEOPENTANOATE	5	12G - Night
ISODECYL NEOPENTANOATE	1	12H - Paste Masks (mud packs)
ISODECYL NEOPENTANOATE	3	12J - Other Skin Care Preps
ISODECYL NEOPENTANOATE	4	13A - Suntan Gels, Creams, and Liquids
ISODECYL NEOPENTANOATE	3	13B - Indoor Tanning Preparations
ISODECYL OLEATE	3	05B - Hair Spray (aerosol fixatives)
ISODECYL OLEATE	6	05G - Tonics, Dressings, and Other Hair Grooming Aids
ISODECYL OLEATE	1	05I - Other Hair Preparations
ISODECYL OLEATE	1	08G - Other Manicuring Preparations
ISODECYL OLEATE	1	12A - Cleansing
ISODECYL OLEATE	3	12F - Moisturizing
Isohexyl Caprate:		
ISOHEXYL DECANOATE	3	07I - Other Makeup Preparations
ISONONYL ISONONANOATE	1	03B - Eyeliner
ISONONYL ISONONANOATE	43	03C - Eye Shadow
ISONONYL ISONONANOATE	12	03D - Eye Lotion
ISONONYL ISONONANOATE	5	03E - Eye Makeup Remover
ISONONYL ISONONANOATE	19	03G - Other Eye Makeup Preparations
ISONONYL ISONONANOATE	9	04B - Perfumes
ISONONYL ISONONANOATE	7	04E - Other Fragrance Preparation
ISONONYL ISONONANOATE	1	05G - Tonics, Dressings, and Other Hair Grooming Aids
ISONONYL ISONONANOATE	2	05I - Other Hair Preparations
ISONONYL ISONONANOATE	33	07A - Blushers (all types)
ISONONYL ISONONANOATE	28	07B - Face Powders
ISONONYL ISONONANOATE	50	07C - Foundations
ISONONYL ISONONANOATE	2	07D - Leg and Body Paints
ISONONYL ISONONANOATE	47	07E - Lipstick
ISONONYL ISONONANOATE	5	07F - Makeup Bases
ISONONYL ISONONANOATE	3	07G - Rouges
ISONONYL ISONONANOATE	3	07H - Makeup Fixatives
ISONONYL ISONONANOATE	27	07I - Other Makeup Preparations
ISONONYL ISONONANOATE	1	08C - Nail Creams and Lotions
ISONONYL ISONONANOATE	1	08G - Other Manicuring Preparations
ISONONYL ISONONANOATE	1	10B - Deodorants (underarm)
ISONONYL ISONONANOATE	1	10E - Other Personal Cleanliness Products

ISONONYL ISONONANOATE	13	11A - Aftershave Lotion
ISONONYL ISONONANOATE	1	11G - Other Shaving Preparation Products
ISONONYL ISONONANOATE	13	12A - Cleansing
ISONONYL ISONONANOATE	56	12C - Face and Neck (exc shave)
ISONONYL ISONONANOATE	86	12D - Body and Hand (exc shave)
ISONONYL ISONONANOATE	74	12F - Moisturizing
ISONONYL ISONONANOATE	18	12G - Night
ISONONYL ISONONANOATE	3	12H - Paste Masks (mud packs)
ISONONYL ISONONANOATE	2	12I - Skin Fresheners
ISONONYL ISONONANOATE	28	12J - Other Skin Care Preps
ISONONYL ISONONANOATE	2	13A - Suntan Gels, Creams, and Liquids
ISONONYL ISONONANOATE	12	13B - Indoor Tanning Preparations
ISONONYL ISONONANOATE	2	13C - Other Suntan Preparations
ISOPROPYL ISOSTEARATE	2	01B - Baby Lotions, Oils, Powders, and Creams
ISOPROPYL ISOSTEARATE	10	03B - Eyeliner
ISOPROPYL ISOSTEARATE	46	03C - Eye Shadow
ISOPROPYL ISOSTEARATE	1	03D - Eye Lotion
ISOPROPYL ISOSTEARATE	2	03G - Other Eye Makeup Preparations
ISOPROPYL ISOSTEARATE	1	04C - Powders (dusting and talcum, excluding aftershave talc)
ISOPROPYL ISOSTEARATE	1	05F - Shampoos (non-coloring)
ISOPROPYL ISOSTEARATE	2	05I - Other Hair Preparations
ISOPROPYL ISOSTEARATE	4	07A - Blushers (all types)
ISOPROPYL ISOSTEARATE	15	07B - Face Powders
ISOPROPYL ISOSTEARATE	6	07C - Foundations
ISOPROPYL ISOSTEARATE	18	07E - Lipstick
ISOPROPYL ISOSTEARATE	3	07F - Makeup Bases
ISOPROPYL ISOSTEARATE	1	07H - Makeup Fixatives
ISOPROPYL ISOSTEARATE	3	07I - Other Makeup Preparations
ISOPROPYL ISOSTEARATE	1	10A - Bath Soaps and Detergents
ISOPROPYL ISOSTEARATE	1	11E - Shaving Cream
ISOPROPYL ISOSTEARATE	7	12A - Cleansing
ISOPROPYL ISOSTEARATE	8	12C - Face and Neck (exc shave)
ISOPROPYL ISOSTEARATE	8	12D - Body and Hand (exc shave)
ISOPROPYL ISOSTEARATE	56	12F - Moisturizing
ISOPROPYL ISOSTEARATE	6	12G - Night
ISOPROPYL ISOSTEARATE	3	12H - Paste Masks (mud packs)
ISOPROPYL ISOSTEARATE	13	12J - Other Skin Care Preps
ISOPROPYL ISOSTEARATE	1	13A - Suntan Gels, Creams, and Liquids
ISOPROPYL ISOSTEARATE	6	13B - Indoor Tanning Preparations
ISOPROPYL JOJOBATE	2	03D - Eye Lotion
ISOPROPYL JOJOBATE	1	03G - Other Eye Makeup Preparations
ISOPROPYL JOJOBATE	3	07E - Lipstick
ISOPROPYL JOJOBATE	10	12D - Body and Hand (exc shave)
ISOPROPYL JOJOBATE	4	12F - Moisturizing
ISOPROPYL JOJOBATE	1	12J - Other Skin Care Preps
ISOPROPYL JOJOBATE	1	13C - Other Suntan Preparations
ISOPROPYL MYRISTATE	6	01B - Baby Lotions, Oils, Powders, and Creams
ISOPROPYL MYRISTATE	14	02A - Bath Oils, Tablets, and Salts
ISOPROPYL MYRISTATE	1	02D - Other Bath Preparations
ISOPROPYL MYRISTATE	17	03A - Eyebrow Pencil
ISOPROPYL MYRISTATE	47	03B - Eyeliner
ISOPROPYL MYRISTATE	45	03C - Eye Shadow
ISOPROPYL MYRISTATE	4	03D - Eye Lotion
ISOPROPYL MYRISTATE	2	03E - Eye Makeup Remover
ISOPROPYL MYRISTATE	15	03G - Other Eye Makeup Preparations
ISOPROPYL MYRISTATE	8	04A - Cologne and Toilet waters

ISOPROPYL MYRISTATE	4	04B - Perfumes
ISOPROPYL MYRISTATE	2	04C - Powders (dusting and talcum, excluding aftershave talc)
ISOPROPYL MYRISTATE	22	04E - Other Fragrance Preparation
ISOPROPYL MYRISTATE	46	05A - Hair Conditioner
ISOPROPYL MYRISTATE	5	05B - Hair Spray (aerosol fixatives)
ISOPROPYL MYRISTATE	2	05C - Hair Straighteners
ISOPROPYL MYRISTATE	8	05F - Shampoos (non-coloring)
ISOPROPYL MYRISTATE	44	05G - Tonics, Dressings, and Other Hair Grooming Aids
ISOPROPYL MYRISTATE	38	05I - Other Hair Preparations
ISOPROPYL MYRISTATE	18	06A - Hair Dyes and Colors (all types requiring caution statements and patch tests)
ISOPROPYL MYRISTATE	3	06G - Hair Bleaches
ISOPROPYL MYRISTATE	33	07A - Blushers (all types)
ISOPROPYL MYRISTATE	16	07B - Face Powders
ISOPROPYL MYRISTATE	22	07C - Foundations
ISOPROPYL MYRISTATE	2	07D - Leg and Body Paints
ISOPROPYL MYRISTATE	53	07E - Lipstick
ISOPROPYL MYRISTATE	3	07F - Makeup Bases
ISOPROPYL MYRISTATE	2	07G - Rouges
ISOPROPYL MYRISTATE	25	07I - Other Makeup Preparations
ISOPROPYL MYRISTATE	5	08B - Cuticle Softeners
ISOPROPYL MYRISTATE	1	08C - Nail Creams and Lotions
ISOPROPYL MYRISTATE	1	08F - Nail Polish and Enamel Removers
ISOPROPYL MYRISTATE	2	08G - Other Manicuring Preparations
ISOPROPYL MYRISTATE	20	10A - Bath Soaps and Detergents
ISOPROPYL MYRISTATE	20	10B - Deodorants (underarm)
ISOPROPYL MYRISTATE	8	10D - Feminine Deodorants
ISOPROPYL MYRISTATE	15	10E - Other Personal Cleanliness Products
ISOPROPYL MYRISTATE	9	11A - Aftershave Lotion
ISOPROPYL MYRISTATE	4	11D - Preshave Lotions (all types)
ISOPROPYL MYRISTATE	6	11E - Shaving Cream
ISOPROPYL MYRISTATE	3	11F - Shaving Soap
ISOPROPYL MYRISTATE	3	11G - Other Shaving Preparation Products
ISOPROPYL MYRISTATE	61	12A - Cleansing
ISOPROPYL MYRISTATE	1	12B - Depilatories
ISOPROPYL MYRISTATE	71	12C - Face and Neck (exc shave)
ISOPROPYL MYRISTATE	166	12D - Body and Hand (exc shave)
ISOPROPYL MYRISTATE	4	12E - Foot Powders and Sprays
ISOPROPYL MYRISTATE	148	12F - Moisturizing
ISOPROPYL MYRISTATE	18	12G - Night
ISOPROPYL MYRISTATE	9	12H - Paste Masks (mud packs)
ISOPROPYL MYRISTATE	40	12J - Other Skin Care Preps
ISOPROPYL MYRISTATE	18	13A - Suntan Gels, Creams, and Liquids
ISOPROPYL MYRISTATE	8	13B - Indoor Tanning Preparations
ISOPROPYL MYRISTATE	1	13C - Other Suntan Preparations
ISOPROPYL PALMITATE	4	01B - Baby Lotions, Oils, Powders, and Creams
ISOPROPYL PALMITATE	26	02A - Bath Oils, Tablets, and Salts
ISOPROPYL PALMITATE	3	03A - Eyebrow Pencil
ISOPROPYL PALMITATE	12	03B - Eyeliner
ISOPROPYL PALMITATE	35	03C - Eye Shadow
ISOPROPYL PALMITATE	5	03D - Eye Lotion
ISOPROPYL PALMITATE	9	03E - Eye Makeup Remover
ISOPROPYL PALMITATE	8	03G - Other Eye Makeup Preparations
ISOPROPYL PALMITATE	2	04A - Cologne and Toilet waters
ISOPROPYL PALMITATE	1	04B - Perfumes
ISOPROPYL PALMITATE	25	04E - Other Fragrance Preparation
ISOPROPYL PALMITATE	14	05A - Hair Conditioner
ISOPROPYL PALMITATE	1	05B - Hair Spray (aerosol fixatives)
ISOPROPYL PALMITATE	3	05C - Hair Straighteners

ISOPROPYL PALMITATE	1	05F - Shampoos (non-coloring)
ISOPROPYL PALMITATE	14	05G - Tonics, Dressings, and Other Hair Grooming Aids
ISOPROPYL PALMITATE	19	05I - Other Hair Preparations
ISOPROPYL PALMITATE	9	07A - Blushers (all types)
ISOPROPYL PALMITATE	26	07B - Face Powders
ISOPROPYL PALMITATE	15	07C - Foundations
ISOPROPYL PALMITATE	1	07D - Leg and Body Paints
ISOPROPYL PALMITATE	104	07E - Lipstick
ISOPROPYL PALMITATE	5	07F - Makeup Bases
ISOPROPYL PALMITATE	1	07H - Makeup Fixatives
ISOPROPYL PALMITATE	14	07I - Other Makeup Preparations
ISOPROPYL PALMITATE	7	08B - Cuticle Softeners
ISOPROPYL PALMITATE	3	08C - Nail Creams and Lotions
ISOPROPYL PALMITATE	1	08F - Nail Polish and Enamel Removers
ISOPROPYL PALMITATE	3	08G - Other Manicuring Preparations
ISOPROPYL PALMITATE	2	10A - Bath Soaps and Detergents
ISOPROPYL PALMITATE	15	10B - Deodorants (underarm)
ISOPROPYL PALMITATE	7	10E - Other Personal Cleanliness Products
ISOPROPYL PALMITATE	7	11A - Aftershave Lotion
ISOPROPYL PALMITATE	3	11E - Shaving Cream
ISOPROPYL PALMITATE	7	11G - Other Shaving Preparation Products
ISOPROPYL PALMITATE	28	12A - Cleansing
ISOPROPYL PALMITATE	37	12C - Face and Neck (exc shave)
ISOPROPYL PALMITATE	157	12D - Body and Hand (exc shave)
ISOPROPYL PALMITATE	3	12E - Foot Powders and Sprays
ISOPROPYL PALMITATE	285	12F - Moisturizing
ISOPROPYL PALMITATE	9	12G - Night
ISOPROPYL PALMITATE	10	12H - Paste Masks (mud packs)
ISOPROPYL PALMITATE	4	12I - Skin Fresheners
ISOPROPYL PALMITATE	39	12J - Other Skin Care Preps
ISOPROPYL PALMITATE	2	13A - Suntan Gels, Creams, and Liquids
ISOPROPYL PALMITATE	12	13B - Indoor Tanning Preparations
ISOPROPYL PALMITATE	1	13C - Other Suntan Preparations
ISOPROPYL STEARATE	1	03G - Other Eye Makeup Preparations
ISOPROPYL STEARATE	1	10B - Deodorants (underarm)
ISOPROPYL STEARATE	1	12A - Cleansing
ISOPROPYL STEARATE	7	12F - Moisturizing
ISOSTEARYL AVOCADATE	1	12D - Body and Hand (exc shave)
ISOSTEARYL BEHENATE	1	07C - Foundations
ISOSTEARYL BEHENATE	1	07F - Makeup Bases
ISOSTEARYL BEHENATE	4	07I - Other Makeup Preparations
ISOSTEARYL BEHENATE	1	12F - Moisturizing
ISOSTEARYL HYDROXYSTEARATE	7	03C - Eye Shadow
ISOSTEARYL HYDROXYSTEARATE	3	07A - Blushers (all types)
ISOSTEARYL HYDROXYSTEARATE	3	07B - Face Powders
ISOSTEARYL HYDROXYSTEARATE	7	07E - Lipstick
ISOSTEARYL HYDROXYSTEARATE	1	12G - Night
ISOSTEARYL ISONONANOATE	3	08D - Nail Extenders
ISOSTEARYL ISONONANOATE	1	08F - Nail Polish and Enamel Removers
ISOSTEARYL ISOSTEARATE	1	02A - Bath Oils, Tablets, and Salts

ISOSTEARYL ISOSTEARATE	1	03D - Eye Lotion
ISOSTEARYL ISOSTEARATE	2	03G - Other Eye Makeup Preparations
ISOSTEARYL ISOSTEARATE	1	04E - Other Fragrance Preparation
ISOSTEARYL ISOSTEARATE	2	07A - Blushers (all types)
ISOSTEARYL ISOSTEARATE	1	07C - Foundations
ISOSTEARYL ISOSTEARATE	114	07E - Lipstick
ISOSTEARYL ISOSTEARATE	2	07I - Other Makeup Preparations
ISOSTEARYL ISOSTEARATE	5	12A - Cleansing
ISOSTEARYL ISOSTEARATE	15	12C - Face and Neck (exc shave)
ISOSTEARYL ISOSTEARATE	11	12D - Body and Hand (exc shave)
ISOSTEARYL ISOSTEARATE	14	12F - Moisturizing
ISOSTEARYL ISOSTEARATE	7	12G - Night
ISOSTEARYL ISOSTEARATE	7	12H - Paste Masks (mud packs)
ISOSTEARYL ISOSTEARATE	11	12J - Other Skin Care Preps
ISOSTEARYL LINOLEATE	1	07B - Face Powders
ISOSTEARYL LINOLEATE	1	12D - Body and Hand (exc shave)
ISOSTEARYL MYRISTATE	1	12F - Moisturizing
ISOSTEARYL NEOPENTANOATE	4	03B - Eyeliner
ISOSTEARYL NEOPENTANOATE	49	03C - Eye Shadow
ISOSTEARYL NEOPENTANOATE	18	03D - Eye Lotion
ISOSTEARYL NEOPENTANOATE	7	03G - Other Eye Makeup Preparations
ISOSTEARYL NEOPENTANOATE	3	04E - Other Fragrance Preparation
ISOSTEARYL NEOPENTANOATE	1	05A - Hair Conditioner
ISOSTEARYL NEOPENTANOATE	11	05F - Shampoos (non-coloring)
ISOSTEARYL NEOPENTANOATE	1	05I - Other Hair Preparations
ISOSTEARYL NEOPENTANOATE	11	07A - Blushers (all types)
ISOSTEARYL NEOPENTANOATE	34	07B - Face Powders
ISOSTEARYL NEOPENTANOATE	16	07C - Foundations
ISOSTEARYL NEOPENTANOATE	8	07E - Lipstick
ISOSTEARYL NEOPENTANOATE	2	07F - Makeup Bases
ISOSTEARYL NEOPENTANOATE	1	07H - Makeup Fixatives
ISOSTEARYL NEOPENTANOATE	12	07I - Other Makeup Preparations
ISOSTEARYL NEOPENTANOATE	1	08E - Nail Polish and Enamel
ISOSTEARYL NEOPENTANOATE	1	11A - Aftershave Lotion
ISOSTEARYL NEOPENTANOATE	1	12A - Cleansing
ISOSTEARYL NEOPENTANOATE	10	12C - Face and Neck (exc shave)
ISOSTEARYL NEOPENTANOATE	6	12D - Body and Hand (exc shave)
ISOSTEARYL NEOPENTANOATE	13	12F - Moisturizing
ISOSTEARYL NEOPENTANOATE	4	12G - Night
ISOSTEARYL NEOPENTANOATE	2	12H - Paste Masks (mud packs)
ISOSTEARYL NEOPENTANOATE	8	12J - Other Skin Care Preps
ISOSTEARYL NEOPENTANOATE	1	13B - Indoor Tanning Preparations
ISOSTEARYL PALMITATE	3	03C - Eye Shadow
ISOSTEARYL PALMITATE	4	03E - Eye Makeup Remover
ISOSTEARYL PALMITATE	1	05A - Hair Conditioner
		05G - Tonics, Dressings, and Other Hair Grooming Aids
ISOSTEARYL PALMITATE	3	
ISOSTEARYL PALMITATE	2	05I - Other Hair Preparations
ISOSTEARYL PALMITATE	1	07A - Blushers (all types)
ISOSTEARYL PALMITATE	8	07B - Face Powders
ISOSTEARYL PALMITATE	6	07C - Foundations
ISOSTEARYL PALMITATE	3	07E - Lipstick
ISOSTEARYL PALMITATE	2	12A - Cleansing
ISOSTEARYL PALMITATE	2	12C - Face and Neck (exc shave)
ISOSTEARYL PALMITATE	1	12D - Body and Hand (exc shave)

ISOSTEARYL PALMITATE	6	12F - Moisturizing
ISOSTEARYL PALMITATE	3	12G - Night
ISOSTEARYL PALMITATE	1	12J - Other Skin Care Preps
ISOSTEARYL PALMITATE	2	13A - Suntan Gels, Creams, and Liquids
ISOTRIDECYL ISONONANOATE	2	03C - Eye Shadow
ISOTRIDECYL ISONONANOATE	3	03G - Other Eye Makeup Preparations
ISOTRIDECYL ISONONANOATE	18	07A - Blushers (all types)
ISOTRIDECYL ISONONANOATE	6	07B - Face Powders
ISOTRIDECYL ISONONANOATE	12	07C - Foundations
ISOTRIDECYL ISONONANOATE	17	07E - Lipstick
ISOTRIDECYL ISONONANOATE	2	07G - Rouges
ISOTRIDECYL ISONONANOATE	3	07I - Other Makeup Preparations
ISOTRIDECYL ISONONANOATE	7	12C - Face and Neck (exc shave)
ISOTRIDECYL ISONONANOATE	4	12F - Moisturizing
ISOTRIDECYL ISONONANOATE	3	13A - Suntan Gels, Creams, and Liquids
ISOTRIDECYL STEARATE	1	03D - Eye Lotion
LAURYL LAURATE	1	03C - Eye Shadow
LAURYL LAURATE	1	03D - Eye Lotion
LAURYL LAURATE	2	04B - Perfumes
LAURYL LAURATE	1	05G - Tonics, Dressings, and Other Hair Grooming Aids
LAURYL LAURATE	1	07A - Blushers (all types)
LAURYL LAURATE	1	07C - Foundations
LAURYL LAURATE	1	07E - Lipstick
LAURYL LAURATE	3	07I - Other Makeup Preparations
LAURYL LAURATE	1	08C - Nail Creams and Lotions
LAURYL LAURATE	3	12C - Face and Neck (exc shave)
LAURYL LAURATE	7	12D - Body and Hand (exc shave)
LAURYL LAURATE	1	12E - Foot Powders and Sprays
LAURYL LAURATE	5	12F - Moisturizing
LAURYL LAURATE	2	12G - Night
LAURYL PALMITATE	1	05A - Hair Conditioner
LAURYL PALMITATE	1	07I - Other Makeup Preparations
MYRISTYL LAURATE	1	03G - Other Eye Makeup Preparations
MYRISTYL LAURATE	1	07E - Lipstick
MYRISTYL LAURATE	1	12A - Cleansing
MYRISTYL LAURATE	1	12C - Face and Neck (exc shave)
MYRISTYL LAURATE	1	12D - Body and Hand (exc shave)
MYRISTYL LAURATE	4	12F - Moisturizing
MYRISTYL LAURATE	1	12J - Other Skin Care Preps
MYRISTYL MYRISTATE	4	01B - Baby Lotions, Oils, Powders, and Creams
MYRISTYL MYRISTATE	4	02A - Bath Oils, Tablets, and Salts
MYRISTYL MYRISTATE	8	03A - Eyebrow Pencil
MYRISTYL MYRISTATE	22	03B - Eyeliner
MYRISTYL MYRISTATE	11	03C - Eye Shadow
MYRISTYL MYRISTATE	9	03D - Eye Lotion
MYRISTYL MYRISTATE	8	03G - Other Eye Makeup Preparations
MYRISTYL MYRISTATE	8	04E - Other Fragrance Preparation
MYRISTYL MYRISTATE	13	05A - Hair Conditioner
MYRISTYL MYRISTATE	1	05C - Hair Straighteners

MYRISTYL MYRISTATE	3	05G - Tonics, Dressings, and Other Hair Grooming Aids
MYRISTYL MYRISTATE	4	07A - Blushers (all types)
MYRISTYL MYRISTATE	6	07C - Foundations
MYRISTYL MYRISTATE	2	07D - Leg and Body Paints
MYRISTYL MYRISTATE	30	07E - Lipstick
MYRISTYL MYRISTATE	4	07F - Makeup Bases
MYRISTYL MYRISTATE	6	07I - Other Makeup Preparations
MYRISTYL MYRISTATE	1	08C - Nail Creams and Lotions
MYRISTYL MYRISTATE	14	10B - Deodorants (underarm)
MYRISTYL MYRISTATE	1	10E - Other Personal Cleanliness Products
MYRISTYL MYRISTATE	4	11A - Aftershave Lotion
MYRISTYL MYRISTATE	8	11E - Shaving Cream
MYRISTYL MYRISTATE	7	12A - Cleansing
MYRISTYL MYRISTATE	29	12C - Face and Neck (exc shave)
MYRISTYL MYRISTATE	59	12D - Body and Hand (exc shave)
MYRISTYL MYRISTATE	2	12E - Foot Powders and Sprays
MYRISTYL MYRISTATE	95	12F - Moisturizing
MYRISTYL MYRISTATE	19	12G - Night
MYRISTYL MYRISTATE	6	12H - Paste Masks (mud packs)
MYRISTYL MYRISTATE	9	12J - Other Skin Care Preps
MYRISTYL MYRISTATE	5	13B - Indoor Tanning Preparations
MYRISTYL STEARATE	1	12D - Body and Hand (exc shave)
MYRISTYL STEARATE	1	12J - Other Skin Care Preps
OCTYLDODECYL ERUCATE	1	07I - Other Makeup Preparations
OCTYLDODECYL HYDROXYSTEARATE	1	03C - Eye Shadow
OCTYLDODECYL ISOSTEARATE	1	07E - Lipstick
OCTYLDODECYL MYRISTATE	2	01B - Baby Lotions, Oils, Powders, and Creams
OCTYLDODECYL MYRISTATE	1	03B - Eyeliner
OCTYLDODECYL MYRISTATE	10	03C - Eye Shadow
OCTYLDODECYL MYRISTATE	1	03D - Eye Lotion
OCTYLDODECYL MYRISTATE	2	03F - Mascara
OCTYLDODECYL MYRISTATE	2	03G - Other Eye Makeup Preparations
OCTYLDODECYL MYRISTATE	1	04E - Other Fragrance Preparation
OCTYLDODECYL MYRISTATE	2	05G - Tonics, Dressings, and Other Hair Grooming Aids
OCTYLDODECYL MYRISTATE	1	07B - Face Powders
OCTYLDODECYL MYRISTATE	15	07C - Foundations
OCTYLDODECYL MYRISTATE	19	07E - Lipstick
OCTYLDODECYL MYRISTATE	1	07G - Rouges
OCTYLDODECYL MYRISTATE	2	11A - Aftershave Lotion
OCTYLDODECYL MYRISTATE	2	11D - Preshave Lotions (all types)
OCTYLDODECYL MYRISTATE	3	12A - Cleansing
OCTYLDODECYL MYRISTATE	11	12C - Face and Neck (exc shave)
OCTYLDODECYL MYRISTATE	14	12D - Body and Hand (exc shave)
OCTYLDODECYL MYRISTATE	28	12F - Moisturizing
OCTYLDODECYL MYRISTATE	3	12G - Night
OCTYLDODECYL MYRISTATE	7	12H - Paste Masks (mud packs)
OCTYLDODECYL MYRISTATE	5	12J - Other Skin Care Preps
OCTYLDODECYL MYRISTATE	10	13B - Indoor Tanning Preparations
OCTYLDODECYL NEOPENTANOATE	17	03C - Eye Shadow

OCTYLDODECYL NEOPENTANOATE	1	03D - Eye Lotion
OCTYLDODECYL NEOPENTANOATE	2	03G - Other Eye Makeup Preparations
OCTYLDODECYL NEOPENTANOATE	1	05A - Hair Conditioner
	1	05G - Tonics, Dressings, and Other Hair Grooming Aids
OCTYLDODECYL NEOPENTANOATE	7	05I - Other Hair Preparations
OCTYLDODECYL NEOPENTANOATE	1	07A - Blushers (all types)
OCTYLDODECYL NEOPENTANOATE	1	07B - Face Powders
OCTYLDODECYL NEOPENTANOATE	8	07C - Foundations
OCTYLDODECYL NEOPENTANOATE	16	07E - Lipstick
OCTYLDODECYL NEOPENTANOATE	3	07I - Other Makeup Preparations
OCTYLDODECYL NEOPENTANOATE	1	11A - Aftershave Lotion
OCTYLDODECYL NEOPENTANOATE	9	12C - Face and Neck (exc shave)
OCTYLDODECYL NEOPENTANOATE	2	12D - Body and Hand (exc shave)
OCTYLDODECYL NEOPENTANOATE	1	12E - Foot Powders and Sprays
OCTYLDODECYL NEOPENTANOATE	26	12F - Moisturizing
OCTYLDODECYL NEOPENTANOATE	2	12G - Night
OCTYLDODECYL NEOPENTANOATE	1	12H - Paste Masks (mud packs)
OCTYLDODECYL NEOPENTANOATE	1	12J - Other Skin Care Preps
OCTYLDODECYL NEOPENTANOATE	1	13A - Suntan Gels, Creams, and Liquids
OCTYLDODECYL NEOPENTANOATE	2	13B - Indoor Tanning Preparations
OCTYLDODECYL NEOPENTANOATE	3	13C - Other Suntan Preparations
OCTYLDODECYL OCTYLDODECANOATE	1	12C - Face and Neck (exc shave)
OCTYLDODECYL OLIVATE	1	03D - Eye Lotion
OCTYLDODECYL OLIVATE	1	03G - Other Eye Makeup Preparations
OCTYLDODECYL OLIVATE	7	12F - Moisturizing
OCTYLDODECYL OLIVATE	1	12G - Night
OCTYLDODECYL OLIVATE	1	12J - Other Skin Care Preps
OCTYLDODECYL RICINOLEATE	4	05A - Hair Conditioner
OCTYLDODECYL RICINOLEATE	1	05F - Shampoos (non-coloring)
OCTYLDODECYL RICINOLEATE	3	05I - Other Hair Preparations
OCTYLDODECYL RICINOLEATE	2	07G - Rouges
OCTYLDODECYL RICINOLEATE	1	12C - Face and Neck (exc shave)
OCTYLDODECYL STEARATE	21	03C - Eye Shadow
	1	04C - Powders (dusting and talcum, excluding aftershave talc)
OCTYLDODECYL STEARATE	3	07A - Blushers (all types)
OCTYLDODECYL STEARATE	2	07E - Lipstick
OCTYLDODECYL STEARATE	1	07G - Rouges
OCTYLDODECYL STEARATE	1	07I - Other Makeup Preparations
OLEYL ERUCATE	1	03D - Eye Lotion
OLEYL ERUCATE	1	05F - Shampoos (non-coloring)
OLEYL ERUCATE	16	07E - Lipstick
OLEYL ERUCATE	1	07I - Other Makeup Preparations
OLEYL ERUCATE	1	10E - Other Personal Cleanliness Products
OLEYL ERUCATE	2	12A - Cleansing
OLEYL ERUCATE	7	12C - Face and Neck (exc shave)
OLEYL ERUCATE	2	12D - Body and Hand (exc shave)
OLEYL ERUCATE	1	12F - Moisturizing
OLEYL ERUCATE	4	12J - Other Skin Care Preps
OLEYL ERUCATE	6	13A - Suntan Gels, Creams, and Liquids
OLEYL ERUCATE	2	13B - Indoor Tanning Preparations


OLEYL OLEATE	3	03C - Eye Shadow
OLEYL OLEATE	3	07B - Face Powders
OLEYL OLEATE	4	07E - Lipstick
OLEYL OLEATE	1	12A - Cleansing
PROPYLHEPTYL CAPRYLATE	1	05A - Hair Conditioner
PROPYLHEPTYL CAPRYLATE	1	07C - Foundations
PROPYLHEPTYL CAPRYLATE	9	07E - Lipstick
PROPYLHEPTYL CAPRYLATE	5	12C - Face and Neck (exc shave)
PROPYLHEPTYL CAPRYLATE	5	12F - Moisturizing
PROPYLHEPTYL CAPRYLATE	1	12G - Night
PROPYLHEPTYL CAPRYLATE	2	13B - Indoor Tanning Preparations
STEARYL BEESWAX	1	12A - Cleansing
STEARYL BEESWAX	2	12C - Face and Neck (exc shave)
STEARYL BEESWAX	5	12D - Body and Hand (exc shave)
STEARYL BEESWAX	1	12G - Night
STEARYL BEESWAX	1	12J - Other Skin Care Preps
STEARYL CAPRYLATE	1	03D - Eye Lotion
STEARYL CAPRYLATE	4	03G - Other Eye Makeup Preparations
STEARYL CAPRYLATE	2	07C - Foundations
STEARYL CAPRYLATE	2	07E - Lipstick
STEARYL CAPRYLATE	1	07I - Other Makeup Preparations
STEARYL CAPRYLATE	1	10E - Other Personal Cleanliness Products
STEARYL CAPRYLATE	4	12C - Face and Neck (exc shave)
STEARYL CAPRYLATE	1	12D - Body and Hand (exc shave)
STEARYL CAPRYLATE	4	12F - Moisturizing
STEARYL CAPRYLATE	6	12G - Night
STEARYL CAPRYLATE	2	12J - Other Skin Care Preps
STEARYL HEPTANOATE	9	03B - Eyeliner
STEARYL HEPTANOATE	2	03D - Eye Lotion
STEARYL HEPTANOATE	7	03G - Other Eye Makeup Preparations
STEARYL HEPTANOATE	1	05B - Hair Spray (aerosol fixatives)
STEARYL HEPTANOATE	1	05I - Other Hair Preparations
STEARYL HEPTANOATE	3	07C - Foundations
STEARYL HEPTANOATE	11	07E - Lipstick
STEARYL HEPTANOATE	1	07F - Makeup Bases
STEARYL HEPTANOATE	3	07I - Other Makeup Preparations
STEARYL HEPTANOATE	1	10A - Bath Soaps and Detergents
STEARYL HEPTANOATE	2	10E - Other Personal Cleanliness Products
STEARYL HEPTANOATE	12	12C - Face and Neck (exc shave)
STEARYL HEPTANOATE	17	12D - Body and Hand (exc shave)
STEARYL HEPTANOATE	12	12F - Moisturizing
STEARYL HEPTANOATE	8	12G - Night
STEARYL HEPTANOATE	1	12H - Paste Masks (mud packs)
STEARYL HEPTANOATE	4	12J - Other Skin Care Preps
STEARYL OLIVATE	1	10A - Bath Soaps and Detergents
STEARYL OLIVATE	1	12A - Cleansing
STEARYL OLIVATE	1	12J - Other Skin Care Preps
STEARYL STEARATE	5	03F - Mascara
STEARYL STEARATE	1	04B - Perfumes
STEARYL STEARATE	1	04E - Other Fragrance Preparation

STEARYL STEARATE	2	05G - Tonics, Dressings, and Other Hair Grooming Aids
STEARYL STEARATE	1	07C - Foundations
STEARYL STEARATE	1	07D - Leg and Body Paints
STEARYL STEARATE	5	07E - Lipstick
STEARYL STEARATE	1	07H - Makeup Fixatives
STEARYL STEARATE	2	07I - Other Makeup Preparations
STEARYL STEARATE	1	10A - Bath Soaps and Detergents
STEARYL STEARATE	1	10E - Other Personal Cleanliness Products
STEARYL STEARATE	2	12D - Body and Hand (exc shave)
STEARYL STEARATE	1	12F - Moisturizing
STEARYL STEARATE	2	12J - Other Skin Care Preps
TETRADECYLOCTADECYL STEARATE	1	12F - Moisturizing
TRIDECYL ISONONANOATE	1	07C - Foundations
TRIDECYL NEOPENTANOATE	10	03C - Eye Shadow
TRIDECYL NEOPENTANOATE	1	07C - Foundations
TRIDECYL NEOPENTANOATE	2	07E - Lipstick
TRIDECYL NEOPENTANOATE	1	07F - Makeup Bases
TRIDECYL NEOPENTANOATE	1	12A - Cleansing
TRIDECYL NEOPENTANOATE	1	12C - Face and Neck (exc shave)
TRIDECYL STEARATE	1	01B - Baby Lotions, Oils, Powders, and Creams
TRIDECYL STEARATE	1	02A - Bath Oils, Tablets, and Salts
TRIDECYL STEARATE	3	05A - Hair Conditioner
		05G - Tonics, Dressings, and Other Hair Grooming Aids
TRIDECYL STEARATE	3	
TRIDECYL STEARATE	1	05I - Other Hair Preparations
TRIDECYL STEARATE	5	07C - Foundations
TRIDECYL STEARATE	10	07E - Lipstick
TRIDECYL STEARATE	1	07F - Makeup Bases
TRIDECYL STEARATE	1	07I - Other Makeup Preparations
TRIDECYL STEARATE	3	11A - Aftershave Lotion
TRIDECYL STEARATE	1	11E - Shaving Cream
TRIDECYL STEARATE	2	11G - Other Shaving Preparation Products
TRIDECYL STEARATE	8	12A - Cleansing
TRIDECYL STEARATE	4	12C - Face and Neck (exc shave)
TRIDECYL STEARATE	16	12D - Body and Hand (exc shave)
TRIDECYL STEARATE	10	12F - Moisturizing
TRIDECYL STEARATE	4	12G - Night
TRIDECYL STEARATE	1	12H - Paste Masks (mud packs)
TRIDECYL STEARATE	9	12J - Other Skin Care Preps
TRIDECYL STEARATE	1	13C - Other Suntan Preparations



Memorandum

TO: F. Alan Andersen, Ph.D.
Director - COSMETIC INGREDIENT REVIEW (CIR)

FROM: Halyna Breslawec, Ph.D.
Industry Liaison to the CIR Expert Panel | 

DATE: October 25, 2012

SUBJECT: Updated Concentration of Use by FDA Product Category: Alkyl Esters and Ethylhexanoates

**Concentration of Use by FDA Product Category
Alkyl Esters - April 2012 Survey***

Arachidyl Behenate	Cetearyl Rice Branate
Arachidyl Erucate	Cetyl Babassuate
Arachidyl Propionate	Cetyl Behenate
Batyl Isostearate	Cetyl Caprate
Batyl Stearate	Cetyl Caprylate
Behenyl Beeswax	Cetyl Dimethyloctanoate
Behenyl Behenate	Cetyl Ethylhexanoate
Behenyl Erucate	Cetyl Isononanoate
Behenyl Isostearate	Cetyl Laurate
Behenyl Oliviate	Cetyl Myristate
Behenyl/Isostearyl Beeswax	Cetyl Oleate
Butyl Avocadate	Cetyl Palmitate
Butyl Babassuate	Cetyl Ricinoleate
Butyl Isostearate	Cetyl Stearate
Butyl Myristate	Chimyl Isostearate
Butyl Oleate	Chimyl Stearate
Butyl Stearate	Coco-Caprylate
Butyloctyl Beeswax	Coco-Caprylate/Caprate
Butyloctyl Behenate	Coco-Rapeseedate
Butyloctyl Candelillate	Decyl Castorate
Butyloctyl Cetearate	Decyl Cocoate
Butyloctyl Oleate	Decyl Isostearate
Butyloctyl Palmitate	Decyl Jojobate
C10-40 Isoalkyl Acid Octyldodecanol Esters	Decyl Laurate
C12-13 Alkyl Ethylhexanoate	Decyl Myristate
C12-15 Alkyl Ethylhexanoate	Decyl Oleate
C14-18 Alkyl Ethylhexanoate	Decyl Oliviate
C14-30 Alkyl Beeswax	Decyl Palmitate
C16-36 Alkyl Stearate	Decyltetradecyl Cetearate
C18-38 Alkyl Beeswax	Decyltetradecyl Ethylhexanoate
C18-38 Alkyl C24-54 Acid Ester	Erucyl Arachidate
C20-40 Alkyl Behenate	Erucyl Erucate
C20-40 Alkyl Stearate	Erucyl Oleate
C30-50 Alkyl Beeswax	Ethylhexyl Adipate/Palmitate/Stearate
C30-50 Alkyl Stearate	Ethylhexyl C10-40 Isoalkyl Acidate
C32-36 Isoalkyl Stearate	Ethylhexyl Cocoate
C40-60 Alkyl Stearate	Ethylhexyl Ethylhexanoate
C4-5 Isoalkyl Cocoate	Ethylhexyl Hydroxystearate
Caprylyl Butyrate	Ethylhexyl Isononanoate
Caprylyl Caprylate	Ethylhexyl Isopalmitate
Caprylyl Eicosenoate	Ethylhexyl Isostearate
Cetearyl Behenate	Ethylhexyl Laurate
Cetearyl Candelillate	Ethylhexyl Myristate
Cetearyl Ethylhexanoate	Ethylhexyl Neopentanoate
Cetearyl Isononanoate	Ethylhexyl Oleate
Cetearyl Nonanoate	Ethylhexyl Oliviate

Ethylhexyl Palmitate	Isohexyl Caprate
Ethylhexyl Pelargonate	Isohexyl Laurate
Ethylhexyl Stearate	Isohexyl Neopentanoate
Heptyl Undecylenate	Isohexyl Palmitate
Heptylundecyl Hydroxystearate	Isolauryl Behenate
Hexyl Isostearate	Isononyl Isononanoate
Hexyl Laurate	Isooctyl Caprylate/Caprates
Hexyldecyl Ethylhexanoate	Isooctyl Tallate
Hexyldecyl Hexyldecanoate	Isopropyl Arachidate
Hexyldecyl Isostearate	Isopropyl Avocadate
Hexyldecyl Laurate	Isopropyl Babassuate
Hexyldecyl Oleate	Isopropyl Behenate
Hexyldecyl Palmitate	Isopropyl Hydroxystearate
Hexyldecyl Stearate	Isopropyl Isostearate
Hexyldodecyl/Octyldecyl Hydroxystearate	Isopropyl Jojobate
Hydrogenated Castor Oil Behenyl Esters	Isopropyl Linoleate
Hydrogenated Castor Oil Cetyl Esters	Isopropyl Myristate
Hydrogenated Castor Oil Stearyl Esters	Isopropyl Oleate
Hydrogenated Ethylhexyl Olivatate	Isopropyl Palmitate
Hydrogenated Ethylhexyl Sesamate	Isopropyl Ricinoleate
Hydrogenated Isocetyl Olivatate	Isopropyl Sorbate
Hydrogenated Isopropyl Jojobate	Isopropyl Stearate
Hydroxycetyl Isostearate	Isopropyl Tallowate
Hydroxyoctacosanyl Hydroxystearate	Isoproyl Laurate
Isoamyl Laurate	Isostearyl Avocadate
Isobutyl Myristate	Isostearyl Behenate
Isobutyl Palmitate	Isostearyl Erucate
Isobutyl Pelargonate	Isostearyl Ethylhexanoate
Isobutyl Stearate	Isostearyl Hydroxystearate
Isobutyl Tallowate	Isostearyl Isononanoate
Isocetyl Behenate	Isostearyl Isostearate
Isocetyl Ethylhexanoate	Isostearyl Laurate
Isocetyl Isodecanoate	Isostearyl Linoleate
Isocetyl Isostearate	Isostearyl Myristate
Isocetyl Laurate	Isostearyl Neopentanoate
Isocetyl Myristate	Isostearyl Palmitate
Isocetyl Palmitate	Isotridecyl Isononanoate
Isocetyl Stearate	Isotridecyl Laurate
Isodecyl Cocoate	Isotridecyl Myristate
Isodecyl Ethylhexanoate	Isotridecyl Stearate
Isodecyl Hydroxystearate	Lauryl Behenate
Isodecyl Isononanoate	Lauryl Cocoate
Isodecyl Laurate	Lauryl Ethylhexanoate
Isodecyl Myristate	Lauryl Isostearate
Isodecyl Neopentanoate	Lauryl Laurate
Isodecyl Oleate	Lauryl Myristate
Isodecyl Palmitate	Lauryl Oleate
Isodecyl Stearate	Lauryl Palmitate

Lauryl Stearate
 Lignoceryl Erucate
 Myristyl Ethylhexanoate
 Myristyl Isostearate
 Myristyl Laurate
 Myristyl Myristate
 Myristyl Neopentanoate
 Myristyl Stearate
 Octyldodecyl Oleate
 Octyldodecyl Oliviate
 Octyldodecyl Avocadoate
 Octyldodecyl Beeswax
 Octyldodecyl Behenate
 Octyldodecyl Cocoate
 Octyldodecyl Erucate
 Octyldodecyl Ethylhexanoate
 Octyldodecyl Hydroxystearate
 Octyldodecyl Isostearate
 Octyldodecyl Meadowfoamate
 Octyldodecyl Myristate
 Octyldodecyl Neodecanoate
 Octyldodecyl Neopentanoate
 Octyldodecyl Octyldodecanoate
 Octyldodecyl Oleate
 Octyldodecyl Ricinoleate
 Octyldodecyl Safflowerate
 Octyldodecyl Stearate
 Oleyl Arachidate
 Oleyl Erucate
 Oleyl Linoleate

Oleyl Myristate
 Oleyl Oleate
 Oleyl Stearate
 Propylheptyl Caprylate
 Stearyl Beeswax
 Stearyl Behenate
 Stearyl Caprylate
 Stearyl Erucate
 Stearyl Ethylhexanoate
 Stearyl Heptanoate
 Stearyl Linoleate
 Stearyl Oliviate
 Stearyl Palmitate
 Stearyl Stearate
 Tetradecyleicosyl Stearate
 Tetradecyloctadecyl Behenate
 Tetradecyloctadecyl Hexyldecanoate
 Tetradecyloctadecyl Myristate
 Tetradecyloctadecyl Stearate
 Tetradecylpropionates
 Tridecyl Behenate
 Tridecyl Cocoate
 Tridecyl Erucate
 Tridecyl Ethylhexanoate
 Tridecyl Isononanoate
 Tridecyl Laurate
 Tridecyl Myristate
 Tridecyl Neopentanoate
 Tridecyl Stearate

Ingredient	Product Category	Concentration of Use
Arachidyl Behenate	Eyeliners	3%
Arachidyl Behenate	Lipstick	3-4%
Arachidyl Behenate	Makeup bases	0.3%
Arachidyl Behenate	Moisturizing creams, lotions and powders not spray	2%
Arachidyl Propionate	Eyebrow pencil	3-14%
Arachidyl Propionate	Eye liner	14%
Arachidyl Propionate	Eye shadow	14%

Arachidyl Propionate	Eye lotion	14%
Arachidyl Propionate	Hair conditioners	0.002%
Arachidyl Propionate	Shampoos (noncoloring)	0.0003%
Arachidyl Propionate	Tonics, dressings and other hair grooming aids	0.003%
Arachidyl Propionate	Blushers (all types)	14%
Arachidyl Propionate	Face powders	14%
Arachidyl Propionate	Foundations	3-14.2%
Arachidyl Propionate	Lipstick	8-14.1%
Arachidyl Propionate	Nail creams and lotions	0.09%
Arachidyl Propionate	Nail polish and enamel removers	0.05%
Arachidyl Propionate	Deodorants not spray	14.1%
Arachidyl Propionate	Aftershave lotions	0.002-14.1%
Arachidyl Propionate	Shaving cream (aerosol, brushless and lather)	14.1%
Arachidyl Propionate	Skin cleansing (cold creams, cleansing lotion, liquids and pads)	14.1%
Arachidyl Propionate	Face and neck creams, lotions and powders not spray	0.003%
Arachidyl Propionate	Body and hand creams, lotions and powders not spray spray	0.007-13.2% 0.002%
Arachidyl Propionate	Moisturizing creams, lotions and powders not spray	14.1%
Arachidyl Propionate	Night creams, lotions and powders not spray	14%
Arachidyl Propionate	Paste masks and mud packs	0.006%
Arachidyl Propionate	Indoor tanning preparations	14%
Behenyl Beeswax	Eye shadow	0.4%
Behenyl Behenate	Eye liner	2%
Behenyl Behenate	Eye lotion	0.6%
Behenyl Behenate	Mascara	5%

Behenyl Behenate	Lipstick	4%
Behenyl Behenate	Body and hand cream, lotions and powders not spray	2%
Behenyl Behenate	Foot powders and sprays	2%
Behenyl Behenate	Moisturizing creams, lotions and powders not spray	0.4%
Behenyl Erucate	Lipstick	0.5%
Behenyl Oliviate	Face and neck creams, lotions and powders not spray	0.5%
Butyl Avocadate	Face and neck creams, lotions and powders not spray	1%
Butyl Myristate	Tonics, dressings and other hair grooming aids	5%
Butyl Stearate	Eyeliners	0.5-9%
Butyl Stearate	Eye shadow	0.6-3%
Butyl Stearate	Other eye makeup preparations	0.4%
Butyl Stearate	Perfumes	5%
Butyl Stearate	Blushers (all types)	2%
Butyl Stearate	Face powders	0.5-2%
Butyl Stearate	Foundations	2-6%
Butyl Stearate	Lipstick	0.1-12%
Butyl Stearate	Bath soaps and detergents	0.8-2%
Butyl Stearate	Deodorants not spray	0.6%
Butyl Stearate	Shaving soap (cakes, sticks etc.)	0.8%
Butyl Stearate	Skin cleansing (cold creams, cleansing lotion, liquids and pads)	0.0008%
Butyl Stearate	Face and neck creams, lotions and powders not spray	0.01-8%
Butyl Stearate	Body and hand creams, lotions and powders not spray	0.002%
Butyl Stearate	Moisturizing creams, lotions and powders not spray	2-3%

Butyl Stearate	Night creams, lotions and powders not spray	0.01%
Butyl Stearate	Suntan gels, creams and liquids not spray	0.6%
C12-13 Alkyl Ethylhexanoate	Eyeliners	15-27%
C12-13 Alkyl Ethylhexanoate	Eye shadow	13%
C12-13 Alkyl Ethylhexanoate	Other eye makeup preparations	13%
C12-13 Alkyl Ethylhexanoate	Blushers (all types)	13%
C12-13 Alkyl Ethylhexanoate	Lipstick	17%
C12-13 Alkyl Ethylhexanoate	Other makeup preparations	13%
C12-15 Alkyl Ethylhexanoate	Eye shadow	5%
C12-15 Alkyl Ethylhexanoate	Eye lotion	2%
C12-15 Alkyl Ethylhexanoate	Blushers (all types)	9%
C12-15 Alkyl Ethylhexanoate	Face powders	12%
C12-15 Alkyl Ethylhexanoate	Foundations	8-22%
C12-15 Alkyl Ethylhexanoate	Other makeup preparations	2%
C12-15 Alkyl Ethylhexanoate	Face and neck creams, lotions and powders not spray	5-6%
C12-15 Alkyl Ethylhexanoate	Body and hand cream, lotions and powders not spray	1-2%
Caprylyl Eicosenoate	Face powders	0.3%
Cetearyl Behenate	Lipstick	7%
Cetearyl Behenate	Other skin care preparations	15%
Cetearyl Behenate	Other suntan preparations not spray	14%
Cetearyl Candelillate	Lipstick	6%
Cetearyl Ethylhexanoate	Eye shadow	0.3-8%
Cetearyl Ethylhexanoate	Eye lotion	26%
Cetearyl Ethylhexanoate	Eye makeup remover	0.6%
Cetearyl Ethylhexanoate	Other fragrance preparations	3%

	not spray pump spray	16% 5%
Cetearyl Ethylhexanoate	Hairsprays aerosol pump sprays	0.2% 0.00009%
Cetearyl Ethylhexanoate	Shampoos (noncoloring)	2%
Cetearyl Ethylhexanoate	Tonics dressings and other hair grooming aids	0.00009-2%
Cetearyl Ethylhexanoate	Hair dyes and colors (all types requiring caution statement and patch test)	0.6%
Cetearyl Ethylhexanoate	Blushers (all types)	25-30%
Cetearyl Ethylhexanoate	Face powders	1-8%
Cetearyl Ethylhexanoate	Foundations	2-11%
Cetearyl Ethylhexanoate	Lipstick	0.2-5%
Cetearyl Ethylhexanoate	Makeup bases	35%
Cetearyl Ethylhexanoate	Other makeup preparations	26%
Cetearyl Ethylhexanoate	Cuticle softeners	46%
Cetearyl Ethylhexanoate	Bath soaps and detergents	2%
Cetearyl Ethylhexanoate	Deodorants not spray aerosol	0.6% 0.6%
Cetearyl Ethylhexanoate	Aftershave lotions	0.6-4%
Cetearyl Ethylhexanoate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.6%
Cetearyl Ethylhexanoate	Face and neck creams, lotions and powders not spray	0.3-6%
Cetearyl Ethylhexanoate	Body and hand creams, lotions and powders not spray	1-3%
Cetearyl Ethylhexanoate	Moisturizing creams, lotions and powders not spray	0.6%
Cetearyl Ethylhexanoate	Night creams, lotions and powders not spray	4%
Cetearyl Isononanoate	Other fragrance preparation spray	40%

Cetearyl Isononanoate	Blushers (all types)	11%
Cetearyl Isononanoate	Lipstick	5%
Cetearyl Isononanoate	Aftershave lotions	5%
Cetearyl Isononanoate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	1-4%
Cetearyl Isononanoate	Face and neck creams, lotions and powders not spray	0.2-7%
Cetearyl Isononanoate	Body and hand creams, lotions and powders not spray	2-5%
Cetearyl Isononanoate	Moisturizing creams, lotions and powders not spray	4%
Cetearyl Isononanoate	Night creams, lotions and powders not spray	2-3%
Cetearyl Isononanoate	Paste masks and mud packs	2%
Cetearyl Isononanoate	Other skin care preparations	5%
Cetearyl Isononanoate	Suntan gels, creams and liquids not spray pump spray	4% 6%
Cetyl Caprate	Lipstick	0.5%
Cetyl Caprylate	Foundations	2%
Cetyl Caprylate	Face and neck creams, lotions and powders not spray	4%
Cetyl Ethylhexanoate	Bath oils, tablets and salts	20%
Cetyl Ethylhexanoate	Eyebrow pencil	10%
Cetyl Ethylhexanoate	Eyeliner	4-10%
Cetyl Ethylhexanoate	Eye shadow	5-33%
Cetyl Ethylhexanoate	Eye lotion	5%
Cetyl Ethylhexanoate	Eye makeup remover	50-77.3%
Cetyl Ethylhexanoate	Perfumes	6%
Cetyl Ethylhexanoate	Powders (dusting and talcum)	8%
Cetyl Ethylhexanoate	Other fragrance preparations	8%

Cetyl Ethylhexanoate	Hair conditioners	0.5-6%
Cetyl Ethylhexanoate	Hair sprays aerosol pump spray	2% 2%
Cetyl Ethylhexanoate	Rinses (noncoloring)	4%
Cetyl Ethylhexanoate	Shampoos (noncoloring)	2%
Cetyl Ethylhexanoate	Tonics, dressings and other hair grooming aids	4-14%
Cetyl Ethylhexanoate	Wave sets	4%
Cetyl Ethylhexanoate	Hair dyes and colors (all types requiring caution statement and patch test)	1%
Cetyl Ethylhexanoate	Hair tints	10%
Cetyl Ethylhexanoate	Blushers (all types)	2-10%
Cetyl Ethylhexanoate	Face powders	1-3%
Cetyl Ethylhexanoate	Foundations	2-13%
Cetyl Ethylhexanoate	Lipstick	10-52%
Cetyl Ethylhexanoate	Makeup bases	7-28%
Cetyl Ethylhexanoate	Rouges	22%
Cetyl Ethylhexanoate	Cuticle softeners	0.4%
Cetyl Ethylhexanoate	Nail creams and lotions	4%
Cetyl Ethylhexanoate	Other manicuring preparations	19%
Cetyl Ethylhexanoate	Deodorants aerosol	1%
Cetyl Ethylhexanoate	Aftershave lotions	3%
Cetyl Ethylhexanoate	Preshave lotions (all types)	3%
Cetyl Ethylhexanoate	Shaving cream (aerosol, brushless and lather)	6%
Cetyl Ethylhexanoate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	60-77.3%
Cetyl Ethylhexanoate	Face and neck creams, lotions and powders not spray	8-20%
Cetyl Ethylhexanoate	Body and hand creams, lotions and powders not spray	2-10%

Cetyl Ethylhexanoate	Moisturizing creams, lotions and powders not spray	0.03-10%
Cetyl Ethylhexanoate	Night creams, lotions and powders not spray	3-4%
Cetyl Ethylhexanoate	Paste masks and mud packs	6%
Cetyl Ethylhexanoate	Other skin care preparations	5%
Cetyl Ethylhexanoate	Suntan gels, creams and liquids not spray	20%
Cetyl Ethylhexanoate	Indoor tanning preparations	3%
Cetyl Palmitate	Eyebrow pencil	5-11%
Cetyl Palmitate	Eyeliner	5%
Cetyl Palmitate	Eye shadow	0.8-2%
Cetyl Palmitate	Eye makeup remover	5%
Cetyl Palmitate	Mascara	3%
Cetyl Palmitate	Other eye makeup preparations	4%
Cetyl Palmitate	Other fragrance preparations	6%
Cetyl Palmitate	Hair conditioners	2%
Cetyl Palmitate	Hair bleaches	0.8%
Cetyl Palmitate	Blushers (all types)	0.8%
Cetyl Palmitate	Face powders	0.8%
Cetyl Palmitate	Foundations	0.9-2%
Cetyl Palmitate	Lipstick	2-7%
Cetyl Palmitate	Makeup fixatives	0.2%
Cetyl Palmitate	Other makeup preparations	0.3%
Cetyl Palmitate	Cuticle softeners	2-7%
Cetyl Palmitate	Bath soaps and detergents	0.006%
Cetyl Palmitate	Skin cleansing (cold cream, cleansing lotions, liquids and pads)	0.05-5%
Cetyl Palmitate	Face and neck creams, lotions and powders not spray	0.04-3%

Cetyl Palmitate	Body and hand creams, lotions and powders not spray	0.5-4%
Cetyl Palmitate	Moisturizing creams, lotions and powders not spray	0.002-2%
Cetyl Palmitate	Night creams, lotions and powders not spray	2-3%
Cetyl Palmitate	Paste masks and mud packs	2%
Cetyl Palmitate	Other skin care preparations rinse-off	1% 4-5%
Cetyl Palmitate	Suntan gels, creams and liquids not spray pump spray	0.8% 8%
Cetyl Palmitate	Indoor tanning preparations	0.4%
Cetyl Palmitate	Other suntan preparations not spray	8%
Cetyl Ricinoleate	Eye lotion	0.3-5%
Cetyl Ricinoleate	Mascara	3%
Cetyl Ricinoleate	Blushers (all types)	2%
Cetyl Ricinoleate	Foundations	5%
Cetyl Ricinoleate	Lipstick	2-15.2%
Cetyl Ricinoleate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.3%
Cetyl Ricinoleate	Face and neck creams, lotions and powders not spray	5-6%
Cetyl Ricinoleate	Body and hand creams, lotions and powders not spray	2%
Cetyl Ricinoleate	Moisturizing creams, lotions and powders not spray	2-6%
Cetyl Ricinoleate	Night creams, lotions and powders not spray	0.4%
Cetyl Stearate	Hair conditioners	1%
Cetyl Stearate	Tonics, dressings and other hair grooming aids	4%
Coco-Caprylate/Caprates	Eyebrow pencil	4-6%

Coco-Caprylate/Caprate	Eye liner	5-35%
Coco-Caprylate/Caprate	Eye shadow	0.7-18%
Coco-Caprylate/Caprate	Eye makeup remover	13%
Coco-Caprylate/Caprate	Other eye makeup preparations	5%
Coco-Caprylate/Caprate	Hair conditioners	30%
Coco-Caprylate/Caprate	Blushers (all types)	1-9%
Coco-Caprylate/Caprate	Face powders	4-16%
Coco-Caprylate/Caprate	Foundations	16-33%
Coco-Caprylate/Caprate	Lipstick	0.5-9%
Coco-Caprylate/Caprate	Aftershave lotions	5%
Coco-Caprylate/Caprate	Preshave lotions (all types)	5%
Coco-Caprylate/Caprate	Other shaving preparations	3%
Coco-Caprylate/Caprate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	5-62%
Coco-Caprylate/Caprate	Face and neck creams, lotions and powders not spray	3-12%
Coco-Caprylate/Caprate	Body and hand creams, lotions and powders not spray	2-33%
Coco-Caprylate/Caprate	Moisturizing creams, lotions and powders not spray	5%
Coco-Caprylate/Caprate	Paste masks and mud packs	1%
Coco-Caprylate/Caprate	Other skin care preparations rinse-off	0.5-5% 3-5%
Coco-Caprylate/Caprate	Suntan gels, creams and liquids not spray	3%
Coco-Caprylate/Caprate	Indoor tanning preparations	2-6%
Decyl Oleate	Eye makeup remover	20%
Decyl Oleate	Hair conditioners	2-3%
Decyl Oleate	Hair sprays pump spray	2%
Decyl Oleate	Hair tints	2%

Decyl Oleate	Aftershave lotions	3%
Decyl Oleate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	2%
Decyl Oleate	Face and neck creams, lotions and powders not spray	2-3%
Decyl Oleate	Body and hand creams, lotions and powders not spray	0.5-3%
Decyl Oleate	Other skin care preparations	4%
Ethylhexyl Cocoate	Bath oils, tablets and salts	6%
Ethylhexyl Cocoate	Eye shadow	12%
Ethylhexyl Cocoate	Foundations	6%
Ethylhexyl Cocoate	Lipstick	8%
Ethylhexyl Cocoate	Makeup bases	4%
Ethylhexyl Cocoate	Nail polish and enamel	0.0006%
Ethylhexyl Cocoate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	5%
Ethylhexyl Cocoate	Face and neck creams, lotions and powders not spray	41%
Ethylhexyl Cocoate	Body and hand creams, lotions and powders not spray	25%
Ethylhexyl Cocoate	Moisturizing creams, lotions and powders not spray	6%
Ethylhexyl Cocoate	Night creams, lotions and powders not spray	5%
Ethylhexyl Cocoate	Paste masks and mud packs	5%
Ethylhexyl Cocoate	Other skin care preparations rinse-off	2-39% 9%
Ethylhexyl Ethylhexanoate	Eye lotion	1%
Ethylhexyl Ethylhexanoate	Lipstick	8.3%
Ethylhexyl Ethylhexanoate	Makeup bases	4%
Ethylhexyl Ethylhexanoate	Deodorant not spray	3%

Ethylhexyl Ethylhexanoate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.5%
Ethylhexyl Ethylhexanoate	Face and neck creams, lotions and powders not spray	5%
Ethylhexyl Ethylhexanoate	Body and hand creams, lotions and powders not spray	2-5%
Ethylhexyl Ethylhexanoate	Moisturizing creams, lotions and powders not spray	2%
Ethylhexyl Ethylhexanoate	Suntan gels, creams and liquids pump spray	4%
Ethylhexyl Hydroxystearate	Bath oils, tablets and salts	3%
Ethylhexyl Hydroxystearate	Eye liner	8%
Ethylhexyl Hydroxystearate	Eye shadow	2%
Ethylhexyl Hydroxystearate	Eye lotion	2%
Ethylhexyl Hydroxystearate	Shampoos (noncoloring)	0.09%
Ethylhexyl Hydroxystearate	Tonics, dressings and other hair grooming aids	0.3-2%
Ethylhexyl Hydroxystearate	Blushers (all types)	4%
Ethylhexyl Hydroxystearate	Foundations	2-9%
Ethylhexyl Hydroxystearate	Lipstick	2-18%
Ethylhexyl Hydroxystearate	Bath soaps and detergents	0.2-1 %
Ethylhexyl Hydroxystearate	Other personal cleanliness products hand scrub	3%
Ethylhexyl Hydroxystearate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	1-5%
Ethylhexyl Hydroxystearate	Face and neck creams, lotions and powders not spray	2-4%
Ethylhexyl Hydroxystearate	Body and hand creams, lotions and powders not spray	1-7%
Ethylhexyl Hydroxystearate	Moisturizing creams, lotions and powders not spray	0.1-4%
Ethylhexyl Hydroxystearate	Night creams, lotions and powders not spray	2%
Ethylhexyl Isononanoate	Eye shadow	12%

Ethylhexyl Isononanoate	Eye lotion	0.8-5%
Ethylhexyl Isononanoate	Eye makeup remover	20%
Ethylhexyl Isononanoate	Other fragrance preparations	2%
Ethylhexyl Isononanoate	Tonics, dressings and other hair grooming aids	8%
Ethylhexyl Isononanoate	Foundations	1-3%
Ethylhexyl Isononanoate	Lipstick	2%
Ethylhexyl Isononanoate	Deodorant not spray	3%
Ethylhexyl Isononanoate	Aftershave lotions	0.2-75%
Ethylhexyl Isononanoate	Face and neck creams, lotions and powders not spray	3-6%
Ethylhexyl Isononanoate	Body and hand creams, lotions and powders not spray	2-5%
Ethylhexyl Isononanoate	Moisturizing creams, lotions and powders not spray	2%
Ethylhexyl Isononanoate	Pastes masks and mud packs	0.3%
Ethylhexyl Isononanoate	Suntan gels, creams and liquids pump spray	4
Ethylhexyl Isononanoate	Indoor tanning preparations	0.1%
Ethylhexyl Isononanoate	Other suntan preparations	0.02%
Ethylhexyl Isostearate	Eye brow pencil	33%
Ethylhexyl Isostearate	Eye liner	27-40%
Ethylhexyl Palmitate	Bath oils, tablets and salts	10%
Ethylhexyl Palmitate	Eye brow pencil	2%
Ethylhexyl Palmitate	Eye liner	16-42%
Ethylhexyl Palmitate	Eye shadow	3-49%
Ethylhexyl Palmitate	Eye lotion	4%
Ethylhexyl Palmitate	Eye makeup remover	7-50%
Ethylhexyl Palmitate	Mascara	0.01%
Ethylhexyl Palmitate	Other eye makeup preparations	43%

Ethylhexyl Palmitate	Other fragrance preparations not spray	3-16% 8-40%
Ethylhexyl Palmitate	Hair conditioners	1-2%
Ethylhexyl Palmitate	Hair spray aerosol pump spray	4% 0.4%
Ethylhexyl Palmitate	Rinses (noncoloring)	3%
Ethylhexyl Palmitate	Tonics, dressings and other hair grooming aids	2-4%
Ethylhexyl Palmitate	Other hair preparations (noncoloring)	3%
Ethylhexyl Palmitate	Hair tints	2%
Ethylhexyl Palmitate	Blushers (all types)	1-47.1%
Ethylhexyl Palmitate	Face powders	0.3-10%
Ethylhexyl Palmitate	Foundations	0.05-32%
Ethylhexyl Palmitate	Lipstick	2-34%
Ethylhexyl Palmitate	Makeup bases	0.5-9%
Ethylhexyl Palmitate	Makeup fixatives	2%
Ethylhexyl Palmitate	Other makeup preparations	20-46%
Ethylhexyl Palmitate	Cuticle softeners	9%
Ethylhexyl Palmitate	Other manicuring preparations spray	7-50% 5%
Ethylhexyl Palmitate	Deodorants aerosol	1%
Ethylhexyl Palmitate	Other personal cleanliness products	1%
Ethylhexyl Palmitate	Aftershave lotions	0.0003-9%
Ethylhexyl Palmitate	Shaving cream (aerosol, brushless and lather)	0.1%
Ethylhexyl Palmitate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	28-37%
Ethylhexyl Palmitate	Face and neck creams, lotions and powders not spray	2-11%
Ethylhexyl Palmitate	Body and hand creams, lotions and powders not spray aerosol	0.5-78% 5%

Ethylhexyl Palmitate	Moisturizing creams, lotions and powders not spray	0.05-4%
Ethylhexyl Palmitate	Night creams, lotions and powders not spray	3-4%
Ethylhexyl Palmitate	Paste masks and mud packs	1-4%
Ethylhexyl Palmitate	Other skin care preparations rinse-off	0.4-30% 0.05-4%
Ethylhexyl Palmitate	Suntan gels, creams and liquids not spray	42%
Ethylhexyl Palmitate	Indoor tanning preparations aerosol	45%
Ethylhexyl Pelargonate	Hair dyes and colors (all types requiring caution statement and patch test)	3%
Ethylhexyl Pelargonate	Hair bleaches	4%
Ethylhexyl Pelargonate	Face and neck creams, lotions and powders not spray	2%
Ethylhexyl Stearate	Eyebrow pencil	38%
Ethylhexyl Stearate	Eye liner	7-11%
Ethylhexyl Stearate	Eye shadow	11%
Ethylhexyl Stearate	Eye lotion	0.003%
Ethylhexyl Stearate	Tonics, dressings and other hair grooming aids	5%
Ethylhexyl Stearate	Hair bleaches	29%
Ethylhexyl Stearate	Blushers (all types)	0.05-9%
Ethylhexyl Stearate	Face powders	6%
Ethylhexyl Stearate	Foundations	3-16%
Ethylhexyl Stearate	Lipstick	19-27.1%
Ethylhexyl Stearate	Other personal cleanliness products hand wash	5%
Ethylhexyl Stearate	Aftershave lotions	0.0004%
Ethylhexyl Stearate	Shaving cream (aerosol, brushless and lather)	0.1%
Ethylhexyl Stearate	Face and neck creams, lotions and powders not spray	0.5-8%

Ethylhexyl Stearate	Body and hand creams, lotions and powders not spray	2-15%
Ethylhexyl Stearate	Moisturizing creams, lotions and powders not spray	0.2-4%
Ethylhexyl Stearate	Night creams, lotions and powders not spray	3%
Ethylhexyl Stearate	Other skin care preparations	10-30%
Ethylhexyl Stearate	Indoor tanning preparations	2-10%
Ethylhexyl Stearate	Other suntan preparations	3%
Heptyl Undecylenate	Eye liner	26%
Heptyl Undecylenate	Hair conditioners	0.1%
Heptyl Undecylenate	Hair sprays pump spray	0.01%
Heptyl Undecylenate	Shampoos (noncoloring)	0.01%
Heptyl Undecylenate	Tonics, dressings and other hair grooming aids	8%
Heptyl Undecylenate	Body and hand creams, lotions and powders not spray	10%
Heptylundecyl Hydroxystearate	Lipstick	20%
Hexyl Isostearate	Nail polish and enamel	0.04%
Hexyl Isostearate	Face and neck creams, lotions and powders not spray	0.008%
Hexyl Laurate	Eye liner	2%
Hexyl Laurate	Eye shadow	2-3%
Hexyl Laurate	Eye makeup remover	2%
Hexyl Laurate	Other eye makeup preparations	0.3-2%
Hexyl Laurate	Tonics, dressings and other hair grooming aids	2-3%
Hexyl Laurate	Blushers (all types)	2%
Hexyl Laurate	Face powders	2%
Hexyl Laurate	Foundations	0.07-3%
Hexyl Laurate	Lipstick	0.1-2%

Hexyl Laurate	Makeup bases	2%
Hexyl Laurate	Other makeup preparations spray	1% 0.07%
Hexyl Laurate	Nail polish and enamel	2%
Hexyl Laurate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	2%
Hexyl Laurate	Face and neck creams, lotions and powders not spray	0.6-2%
Hexyl Laurate	Body and hand creams, lotions and powders not spray	0.6-2%
Hexyl Laurate	Moisturizing creams, lotions and powders not spray	2%
Hexyl Laurate	Other skin care preparations spray	0.1%
Hexyl Laurate	Suntan gels, creams and liquids not spray	0.3-2%
Hexyl Laurate	Indoor tanning preparations	1%
Hexyl Laurate	Other suntan preparations spray	0.1%
Hexyldecyl Isostearate	Hair conditioners	0.7%
Hexyldecyl Isostearate	Rinses (noncoloring)	2%
Hexyldecyl Isostearate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.2%
Hexyldecyl Isostearate	Face and neck creams, lotions and powders not sprays	2%
Hexyldecyl Laurate	Shampoos (noncoloring)	1%
Hexyldecyl Laurate	Blushers (all types)	2%
Hexyldecyl Laurate	Foundations	2%
Hexyldecyl Laurate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	1%
Hexyldecyl Laurate	Face and neck creams, lotions and powders not spray	2%
Hexyldecyl Laurate	Body and hand creams, lotions and powders	

	not spray	2%
Hexyldecyl Stearate	Eye lotion	3%
Hexyldecyl Stearate	Foundations	13%
Hexyldecyl Stearate	Lipstick	0.9%
Hexyldecyl Stearate	Aftershave lotions	0.5%
Hexyldecyl Stearate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	3%
Hexyldecyl Stearate	Face and neck creams, lotions and powders not spray	5%
Hexyldecyl Stearate	Body and hand creams, lotions and powders not spray	4%
Hydrogenated Ethylhexyl Olivat	Eye shadow	4%
Hydrogenated Ethylhexyl Olivat	Hair conditioners	0.05%
Hydrogenated Ethylhexyl Olivat	Hair sprays pump spray	15.5%
Hydrogenated Ethylhexyl Olivat	Foundations	7%
Isoamyl Laurate	Face and neck creams, lotions and powders not spray	1%
Isoamyl Laurate	Paste masks and mud packs	2%
Isocetyl Myristate	Face powders	0.4-2%
Isocetyl Myristate	Foundations	36.5%
Isocetyl Stearate	Eye liner	0.1-5%
Isocetyl Stearate	Eye shadow	15-16%
Isocetyl Stearate	Other eye makeup preparations	8%
Isocetyl Stearate	Perfumes	2%
Isocetyl Stearate	Other fragrance preparations not spray pump spray	15% 34%
Isocetyl Stearate	Hair conditioners	1%

Isocetyl Stearate	Tonics, dressings and other hair grooming aids	0.5%
Isocetyl Stearate	Hair dyes and colors (all types requiring caution statement and patch test)	0.6%
Isocetyl Stearate	Blushers (all types)	3-32%
Isocetyl Stearate	Foundations	3-31.4%
Isocetyl Stearate	Lipstick	0.3-24%
Isocetyl Stearate	Makeup fixatives	2%
Isocetyl Stearate	Other makeup preparations	20%
Isocetyl Stearate	Aftershave lotions	2%
Isocetyl Stearate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	5%
Isocetyl Stearate	Face and neck creams, lotions and powders not spray	2-4%
Isocetyl Stearate	Body and hand creams, lotions and powders not spray	2-12%
Isocetyl Stearate	Moisturizing creams, lotions and powders not spray	3%
Isocetyl Stearate	Night creams, lotions and powders not spray	10%
Isocetyl Stearate	Other skin care preparations	1-3%
Isocetyl Stearate	Suntan gels, creams and liquids not spray	0.6%
Isocetyl Stearate	Indoor tanning preparations	0.6%
Isodecyl Cocoate	Face and neck creams, lotions and powders not spray	2%
Isodecyl Isononanoate	Eye shadow	38-40%
Isodecyl Isononanoate	Eye lotion	1-2%
Isodecyl Isononanoate	Eye makeup remover	10%
Isodecyl Isononanoate	Blushers (all types)	23-36%
Isodecyl Isononanoate	Foundations	25%
Isodecyl Isononanoate	Lipstick	40-43.5%

Isodecyl Neopentanoate	Baby lotions, oils and creams not powder	3%
Isodecyl Neopentanoate	Eye liner	1-12%
Isodecyl Neopentanoate	Eye shadow	1-17%
Isodecyl Neopentanoate	Eye lotion	2%
Isodecyl Neopentanoate	Eye makeup remover	1%
Isodecyl Neopentanoate	Hair conditioners	2%
Isodecyl Neopentanoate	Hair sprays aerosol pump spray	0.5% 0.3%
Isodecyl Neopentanoate	Blushers (all types)	2%
Isodecyl Neopentanoate	Face powders	2%
Isodecyl Neopentanoate	Foundations	0.05-14%
Isodecyl Neopentanoate	Lipstick	0.6-5%
Isodecyl Neopentanoate	Other makeup preparations	0.05-10%
Isodecyl Neopentanoate	Other manicuring preparations	2%
Isodecyl Neopentanoate	Aftershave lotions	2-6%
Isodecyl Neopentanoate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.1%
Isodecyl Neopentanoate	Face and neck creams, lotions and powders not spray	2-5%
Isodecyl Neopentanoate	Body and hand creams, lotions and powders not spray spray	2-4% 3%
Isodecyl Neopentanoate	Moisturizing creams, lotions and powders not spray	2%
Isodecyl Neopentanoate	Night creams, lotions and powders not spray	2%
Isodecyl Neopentanoate	Other suntan preparations not spray	8%
Isodecyl Oleate	Eye makeup remover	2%
Isodecyl Oleate	Hair conditioners	2%

Isodecyl Oleate	Hair sprays aerosol pump spray	4% 2%
Isodecyl Oleate	Blushers (all types)	7%
Isodecyl Oleate	Lipstick	0.07%
Isodecyl Oleate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	3%
Isodecyl Oleate	Face and neck creams, lotions and powders not spray	2%
Isodecyl Oleate	Moisturizing creams, lotions and powders not spray	3%
Isononyl Isononanote	Baby oils, lotions and creams not powder	3%
Isononyl Isononanote	Bath oils, tablets and salts	15%
Isononyl Isononanote	Eye liner	2-24%
Isononyl Isononanote	Eye shadow	0.8-53%
Isononyl Isononanote	Eye lotion	3-25%
Isononyl Isononanote	Eye makeup remover	7-19%
Isononyl Isononanote	Other fragrance preparations not spray	26-45% 30-42%
Isononyl Isononanote	Hair conditioners	1%
Isononyl Isononanote	Hair sprays pump spray	0.4%
Isononyl Isononanote	Rinses (noncoloring)	1%
Isononyl Isononanote	Tonics, dressings and other hair grooming aids	0.08%
Isononyl Isononanote	Blushers (all types)	4-16%
Isononyl Isononanote	Face powders	4-9%
Isononyl Isononanote	Foundations	2-16%
Isononyl Isononanote	Lipstick	5-47%
Isononyl Isononanote	Makeup bases	7%
Isononyl Isononanote	Rouges	2%

Isononyl Isononanote	Other makeup preparations	4-8%
Isononyl Isononanote	Other manicuring preparations	6%
Isononyl Isononanote	Bath soaps and detergents	6%
Isononyl Isononanote	Deodorants not spray aerosol	7% 7%
Isononyl Isononanote	Aftershave lotions	1-8%
Isononyl Isononanote	Preshave lotions (all types)	22%
Isononyl Isononanote	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	2-19%
Isononyl Isononanote	Face and neck creams, lotions and powders not spray	0.07-25%
Isononyl Isononanote	Body and hand creams lotions and powders not spray	2-25%
Isononyl Isononanote	Moisturizing creams, lotions and powders not spray	0.5-7%
Isononyl Isononanote	Night creams, lotions and powders not spray	3-9%
Isononyl Isononanote	Paste masks and mud packs	0.3-25%
Isononyl Isononanote	Other skin care preparations	3%
Isononyl Isononanote	Suntan gels, creams and liquids not spray	6-7%
Isononyl Isononanote	Indoor tanning preparations	0.2-6%
Isononyl Isononanote	Other suntan preparations	0.1%
Isopropyl Hydroxystearate	Eyeliner	8%
Isopropyl Isostearate	Eye shadow	3-10%
Isopropyl Isostearate	Eye lotion	0.8-5%
Isopropyl Isostearate	Powders (dusting and talcum)	3%
Isopropyl Isostearate	Hair conditioners	0.7%
Isopropyl Isostearate	Hair sprays pump spray	0.6%
Isopropyl Isostearate	Tonics, dressings and other hair grooming aids	0.5-0.8%

Isopropyl Isostearate	Blushers (all types)	2-15%
Isopropyl Isostearate	Face powders	2-19%
Isopropyl Isostearate	Foundations	0.5-15%
Isopropyl Isostearate	Lipstick	15-17%
Isopropyl Isostearate	Other makeup preparations	0.8%
Isopropyl Isostearate	Shaving cream (aerosol, brushless and lather)	4%
Isopropyl Isostearate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.8-6%
Isopropyl Isostearate	Face and neck creams, lotions and powders not spray	2%
Isopropyl Isostearate	Body and hand creams lotions and powders not spray	3-12%
Isopropyl Isostearate	Moisturizing creams, lotions and powders not spray	0.5-5%
Isopropyl Isostearate	Night creams, lotions and powders not spray	2-10%
Isopropyl Isostearate	Paste masks and mud packs	0.8%
Isopropyl Jojobate	Eye lotion	0.7%
Isopropyl Jojobate	Face and neck creams, lotions and powders not spray	6%
Isopropyl Jojobate	Body and hand creams, lotions and powders not spray	0.3%
Isopropyl Linoleate	Hair conditioners	0.1%
Isopropyl Linoleate	Face powders	0.1%
Isopropyl Linoleate	Foundations	0.1%
Isopropyl Myristate	Baby lotions, oils and creams not powder	17%
Isopropyl Myristate	Bubble baths	1%
Isopropyl Myristate	Bath capsules	2-22%
Isopropyl Myristate	Other bath preparations	6%
Isopropyl Myristate	Eyebrow pencil	2-7%

Isopropyl Myristate	Eyeliner	2-31%
Isopropyl Myristate	Eye shadow	4-21%
Isopropyl Myristate	Eye lotion	22%
Isopropyl Myristate	Eye makeup remover	0.9-16%
Isopropyl Myristate	Mascara	0.4%
Isopropyl Myristate	Colognes and toilet waters	3-15%
Isopropyl Myristate	Perfumes	23%
Isopropyl Myristate	Other fragrance preparations	36%
Isopropyl Myristate	Hair conditioners	0.002-67%
Isopropyl Myristate	Hair sprays aerosol	0.02-76.6%
Isopropyl Myristate	Hair straighteners	42%
Isopropyl Myristate	Shampoos (noncoloring)	0.000005-43%
Isopropyl Myristate	Tonics, dressings and other hair grooming aids	0.0002-77.3%
Isopropyl Myristate	Other hair preparations (noncoloring) aerosol	0.3-4% 1%
Isopropyl Myristate	Hair dyes and colors (all types requiring caution statement and patch test)	30%
Isopropyl Myristate	Hair bleaches	68%
Isopropyl Myristate	Blushers (all types)	0.7-2%
Isopropyl Myristate	Face powders	0.7-3%
Isopropyl Myristate	Foundations	2-22%
Isopropyl Myristate	Lipstick	2-18%
Isopropyl Myristate	Makeup bases	0.2-4%
Isopropyl Myristate	Makeup fixatives	9%
Isopropyl Myristate	Other makeup preparations	0.8-15%
Isopropyl Myristate	Cuticle softeners	0.05-33%
Isopropyl Myristate	Nail creams and lotions	0.4-7%
Isopropyl Myristate	Nail polish and enamel removers	2-22%

Isopropyl Myristate	Other manicuring preparations aerosol	28-38% 2%
Isopropyl Myristate	Bath soaps and detergents hand soap	0.002-2% 0.0009%
Isopropyl Myristate	Deodorants not spray aerosol pump spray	0.0003-23% 0.03-23% 8%
Isopropyl Myristate	Feminine hygiene deodorants aerosol	5%
Isopropyl Myristate	Other personal cleanliness products foot scrub	0.05%
Isopropyl Myristate	Aftershave lotions	2-6%
Isopropyl Myristate	Pre-shave lotions (all types) leave-on	8% 17%
Isopropyl Myristate	Shaving cream (aerosol, brushless and lather)	0.003%
Isopropyl Myristate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.02-18%
Isopropyl Myristate	Face and neck creams, lotions and powders not spray	0.03-25%
Isopropyl Myristate	Body and hand creams, lotions and powders not spray spray	0.2-60% 2-12%
Isopropyl Myristate	Foot powders and sprays	1%
Isopropyl Myristate	Moisturizing creams, lotions and powders not spray	0.2-25%
Isopropyl Myristate	Night creams, lotions and powders not spray	1-22%
Isopropyl Myristate	Paste masks and mud packs	15%
Isopropyl Myristate	Skin fresheners	0.1%
Isopropyl Myristate	Other skin care preparations	30%
Isopropyl Myristate	Suntan gels, creams and liquids not spray aerosol	3-25% 5%
Isopropyl Myristate	Indoor tanning preparations	4-25%

	aerosol	5%
Isopropyl Myristate	Other suntan preparations	0.6-17%
Isopropyl Palmitate	Baby lotions oils and creams not powders	2-11%
Isopropyl Palmitate	Bath oils tablets and salts	11-60%
Isopropyl Palmitate	Bubble baths	0.001-23%
Isopropyl Palmitate	Bath capsules	45%
Isopropyl Palmitate	Other bath preparations	20%
Isopropyl Palmitate	Eyebrow pencil	0.1-30%
Isopropyl Palmitate	Eyeliner	0.2-34%
Isopropyl Palmitate	Eye shadow	1-25%
Isopropyl Palmitate	Eye lotion	2-5%
Isopropyl Palmitate	Eye makeup remover	4%
Isopropyl Palmitate	Colognes and toilet waters	35%
Isopropyl Palmitate	Perfumes	40%
Isopropyl Palmitate	Powders (dusting and talcum)	3%
Isopropyl Palmitate	Other fragrance preparations	9-60%
Isopropyl Palmitate	Hair conditioners	0.0003-11%
Isopropyl Palmitate	Hair sprays aerosol pump spray	0.8% 3-20%
Isopropyl Palmitate	Shampoos (noncoloring)	0.0003-0.001%
Isopropyl Palmitate	Tonics, dressings and other hair grooming aids	2-25%
Isopropyl Palmitate	Other hair preparations (noncoloring)	3%
Isopropyl Palmitate	Other hair coloring preparations	44%
Isopropyl Palmitate	Blushers (all types)	3-30%
Isopropyl Palmitate	Face powders	3-18%
Isopropyl Palmitate	Foundations	9-17%
Isopropyl Palmitate	Lipstick	1-34%

Isopropyl Palmitate	Makeup bases	0.7-17%
Isopropyl Palmitate	Other makeup preparations	4-18%
Isopropyl Palmitate	Cuticle softeners	6-12%
Isopropyl Palmitate	Nail creams and lotions	4%
Isopropyl Palmitate	Nail polish and enamel	14%
Isopropyl Palmitate	Nail polish and enamel removers	0.5%
Isopropyl Palmitate	Other manicuring preparations	3%
Isopropyl Palmitate	Bath soaps and detergents	0.3-14%
Isopropyl Palmitate	Deodorants not spray aerosol	0.5-17% 3-5%
Isopropyl Palmitate	Other personal cleanliness products	0.05-31%
Isopropyl Palmitate	Aftershave lotions	2-8%
Isopropyl Palmitate	Shaving cream (aerosol, brushless and lather)	1-11%
Isopropyl Palmitate	Shaving soap (cakes, sticks etc.)	0.4%
Isopropyl Palmitate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	3-30%
Isopropyl Palmitate	Face and neck creams, lotions and powder not spray	2-11%
Isopropyl Palmitate	Body and hand creams, lotions and powders not spray spray	1-60% 2-5%
Isopropyl Palmitate	Foot powders and sprays	17%
Isopropyl Palmitate	Moisturizing creams, lotions and powders not spray	0.002-15%
Isopropyl Palmitate	Night creams, lotions and powders not spray	3%
Isopropyl Palmitate	Paste masks and mud packs	1-3%
Isopropyl Palmitate	Other skin care preparations	0.0001-47%
Isopropyl Palmitate	Suntan gels, creams and liquids not spray	4-5%
Isopropyl Palmitate	Indoor tanning preparations	5%

Isopropyl Palmitate	Other suntan preparations	0.4-2%
Isopropyl Ricinoleate	Lipstick	2%
Isopropyl Stearate	Bath capsules	7%
Isopropyl Stearate	Eye shadow	2%
Isopropyl Stearate	Foundations	3%
Isopropyl Stearate	Lipstick	16%
Isopropyl Stearate	Nail polish and enamel removers	0.9%
Isopropyl Stearate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	9%
Isopropyl Stearate	Face and neck creams, lotions and powders not spray	1-4%
Isopropyl Stearate	Body and hand creams, lotions and powders not spray	3-7%
Isostearyl Behenate	Foundations	4%
Isostearyl Hydroxystearate	Eye shadow	3%
Isostearyl Hydroxystearate	Blushers (all types)	0.3%
Isostearyl Hydroxystearate	Face powders	0.01%
Isostearyl Hydroxystearate	Foundations	0.01-0.1%
Isostearyl Hydroxystearate	Face and neck creams, lotions and powders not spray	2%
Isostearyl Isostearate	Eye lotion	4%
Isostearyl Isostearate	Blushers (all types)	9-12%
Isostearyl Isostearate	Foundations	9%
Isostearyl Isostearate	Lipstick	4-31%
Isostearyl Isostearate	Other makeup preparations	3-30%
Isostearyl Isostearate	Face and neck cream, lotions and powders not spray	1-3%
Isostearyl Isostearate	Body and hand cream, lotions and powders not spray	4%
Isostearyl Laurate	Skin cleansing (cold creams, cleansing lotions, liquid and pads)	0.4%

Isostearyl Linoleate	Foundations	3%
Isostearyl Linoleate	Lipstick	2%
Isostearyl Linoleate	Other skin care preparations	2%
Isostearyl Myristate	Face and neck creams, lotions and powders not spray	2%
Isostearyl Neopentanoate	Eyebrow pencil	16%
Isostearyl Neopentanoate	Eye liner	8-30%
Isostearyl Neopentanoate	Eye shadow	2-46%
Isostearyl Neopentanoate	Eye lotion	3-16%
Isostearyl Neopentanoate	Eye makeup remover	8-12%
Isostearyl Neopentanoate	Other fragrance preparations pump spray	0.5%
Isostearyl Neopentanoate	Hair conditioners	16%
Isostearyl Neopentanoate	Blushers (all types)	3-35.1%
Isostearyl Neopentanoate	Face powders	1-16%
Isostearyl Neopentanoate	Foundations	10-35.1%
Isostearyl Neopentanoate	Lipstick	4-19%
Isostearyl Neopentanoate	Other makeup preparations	12-21%
Isostearyl Neopentanoate	Aftershave lotions	3%
Isostearyl Neopentanoate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	5-16%
Isostearyl Neopentanoate	Face and neck creams, lotions and powders not spray	3-5%
Isostearyl Neopentanoate	Body and hand creams, lotions and powders not spray	2-16%
Isostearyl Neopentanoate	Moisturizing creams, lotions and powders not spray	2-16%
Isostearyl Neopentanoate	Night creams, lotions and powders not spray	16%
Isostearyl Neopentanoate	Suntan gels, creams and liquids not spray	0.6-1%

Isostearyl Palmitate	Eye shadow	0.2%
Isostearyl Palmitate	Eye lotion	5%
Isostearyl Palmitate	Tonics, dressings and other hair grooming aids	0.6-8%
Isostearyl Palmitate	Wave sets	5%
Isostearyl Palmitate	Blushers (all types)	7%
Isostearyl Palmitate	Face powders	1-16%
Isostearyl Palmitate	Foundations	4-17%
Isostearyl Palmitate	Lipstick	5-8%
Isostearyl Palmitate	Makeup bases	10%
Isostearyl Palmitate	Other manicuring preparations	1%
Isostearyl Palmitate	Other personal cleanliness products	0.5%
Isostearyl Palmitate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	8%
Isostearyl Palmitate	Face and neck creams, lotions and powders not spray	3-5%
Isostearyl Palmitate	Body and hand creams, lotions and powders not spray	1-5%
Isostearyl Palmitate	Moisturizing creams, lotions and powders not spray	5%
Isostearyl Palmitate	Suntan gels, creams and liquids not spray	2%
Isotridecyl Isononanoate	Eye liner	2%
Isotridecyl Isononanoate	Eye shadow	2-21%
Isotridecyl Isononanoate	Hair conditioners	3%
Isotridecyl Isononanoate	Blushers (all types)	2-12%
Isotridecyl Isononanoate	Face powders	2%
Isotridecyl Isononanoate	Foundations	2-20%
Isotridecyl Isononanoate	Lipstick	2%
Isotridecyl Isononanoate	Rouges	3%
Isotridecyl Isononanoate	Other makeup preparations	5%

Isotridecyl Isononanoate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	4%
Isotridecyl Isononanoate	Face and neck creams, lotions and powders not spray	2%
Isotridecyl Isononanoate	Body and hand creams, lotions and powders not spray	1%
Isotridecyl Isononanoate	Pastes masks and mud packs	4%
Isotridecyl Isononanoate	Other skin care preparations	3-5%
Lauryl Laurate	Eye shadow	0.8-16%
Lauryl Laurate	Tonics, dressings and other hair grooming aids	6%
Lauryl Laurate	Blushers (all types)	0.1%
Lauryl Laurate	Face powders	0.1%
Lauryl Laurate	Body and hand creams, lotions and powders not spray	4%
Lauryl Laurate	Moisturizing creams, lotions and powders not spray	0.5%
Lauryl Laurate	Other suntan preparations not spray	5%
Myristyl Laurate	Eye liner	2%
Myristyl Laurate	Eye lotion	0.4-0.6%
Myristyl Laurate	Tonics, dressings and other hair grooming aids	0.4-0.5%
Myristyl Laurate	Lipstick	2%
Myristyl Laurate	Other makeup preparations	1%
Myristyl Laurate	Preshave lotions (all types)	0.7%
Myristyl Laurate	Shaving cream (aerosol, brushless and lather)	0.1-0.3%
Myristyl Laurate	Face and neck creams, lotions and powders not spray	0.9%
Myristyl Laurate	Body and hand creams, lotions and powders not spray	0.2-0.7%
Myristyl Laurate	Moisturizing creams, lotions and powders not spray	0.4%
Myristyl Laurate	Indoor tanning preparations	0.2%

Myristyl Myristate	Baby lotions, oils and creams not powder	2-3%
Myristyl Myristate	Bubble baths	2%
Myristyl Myristate	Other bath preparations	1%
Myristyl Myristate	Eyebrow pencil	5-8%
Myristyl Myristate	Eye liner	4-12%
Myristyl Myristate	Eye shadow	4-8%
Myristyl Myristate	Eye lotion	2-4%
Myristyl Myristate	Eye makeup remover	4%
Myristyl Myristate	Mascara	1%
Myristyl Myristate	Other eye makeup preparations	7%
Myristyl Myristate	Colognes and toilet waters	16%
Myristyl Myristate	Perfumes	2-17%
Myristyl Myristate	Sachets	2%
Myristyl Myristate	Other fragrance preparations not spray	17%
Myristyl Myristate	Hair conditioners	0.5-3%
Myristyl Myristate	Tonics, dressings and other hair grooming aids	2-8%
Myristyl Myristate	Hair bleaches	1%
Myristyl Myristate	Blushers (all types)	5%
Myristyl Myristate	Face powders	5%
Myristyl Myristate	Foundations	2-15%
Myristyl Myristate	Lipstick	1-12%
Myristyl Myristate	Makeup bases	7%
Myristyl Myristate	Other makeup preparations	1-3%
Myristyl Myristate	Cuticle softeners	1-7%
Myristyl Myristate	Other manicuring preparations	1%
Myristyl Myristate	Deodorants not spray	2%

Myristyl Myristate	Aftershave lotions	2-3%
Myristyl Myristate	Shaving cream (aerosol, brushless and lather)	2%
Myristyl Myristate	Other shaving preparations	3%
Myristyl Myristate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	2%
Myristyl Myristate	Face and neck creams, lotions and powders not spray	0.5-9%
Myristyl Myristate	Body and hand creams, lotions and powder not spray spray	2-6% 2%
Myristyl Myristate	Foot powders and sprays	2%
Myristyl Myristate	Moisturizing creams, lotions and powders not spray	2-9%
Myristyl Myristate	Night creams, lotions and powders not spray	3-9%
Myristyl Myristate	Pastes masks and mud packs	3-4%
Myristyl Myristate	Other skin care preparations	5%
Myristyl Myristate	Indoor tanning preparations	0.5-0.8%
Myristyl Neopentanoate	Eye lotion	2%
Myristyl Neopentanoate	Face and neck creams, lotions and powders not spray	2%
Myristyl Neopentanoate	Body and hand creams, lotions and powders not spray	2%
Myristyl Neopentanoate	Moisturizing creams, lotions and powders not spray	2%
Myristyl Neopentanoate	Night creams, lotions and powders not spray	2%
Octyldodecyl Erucate	Eyebrow pencil	0.1%
Octyldodecyl Erucate	Eye liner	0.1%
Octyldodecyl Erucate	Eye shadow	0.2%
Octyldodecyl Erucate	Mascara	0.01%
Octyldodecyl Erucate	Blushers (all types)	1%

Octyldodecyl Erucate	Face powders	0.1%
Octyldodecyl Erucate	Foundations	1%
Octyldodecyl Erucate	Lipstick	10%
Octyldodecyl Erucate	Makeup bases	0.1%
Octyldodecyl Erucate	Nail polish and enamel removers	0.01%
Octyldodecyl Erucate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.1%
Octyldodecyl Erucate	Face and neck creams, lotions and powders not spray	0.1%
Octyldodecyl Erucate	Moisturizing creams, lotions and powders not spray	0.1%
Octyldodecyl Isostearate	Mascara	2%
Octyldodecyl Isostearate	Makeup bases	2%
Octyldodecyl Myristate	Eye brow pencil	0.05%
Octyldodecyl Myristate	Eye liner	0.06%
Octyldodecyl Myristate	Eye shadow	0.8%
Octyldodecyl Myristate	Eye lotion	2%
Octyldodecyl Myristate	Mascara	0.07%
Octyldodecyl Myristate	Tonics, dressings and other hair grooming aids	3%
Octyldodecyl Myristate	Blushers (all types)	0.06%
Octyldodecyl Myristate	Foundations	0.1-3%
Octyldodecyl Myristate	Lipstick	0.08-21%
Octyldodecyl Myristate	Other makeup preparations	0.2-0.3%
Octyldodecyl Myristate	Aftershave lotions	3%
Octyldodecyl Myristate	Preshave lotions (all types)	3%
Octyldodecyl Myristate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.4%
Octyldodecyl Myristate	Face and neck creams, lotions and powders not spray	2-4%
Octyldodecyl Myristate	Body and hand creams, lotions and powders	

	not spray	2-8%
Octyldodecyl Myristate	Moisturizing creams, lotions and powders not spray	0.5-5%
Octyldodecyl Myristate	Other skin care preparations	1%
Octyldodecyl Myristate	Other suntan preparations not spray	32%
Octyldodecyl Neopentanoate	Eyebrow pencil	3%
Octyldodecyl Neopentanoate	Eye liner	4%
Octyldodecyl Neopentanoate	Eye shadow	1-9%
Octyldodecyl Neopentanoate	Eye lotion	3-8%
Octyldodecyl Neopentanoate	Eye makeup remover	3%
Octyldodecyl Neopentanoate	Other eye makeup preparations	3%
Octyldodecyl Neopentanoate	Tonics, dressings and other hair grooming aids	0.5%
Octyldodecyl Neopentanoate	Blushers (all types)	4%
Octyldodecyl Neopentanoate	Face powders	2-4%
Octyldodecyl Neopentanoate	Foundations	4-16%
Octyldodecyl Neopentanoate	Lipstick	0.7-12%
Octyldodecyl Neopentanoate	Makeup bases	3%
Octyldodecyl Neopentanoate	Makeup fixatives	2%
Octyldodecyl Neopentanoate	Other makeup preparations	4-5%
Octyldodecyl Neopentanoate	Face and neck creams, lotions and powders not spray	0.8-3%
Octyldodecyl Neopentanoate	Body and hand creams, lotions and powders not spray	2-5%
Octyldodecyl Neopentanoate	Moisturizing creams, lotions and powders not spray	3-4%
Octyldodecyl Neopentanoate	Night creams, lotions and powders not spray	3-5%
Octyldodecyl Neopentanoate	Paste masks and mud packs	3%
Octyldodecyl Neopentanoate	Suntan, gels, creams and liquids not spray	13%

	pump spray	20%
Octyldodecyl Neopentanoate	Indoor tanning preparations	7%
Octyldodecyl Octyldodecanoate	Face and neck creams, lotions and powders not spray	4%
Octyldodecyl Olivatate	Suntan gels, creams and liquids not spray	2%
Octyldodecyl Ricinoleate	Other fragrance preparations not spray	3%
Octyldodecyl Ricinoleate	Lipstick	0.9-3%
Octyldodecyl Stearate	Eye brow pencil	4%
Octyldodecyl Stearate	Eye shadow	8-19%
Octyldodecyl Stearate	Foundations	9%
Octyldodecyl Stearate	Lipstick	9%
Octyldodecyl Stearate	Other makeup preparations	3-8%
Octyldodecyl Stearate	Aftershave lotions	4%
Oleyl Erucate	Eye liner	12%
Oleyl Erucate	Eye shadow	12%
Oleyl Erucate	Blushers (all types)	11%
Oleyl Erucate	Face powders	11%
Oleyl Erucate	Foundations	11%
Oleyl Erucate	Aftershave lotions	1%
Oleyl Erucate	Body and hand creams, lotions and powders not spray	3%
Oleyl Linoleate	Lipstick	11%
Oleyl Linoleate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	10%
Oleyl Linoleate	Moisturizing creams, lotions and powders not spray	10%
Oleyl Oleate	Tonics, dressings and other hair grooming aids	4%
Oleyl Oleate	Lipstick	9%

Oleyl Oleate	Makeup bases	1%
Oleyl Oleate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	1%
Oleyl Oleate	Face and neck creams, lotions and powders not spray	3%
Oleyl Oleate	Body and hand creams, lotions and powders not spray	0.4%
Propylheptyl Caprylate	Hair conditioners	1%
Propylheptyl Caprylate	Foundations	6%
Propylheptyl Caprylate	Lipstick	13%
Propylheptyl Caprylate	Face and neck creams, lotions and powders not spray	2-4%
Propylheptyl Caprylate	Body and hand lotions and powders not spray spray	2-6% 5%
Propylheptyl Caprylate	Night creams, lotions and powders not spray	3%
Stearyl Beeswax	Eye shadow	0.4%
Stearyl Behenate	Mascara	3%
Stearyl Caprylate	Eye liner	1%
Stearyl Caprylate	Other eye makeup preparations	0.3%
Stearyl Caprylate	Tonics, dressings and other hair grooming aids	3%
Stearyl Caprylate	Foundations	0.7%
Stearyl Caprylate	Lipstick	0.5%
Stearyl Caprylate	Face and neck creams, lotions and powders not spray	2%
Stearyl Caprylate	Body and hand creams, lotions and powders not spray	0.6%
Stearyl Caprylate	Night creams, lotions and powders not spray	5%
Stearyl Caprylate	Other suntan preparations	0.5%
Stearyl Ethylhexanoate	Foundations	7%

Stearyl Ethylhexanoate	Lipstick	0.2%
Stearyl Ethylhexanoate	Cuticle softeners	0.2%
Stearyl Ethylhexanoate	Other suntan preparations	10%
Stearyl Heptanoate	Eye brow pencil	2%
Stearyl Heptanoate	Eye liner	2-11%
Stearyl Heptanoate	Eye shadow	2%
Stearyl Heptanoate	Eye lotion	2%
Stearyl Heptanoate	Eye makeup remover	2-7%
Stearyl Heptanoate	Other eye makeup preparations	0.6-2%
Stearyl Heptanoate	Hair conditioners	2%
Stearyl Heptanoate	Tonics, dressings and other hair grooming aids	2-3%
Stearyl Heptanoate	Blushers (all types)	2%
Stearyl Heptanoate	Face powders	2%
Stearyl Heptanoate	Foundations	2%
Stearyl Heptanoate	Lipstick	2-11%
Stearyl Heptanoate	Other makeup preparations	3%
Stearyl Heptanoate	Face and neck creams, lotions and powders not spray	2%
Stearyl Heptanoate	Body and hand creams, lotions and powders not spray	2-4%
Stearyl Heptanoate	Moisturizing creams, lotions and powders not spray	2-3%
Stearyl Heptanoate	Night creams, lotions and powders not spray	5%
Stearyl Palmitate	Mascara	0.02-0.6%
Stearyl Stearate	Mascara	0.2%
Stearyl Stearate	Tonics, dressings and other hair grooming aids	3%
Stearyl Stearate	Hair dyes and colors (all types requiring caution statement and patch test)	2%
Stearyl Stearate	Foundations	0.2%

Stearyl Stearate	Lipstick	0.3-0.9%
Stearyl Stearate	Bath soaps and detergents	2%
Stearyl Stearate	Body and hand creams, lotions and powders not spray	0.02%
Tridecyl Neopentanoate	Eye eyebrow pencil	5%
Tridecyl Neopentanoate	Eye liner	5%
Tridecyl Neopentanoate	Eye shadow	5-41%
Tridecyl Neopentanoate	Eye lotion	5%
Tridecyl Neopentanoate	Blushers (all types)	5%
Tridecyl Neopentanoate	Face powders	5%
Tridecyl Neopentanoate	Foundations	5-8%
Tridecyl Neopentanoate	Lipstick	2-5%
Tridecyl Neopentanoate	Makeup bases	8%
Tridecyl Neopentanoate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	5%
Tridecyl Neopentanoate	Face and neck creams, lotions and powders not spray	2%
Tridecyl Neopentanoate	Moisturizing creams, lotions and powders not spray	5%
Tridecyl Neopentanoate	Night creams, lotions and powders not spray	5%
Tridecyl Stearate	Eye liner	0.3%
Tridecyl Stearate	Eye lotion	0.3%
Tridecyl Stearate	Hair sprays pump spray	0.4%
Tridecyl Stearate	Tonics, dressings and other hair grooming aids	1-7%
Tridecyl Stearate	Foundations	5%
Tridecyl Stearate	Lipstick	3-16%
Tridecyl Stearate	Aftershave lotions	0.2-0.8%
Tridecyl Stearate	Shaving cream (aerosol, brushless and lather)	2%

Tridecyl Stearate	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	18%
Tridecyl Stearate	Face and neck creams lotions and powders not spray	3-4%
Tridecyl Stearate	Body and hand creams, lotions and powders not spray spray	2% 2%
Tridecyl Stearate	Night creams, lotions and powders not spray	0.5%
Tridecyl Stearate	Other skin care products	2%

*Ingredients included in the title of the table but not found in the table were included in the concentration of use survey, but no uses were reported.

Information collected in 2012


Table prepared August 1, 2012

Table updated October 18, 2012: Arachidyl Propionate: Foundations: 15% changed to 14.2%; Lipstick, Deodorant, Aftershave lotions, Shaving cream, Skin cleansing, Moisturizing (not spray): 15% changed to 14.1%; Body and hand (not spray): 14% changed to 13.2%; Cetyl Ethylhexanoate: Eye makeup remover, Skin cleansing: changed 78% to 77.3%; Cetyl Ricinoleate: Eye lotion: low concentration changed from 3% to 0.3%; Lipstick 16% changed to 15.2%; Cetyl Stearate: Tonics, dressings and other hair grooming aids: 16% changed to 4%; Decyl Oleate: Hair conditioners: added 2% as low concentration; Tonics, dressings and other hair grooming aids deleted; Ethylhexyl Ethylhexanoate: Lipstick: changed 9% to 8.3%; Ethylhexyl Ethylhexanoate: Body and hand product: 55% changed to 5%; Ethylhexyl Palmitate: Blushers: 48% changed to 47.1%; Ethylhexyl Stearate: Lipstick: 28% changed to 27.1%; Hydrogenated Ethylhexyl Olivatate: Hair sprays (pump spray): 16% changed to 15.5%; Isocetyl Myristate: Foundations: 37% changed to 36.5%; Isocetyl Stearate: Foundations: 32% changed to 31.4%; Isodecyl Isononanoate: Lipstick: 44% changed to 43.5%; Isopropyl Myristate: Hair sprays (aerosol) 77% changed to 76.6%; Tonics, dressings and other hair grooming aids 78% changed to 77.3%; Isopropyl Palmitate: Perfumes: 76% deleted; Hair conditioners: 1% changed to 11%; Isostearyl Neopentanoate: Blushers, Foundations: 36% changed to 35.1%; Stearyl Caprylate: Other suntan preparations: 10% changed to 0.5%;



Memorandum

TO: F. Alan Andersen, Ph.D.
Director - COSMETIC INGREDIENT REVIEW (CIR)

FROM: Halyna Breslawec, Ph.D.
Industry Liaison to the CIR Expert Panel | 

DATE: October 31, 2012

SUBJECT: Updated Concentration of Use by FDA Product Category: Cetyl Esters

Concentration of use by FDA Product Category*

Cetyl Esters
Cetearyl Olivatate
Cetearyl Palmate

Cetearyl Palmitate
Cetearyl Stearate
Cetyl Tallowate

Ingredient	Product Category	Maximum Concentration of Use
Cetyl Esters	Eye liner	4%
Cetyl Esters	Eye shadow	3%
Cetyl Esters	Eye lotion	4%
Cetyl Esters	Hair conditioners	0.7-5%
Cetyl Esters	Tonics, dressings and other hair grooming aids	2-3%
Cetyl Esters	Other hair preparations (noncoloring)	2%
Cetyl Esters	Blushers (all types)	3%
Cetyl Esters	Foundations	3-5%
Cetyl Esters	Lipstick	3-11.5%
Cetyl Esters	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.8-4%
Cetyl Esters	Face and neck creams, lotions and powders not sprays	0.8-5%
Cetyl Esters	Body and hand creams, lotions and powders not sprays	2-3%
Cetyl Esters	Moisturizing creams, lotions and powders not sprays	2-3%
Cetyl Esters	Night creams, lotions and powders not sprays	3%
Cetyl Esters	Paste masks and mud packs	5%
Cetyl Esters	Other skin care preparations	4%

Cetyl Esters	Suntan gels, creams and liquids not spray	2%
Cetearyl Olivat	Eye lotion	3%
Cetearyl Olivat	Mascara	1%
Cetearyl Olivat	Tonics, dressings and other hair grooming aids	2%
Cetearyl Olivat	Foundations	2%
Cetearyl Olivat	Aftershave lotions	2%
Cetearyl Olivat	Shaving cream (aerosol, brushless and lather)	2%
Cetearyl Olivat	Skin cleansing (cold creams, cleansing lotions, liquids and pads)	0.4%
Cetearyl Olivat	Face and neck creams, lotions and powders not sprays	0.3-3%
Cetearyl Olivat	Moisturizing creams, lotions and powders not sprays	2%
Cetearyl Olivat	Night creams, lotions and powders not sprays	2%
Cetearyl Olivat	Indoor tanning preparations	2%

*Ingredients found in the title of the table but not found in the table were included in the concentration of use survey, but no uses were reported.

Information collected in 2012

Table prepared April 24, 2012

Table updated October 31, 2012: Cetyl Esters: Lipstick changed from 12-30% to 3-11.5%



Memorandum

TO: F. Alan Andersen, Ph.D.
Director - COSMETIC INGREDIENT REVIEW (CIR)

FROM: Halyna Breslawec, Ph.D.
Industry Liaison to the CIR Expert Panel

DATE: September 26, 2012

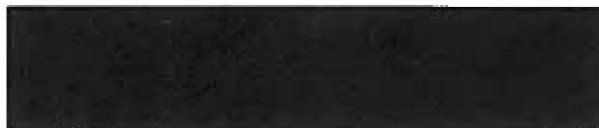
SUBJECT: HRIPT of a Product Containing Ethylhexyl Palmitate

Product Investigations, Inc. 2008. Determination of the irritating and sensitizing propensities of a product on human skin (body oil containing 77.9% Ethylhexyl Palmitate).



PRODUCT INVESTIGATIONS, INC.

151 East Tenth Avenue
Conshohocken, PA 19428
610-825-5855 • fax 610-825-7288



body oil contains 77.9% Ethylhexyl Palmitate

**DETERMINATION OF THE IRRITATING AND SENSITIZING PROPENSITIES
OF [REDACTED] ON HUMAN SKIN**

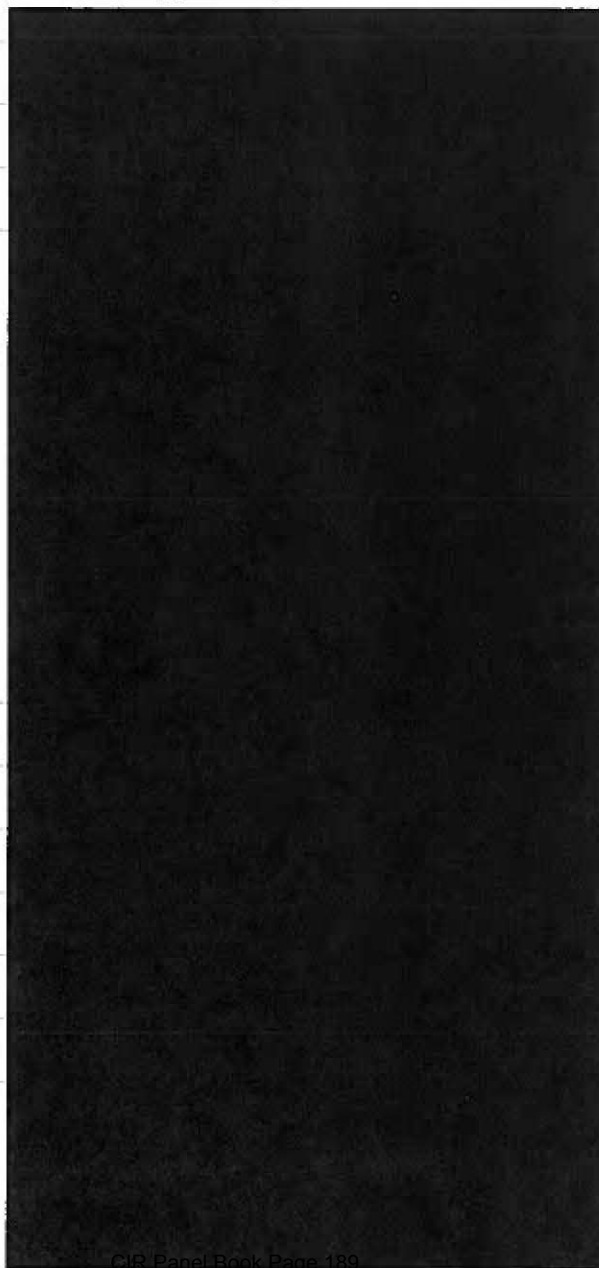


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DETERMINATION OF THE IRRITATING AND SENSITIZING PROPENSITIES OF [REDACTED] ON HUMAN SKIN

1.00 OBJECTIVES:

- .01 To identify and characterize the skin-damaging propensities that [REDACTED] can be induced to exercise under the conditions of this modified patch test procedure.
- .02 To adjudge whether the exercise of such propensities under the test conditions contraindicates the kind of skin contact that would be occasioned during the appropriate use of the product.

2.00 DESIGN:

- .01 A modified version of the Repeated Insult Patch Test [REDACTED] was conducted under double blind conditions on a panel composed of more than one hundred subjects at the outset.
- .02 The regimen comprised nine sequential 24-hour induction applications and two concurrently conducted 24-hour challenge applications, one on the initial induction site and one on a naive site.
- .03 During the initial phase, the skin of the contact sites was graded and the grades recorded on Wednesdays, Fridays (i.e. twenty-four hours after patches had been removed), and Mondays (i.e. forty-eight hours after patches had been removed).
- .04 During the challenge phase, the skin of the contact sites was graded within moments after the patches had been removed (24 hours post application) and again twenty-four hours later. Follow-up examinations were conducted thereafter only if adverse effects were present.
- .05 This study was conducted in compliance with the standards of good clinical practices generally applicable for the protection of the privileges and well-being of individuals who participate in patch test procedures.

3.00 SPONSOR:

Project Director:

Authorization:

Purchase Order:

4.00 STUDY PRODUCT:

Type of Product: Fragranced Shimmer Body Oil
 Sponsor Identification: [REDACTED]
 Date received: 4/25/08
 Quantity rec'd: > 600 g. gross wt.
 Form used in study: As supplied
 PI N° [REDACTED]

5.00 SITE OF STUDY:

Product Investigations, Inc.
 151 East Tenth Avenue
 Conshohocken, PA 19428

Study Personnel:

Medical Director: Morris V. Shelanski, MDCM
 Dir. Derm. Services: Joseph E. Nicholson III
 Dermatologist: Julia H. Cohen, MD
 Technicians: Kay Walk, Margaret Reilly
 Quality Assurance: Samuel J. Charles III

6.00 DATES OF STUDY:

Started: 5 May 2008
Completed: 4 June 2008

7.00 SELECTION OF SUBJECTS:**.01 RECRUITING:**

Prospective subjects were recruited from surrounding localities via phone, posters and personal contact.

.02 INFORMED CONSENT:

All individuals who expressed interest in participating were given an informed consent document to read. This document, which each candidate had to read and sign before being entered into the study, presented the following information:

- a. How many subjects were to be enrolled in the study;
- b. The intended use of the product;
- c. Why the product was being tested;
- d. How the test was to be performed;
- e. That the regimen was not intended to benefit a subject's health, well being, or quality of life.
- f. The different ways that participation may be detrimental to a subject's health, well being, or quality of life.
- g. That not all detrimental effects could be foreseen and made known at the time the informed consent was presented for the prospective subject's signature.
- h. What commitments a subject had to make to be in compliance; and
- i. What considerations a subject was entitled to receive and the conditions for receiving them.

.03 DETERMINATION OF ELIGIBILITY:

Information concerning a prospective subject's qualifications was obtained from the answers the subject gave in filling out a medical history form and in responding to specific questions. Those who did not meet the following criteria were rejected.

a. Inclusion Criteria: Satisfaction of all the following items was obligatory:

- i. The candidate was at least eighteen years old, and
- ii. agreed to comply fully with the scheduled study regimen, and
- iii. expressed awareness that a participant would incur risks that would affect her/his well-being, and
- iv. denied that the amount of the stipend had induced her/him to participate against her/his better judgment, and
- v. had read the informed consent agreement, and
- vi. had assured the interviewer that she/he had no questions about the informed consent's contents that had not been answered to her/his satisfaction, and
- vii. had signed the consent form willingly and without reservation.

b. Exclusion Criteria: Any one of the following items was cause for rejection:

- i. The candidate had an illness that contraindicated participation; or
- ii. a condition that rendered the skin unsuitable for use in this study; or
- iii. was using dosages of medications that could alter the skin's tolerance; or
- iv. had a documented history of intolerance to the category of products submitted for study; or
- v. was a female who was pregnant or was breast feeding an infant.

.04 PANEL INFORMATION:

a. [REDACTED]

b. Demographics:

SEX	Number	Age Range
Female	81	19 - 83
Male	25	18 - 69

c. **Dedication:** This was a **shared panel**, i.e. the subjects were engaged in the evaluation of materials submitted by sponsors other than [REDACTED]

8.00 SITE INFORMATION:**.01 LOCATION:**

[REDACTED] was assigned Band #4 on the **left side of the back of each subject.**

.02 IDENTIFICATION OF A CONTACT SITE:

At each visit the skin around the contact site was marked to facilitate examinations after the device was removed and positioning of subsequently-applied devices as precisely as was feasible on the same site.

9.00 PATCHING DEVICES:**.01 TYPE OF DEVICE:**

Partially-occlusive patching devices consisting of a 2 cm x 2 cm absorbent pad centered on the adhesive-coated surface of a 2 cm x 4 cm plastic film were used to convey and maintain the product on the skin.

.02 PREPARATION OF A PATCHING DEVICE:

The webril pad of a patching device was infused with 150µl of the test material.

.03 POSITIONING AND REMOVING A PATCHING DEVICE:

- a. A prepared device was positioned on its designated site on each subject with the product-treated surface of the pad in contact with the skin.
- b. Firm pressure was applied to the backing of the device to effect intimate contact of the pad with the skin and to bond the flanges of the device securely to the skin.
- c. When the time came for removing the device, the device was peeled off the skin as gently as was feasible under the circumstances.

10.00 DATA ACQUISITION:**.01 GRADING PROCEDURE:**

- a. Examinations of the contact sites to grade the effects elicited by the product were conducted on Mondays, Wednesday and Fridays. When a subject came in on a scheduled examination day, the technician examined the skin of the contact site.
 - i. If no adverse effect was detected, a "0" was recorded in the subject's Case Report Form.
 - ii. If an adverse effect was detected, the technician entered a grade indicating her assessment of the response's intensity.
- b. The subject was then sent into the patching room where the site was examined again by a second technician to ascertain independently whether or not the site should be used again. If she disagreed with the first technician's assessment, the application was held in abeyance until the issue could be resolved with the help of the supervisor and/or the investigator.
- c. The supervisor or the investigator was called in not only when a disagreement had to be resolved, but also to validate substantial sudden changes, e.g. when a response is deemed to merit a grade ≥ 3 or when a response has been judged to have decreased by two or more points from the previous day's status.

.02 CRITERIA FOR GRADING RESPONSE INTENSITY:

The following scale was used in this procedure to designate the intensities of those gross skin changes that may be occasioned by exposing the surface of the skin to a product.

<u>Morphology</u>	<u>Visible Change</u>	<u>Grade</u>
<u>Subclinical Stage</u>	None	0
<u>Inflammation</u>		
<u>Vascular Dilation:</u>	Faint redness with poorly defined margins	1
	Redness with well-defined margins	2
<u>Infiltration:</u>	Redness plus well-defined edema	3
	Redness plus papules, or vesicles or ulceration	4

.04 SITE CHANGES:

- a. Switch to a Naive Site:
 - i. If the product had elicited a Grade 2 response on a subject, application of the product would have been switched immediately to a naive site on the subject.
- b. Discontinuation of Applications:
 - i. If the product had elicited a second Grade 2 on a subject, application of the product would have been discontinued immediately for the remainder of the initial phase on the affected subject.
 - ii. If the product had elicited a Grade 3 response on a subject, application of the product would have been discontinued immediately for the remainder of the initial phase on the affected subject.

11.00 OVERVIEW OF STUDY REGIMEN:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Week #1	Apply-	Remove	Grade/Apply	Remove	Grade/Apply	(Removed)	-
Week #2	Grade/Apply	Remove	Grade/Apply	Remove	Grade/Apply	(Removed)	-
Week #3	Grade/Apply	Remove	Grade/Apply	Remove	Grade/Apply	(Removed)	-
Week #4	-	Grade	-	-	-	-	-
Week #5	Apply	Remove/Grade	Grade	Grade*	Grade*	-	-

*If necessary

12.00 STUDY REGIMEN:**.01 INITIAL/INDUCTION PHASE-****Week #1:****Monday:**

- i. As each subject presented herself/himself at the clinic, the skin of the contact site assigned to the product submitted for study was examined and ascertained to be suitable before applications were begun.
- ii. A freshly-prepared patching device was applied on its assigned site.
- iii. The skin around the device was marked and the subject was instructed to return on Tuesday.

Tuesday:

- i. As each subject returned, the site-identifying marks were reinforced.
- ii. The patching device was removed by a technician and the subject was instructed to return on Wednesday

Wednesday:

- i. As each subject returned, the skin of the contact site was graded. The grade was recorded.
- ii. A freshly-prepared patching device was applied on the same site.
- iii. The site-identifying marks were reinforced and the subject was instructed to return on Thursday

Thursday:

- i. As each subject returned, the site-identifying marks were reinforced.
- ii. The patching device was removed by a technician and the subject was instructed to return on Friday.

Friday:

- i. As each subject returned, the skin of the contact site was graded. The grade was recorded.
- ii. A freshly-prepared patching device was applied on the same site.
- iii. The site-identifying marks were reinforced.
- iv. The subject was dismissed with instructions to remove the patching device on Saturday, to record the time of removal, and to return to the clinic on the following Monday for resumption of the regimen.

Week #2:**Monday:**

- i. As each subject returned, the skin of the contact site was graded. The grade was recorded.
- ii. The time at which the patch was removed on Saturday was recorded.
- iii. A freshly-prepared patching device was applied on the same site.
- iv. The site-identifying marks were reinforced and the subject was instructed to return on Tuesday.

Tuesday, Wednesday, Thursday, Friday:

The procedures followed were the same as those followed on corresponding days during Week 1.

Week #3:**Monday:**

- i. As each subject returned, the skin of the contact site was graded. The grade was recorded.
- ii. The time at which the patch was removed on Saturday was recorded.
- iii. A freshly-prepared patching device was applied on the same site.
- iv. The site-identifying marks were reinforced and the subject was instructed to return on Tuesday.

Tuesday, Wednesday, Thursday, Friday:

The procedures followed were the same as those followed on corresponding days during Week 1.

Week #4:**Tuesday:**

- i. As each subject returned, the skin of the contact site was graded. The grade was recorded.
- ii. The time at which the patch was removed on Saturday was recorded.
- iii. a) If the subject had undergone all nine induction applications, she/he was dismissed after being instructed as follows:
 - i) to report back to the clinic on the following Monday to receive the challenge applications, and
 - ii) to notify the investigator without delay should any significant changes occur in the skin of the contact site before Monday of the challenge week.
- b) If the subject had not received the required number of induction applications and was deficient without valid reason, applications were continued. As many as two missed applications could be made up during this week. When the subject had undergone the required number of make up applications, she/he was dismissed after being instructed as in section a) ii, above.

.02 HIATUS/MAKE UP PHASE-**Week # 4:**

After the examination on Tuesday of Week 4, no procedures other than make-up cycles were scheduled during this period.

.03 CHALLENGE PHASE-**Week #5:****Monday:**

- i. As each subject returned, the skin of the initial induction site was examined and ascertained to be free of any conditions that would have rendered it unfit for undergoing the challenge applications.
- ii. A prepared device was applied on the initial induction site.
- iii. A second prepared device was applied on a naive site.
- iv. The skin around both devices was marked and the subject was instructed to return on Tuesday.

Tuesday: (Note: If a subject was absent on Monday, she/he was patched on Tuesday.)

- i. As each subject returned, the site-identifying marks around both contact sites were reinforced.
- ii. Both patching devices were removed by a technician.
- iii. The skin of both contact sites was graded; the grades were recorded.
- iv. The subject was instructed to return on Wednesday.

Wednesday:

- i. As each subject returned, the skin of both contact sites was graded; the grades were recorded.
- ii. If follow-up was indicated, the subject was instructed to return on Thursday, otherwise the subject was dismissed from the study of this material.

.04 FOLLOW-UP PHASE:**Week #6 and Week #7:**

During the two weeks following the exit examination, the subjects were given the opportunity to relay any information concerning effects that were relevant to the characterization of the product as well as to communicate the need for treatment of persistent or newly-occurring responses.

13.00 PROCEDURE DEVIATIONS:

The lab was closed on Monday of Week #4 due to the Memorial Day holiday. Subjects returned on Tuesday as noted above.

14.00 COMPLIANCE

PHASE	No. Of AEC's Required	EXCUSED	COMPLIANT	
			YES	NO
Induction	8	0	105	1
Challenge	1/1	0	104	2

105 of the 106 Subjects were in compliance with the number of required application/examination cycles during induction.
104 of the 106 Subjects were in compliance with the number of required application/examination cycles during challenge.

15.00 INCIDENCE OF RESPONSES:

GRADE	TYPE OF RESPONSE	INDUCTION PHASE	CHALLENGE PHASE	
			ORIGINAL CONTACT SITE	NAIVE CONTACT SITE
0	NO VISIBLE CHANGE	105 SUBJECTS	104 SUBJECTS	104 SUBJECTS
1	FAINT REDNESS, UNDEFINED BORDER	0 "	0 "	0 "
2	INTENSE REDNESS, DEFINED BORDER	0 "	0 "	0 "
3	REDNESS + DEFINITE EDEMA	0 "	0 "	0 "
4	REDNESS + PAPULES, OR VESICLES,	0 "	0 "	0 "
	NO. OF RESPONDERS	0 SUBJECTS	0 SUBJECTS	0 SUBJECTS
	NO DATA ACQUIRED	1 SUBJECT	2 SUBJECTS	2 SUBJECTS

16.00 SIGNIFICANCE OF THE RESPONSES:**.01 INITIAL/INDUCTION PHASE:**

No responses were noted on any of the 105 subjects who underwent at least one post-application examination. The absence of responses characterizes the product as one which is devoid of clinically significant skin-irritating propensities.

.02 CHALLENGE PHASE:**a. Original Contact Sites:**

No responses were noted on any of the 104 subjects who participated in this phase of the study. The absence of responses characterizes the product as one which is devoid of clinically significant skin sensitizing propensities.

b. Naive Contact Sites:

No responses were noted on any of the 104 subjects who participated in this phase of the study. The absence of responses characterizes the product as one which is devoid of clinically significant skin sensitizing propensities.

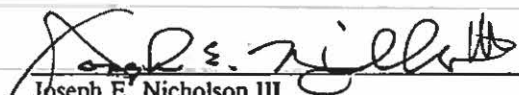
17.00 CONCLUSIONS:

_____ was found to be neither a clinically significant skin irritant nor a skin sensitizer under the conditions of this study.

_____ is not contraindicated for usages entailing repeated applications on human skin under conditions appropriate for such products.


PRODUCT INVESTIGATIONS, INC.

6/24/08
Date


Joseph E. Nicholson III
Director, Dermatological Studies

18.00 COMPLIANCE WITH GOOD QUALITY ASSURANCE STANDARDS:

I have audited the results presented in this report and believe that, to the best of my knowledge, they accurately reflect the raw data acquired during the course of this study.


Samuel Charles
Director, Quality Assurance

Subj #	INDUCTION PHASE														HIATUS/MAKEUPS							CHALLENGE PHASE														
	WEEK 1							WEEK 2							WEEK 3							WEEK 4							WEEK 5							
	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	
	WEEK 1							WEEK 2							WEEK 3							WEEK 4							WEEK 5							
1	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	B	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Site: L4

Subj #	INDUCTION PHASE														HIATUS/MAKEUPS							CHALLENGE PHASE															
	WEEK 1							WEEK 2							WEEK 3							WEEK 4							WEEK 5								
	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S		
	WEEK 1							WEEK 2							WEEK 3							WEEK 4							WEEK 5								

Subj #	INDUCTION PHASE																									HIATUS/MAKEUPS					CHALLENGE PHASE									
	WEEK 1					WEEK 2					WEEK 3					WEEK 4					WEEK 5																			
	M	T	W	TH	F	M	T	W	TH	F	M	T	W	TH	F	M	T	W	TH	F	M	T	W	TH	F															
	B		0		0	0				0	0				0						0		B	0/0	0/0															
61	B		0		0	0				0	0				0						0		B	0/0	0/0															
62	B		0		0	0				0	0				0						0		B	0/0	0/0															
63	B		0		0	0				0	0				0						0		B	0/0	0/0															
64	B		0		0	0				0	0				0						0		B	0/0	0/0															
65	B		0		0	0				0	0				0						0		B	0/0	0/0															
66	B		0		0	0				0	0				0						0		B	0/0	0/0															
67	B		0		0	0				0	0				0						0		B	0/0	0/0															
68	B		0		0	0				0	0				0						0		B	0/0	0/0															
69	B		0		0	0				0	0				0						0		B	0/0	0/0															
70	B		0		0	0				0	0				0						0		B	0/0	0/0															
71	B		0		0	0				0	0				0						0		B	0/0	0/0															
72	B		0		0	0				0	0				0						0		B	0/0	0/0															
73	B		0		0	0				0	0				0						0		B	0/0	0/0															
74	B		0		0	0				0	0				0						0		B	0/0	0/0															
75	B		0		0	0				0	0				0						0		B	0/0	0/0															
76	B		0		0	0				0	0				0						0		B	0/0	0/0															
77	B		0		0	0				0	0				0						0		B	0/0	0/0															
78	B		0		0	0				0	0				0						0		B	0/0	0/0															
79	B		0		0	0				0	0				0						0		B	0/0	0/0															
80	B		0		0	0				0	0				0						0		B	0/0	0/0															
81	B		0		0	0				0	0				0						0		B	0/0	0/0															
82	B		0		0	0				A	0				0						0		B	0/0	0/0															
83	B		0		0	0				0	0				0						0		B	0/0	0/0															
84	B		0		0	0				0	0				0						0		B	0/0	0/0															
85	B		0		0	0				0	0				0						0		B	0/0	0/0															
86	B		A		0	Dropped															0																			
87	B		0		0	0				0	0				0						0		B	0/0	0/0															
88	B		0		0	0				0	0				0						0		B	0/0	0/0															
89	B		0		0	0				0	0				0						0		B	0/0	0/0															
90	B		0		0	0				0	0				0						0		B	0/0	0/0															

#iqns



Memorandum

TO: F. Alan Andersen, Ph.D.
Director - COSMETIC INGREDIENT REVIEW (CIR)

FROM: Halyna Breslawec, Ph.D.
Industry Liaison to the CIR Expert Panel

DATE: September 26, 2012

SUBJECT: HRIPT of Products Containing Ethylhexyl Stearate

Clinical Research Laboratories, Inc. 2009. Repeated insult patch test of eyebrow pencil containing 38.8% Ethylhexyl Stearate.

Product Investigations, Inc. 2008. Determination of the irritating and sensitizing propensities of a product on human skin (lip gloss containing 25.9% Ethylhexyl Stearate).



Clinical Research Laboratories, Inc.

Final Report

Repeated Insult Patch Test

Eyebrow pencil containing 38.8% Ethylhexyl Stearate

CLIENT:

ATTENTION:

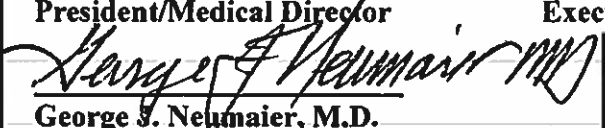
TEST MATERIAL:

CRL STUDY NUMBER:

AUTHORIZED SIGNATURES:


Bruce E. Kanengiser, M.D.
President/Medical Director


Michael J. Muscatiello, Ph.D.
Executive Vice President/COO


George S. Neumaier, M.D.
Diplomate American Board
of Dermatology

REPORT DATE:

July 31, 2009



Clinical Research Laboratories, Inc.

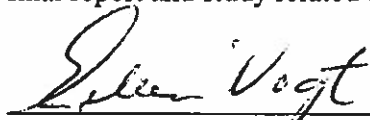
Good Clinical Practice Quality Assurance Audit Statement

Clinical Study Number: CRL41909-1

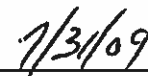
Start Date: April 27, 2009

Completion Date: July 10, 2009

The clinical study listed above was conducted in accordance with Clinical Research Laboratories, Inc. Standard Operating Procedures, which incorporate the principles of Good Clinical Practice defined by applicable guidelines and regulations established by U.S. Regulatory Agencies. The conduct of the study was monitored for compliance, and the associated records, including source documents or raw data, were reviewed for documentation practices and accuracy by a Project Manager/Study Director and/or a Quality Assurance Representative. Standard Quality Assurance audit procedures for this final report and study related documents were conducted, as indicated below.



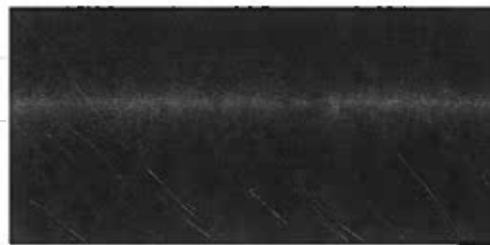
Signature of QA Auditor



Date



Clinical Research Laboratories, Inc.



FINAL REPORT

REPEATED INSULT PATCH TEST

PURPOSE

The purpose of this study was to determine the dermal irritation and sensitization potential of a test material.

INVESTIGATIVE SITE



TEST MATERIAL

The following test material was provided by [REDACTED] and was received by Clinical Research Laboratories, Inc. on April 24, 2009:

Test Material	Test Condition	Patch Type
[REDACTED]	Test as received	Semi-occlusive*

The test material was coded with the following CRL identification number:



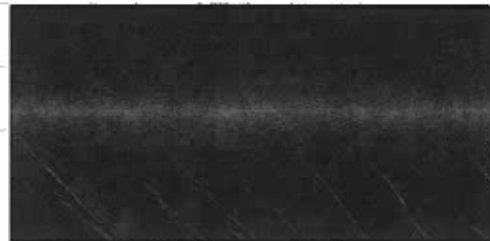
STUDY DATES

This study was initiated on April 27, 2009 and was completed on July 10, 2009.

* Semi-occlusive Strip (Brady Medical, Mesquite, TX)



Clinical Research Laboratories, Inc.



PANEL SELECTION

Each subject was assigned a permanent CRL identification number. All subjects signed an Informed Consent Form in compliance with 21 CFR Part 50: "Protection of Human Subjects" and a HIPAA Authorization Form in compliance with 45 CFR Parts 160 and 164. All subjects completed a Subject Profile/Medical History Form provided by Clinical Research Laboratories, Inc. prior to the study (Subject Demographics - Appendix I). Subjects who met the following criteria were impaneled:

- Male and female panelists between the ages of 18 and 70;
- Subjects who have completed a Panelist Profile/Medical History;
- Subjects who are in general good health as determined by a Panelist Profile/Medical History;
- Subjects who do not exhibit any skin diseases that might be confused with a skin reaction from the test material;
- Subjects willing to sign an Informed Consent Form in conformance with 21 CFR Part 50: "Protection of Human Subjects";
- Subjects who have completed a HIPAA Authorization Form in conformance with 45 CFR Parts 160 and 164;
- Females who are not pregnant or lactating;
- Subjects who demonstrate dependability and intelligence in following directions;
- Subjects who are not currently using any systemic or topical corticosteroids, anti-inflammatory drugs or antihistamines.

TEST METHOD

Prior to the application of the patch, the test area was wiped with 70% isopropyl alcohol and allowed to dry. The test material, which was prepared as described in the Test Material section of the report, was applied to the upper back (between the scapulae) and was allowed to remain in direct skin contact for a period of 24 hours.



Clinical Research Laboratories, Inc.



TEST METHOD (Continued)

Patches were applied to the same site on Monday, Wednesday, and Friday for a total of 9 applications during the Induction Period. This schedule may have been modified to allow for missed visits or holidays. If a subject was unable to report on an assigned test date, the test material was applied on 2 consecutive days during the Induction Phase and/or a makeup day was added at the end of the Induction Phase.

The sites were graded by a CRL technician for dermal irritation 24 hours after removal of the patches by the subjects on Tuesday and Thursday and 48 hours after removal of the patches on Saturday, unless the patching schedule was altered as described above.

The sites were graded according to the following scoring system:

Dermal Scoring Scale

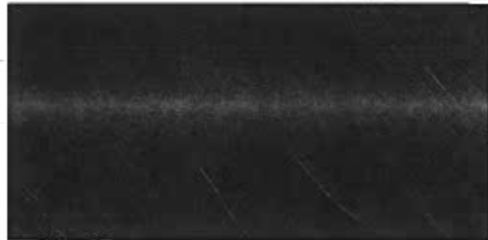
- 0 No visible skin reaction
- ± Barely perceptible erythema
- 1+ Mild erythema
- 2+ Well defined erythema
- 3+ Erythema and edema
- 4+ Erythema and edema with vesiculation

If a "2+" reaction or greater occurred, the test material was applied to an adjacent virgin site. If a "2+" reaction or greater occurred on the new site, the subject was not patched again during the Induction Phase but was challenged on the appropriate day of the study. At the discretion of the Study Director, patch sites with scores less than a "2+" may have been changed.

Following approximately a 2-week rest period, the challenge patches were applied to previously untreated test sites on the back. After 24 hours, the patches were removed by a CRL technician and the test sites were evaluated for dermal reactions. The test sites were re-evaluated at 48 and 72 hours. Subjects exhibiting reactions during the Challenge Phase of the study may have been asked to return for a 96-hour reading.



Clinical Research Laboratories, Inc.



RESULTS

This study was initiated with 672 subjects. Thirty subjects discontinued study participation for reasons unrelated to the test material. A total of 642 subjects completed the study.

Individual dermal scores recorded during the Induction and Challenge Phases appear in Table I.

CONCLUSION

Based on the test population of 642 subjects and under the conditions of this study, the test material identified as [REDACTED] Eyebrow Pencil did not demonstrate a potential for eliciting dermal irritation or sensitization.

RETENTION

Test materials and all original forms of this study will be retained by Clinical Research Laboratories, Inc. as specified in CRL Standard Operating Procedures 30.6 and 30.6C, unless designated otherwise by the Sponsor.



Clinical Research Laboratories, Inc.

TABLE I

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1A	0	0	0	0	0	0	0	0	0	0	0	0
2A	0	0	0	0	0	0	0	0	0	0	0	0
3A	0	0	0	0	0	0	0	0	0	0	0	0
4A	0	0	0	0	0	0	0	0	0	0	0	0
5A	0	0	0	0	0	0	0	0	0	0	0	0
6A	0	0	0	0	0	0	0	0	0	0	0	0
7A	0	0	0	0	0	0	0	0	0	0	0	0
8A	0	0	0	0	0	0	0	0	0	0	0	0
9A	0	0	0	0	0	0	0	0	0	0	0	0
10A	0	0	0	0	0	0	0	0	0	0	0	0
11A	0	0	0	0	0	0	0	0	0	0	0	0
12A	0	0	0	0	0	0	0	0	0	0	0	0
13A	0	0	0	0	0	0	0	0	0	0	0	0
14A	0	0	0	0	0	0	0	0	0	0	0	0
15A	0	0	0	0	0	0	0	0	0	0	0	0
16A	0	0	0	0	0	0	0	0	0	0	0	0
17A	0	0	0	0	0	0	0	0	0	0	0	0
18A	0	0	0	0	0	0	0	0	0	0	0	0
19A	0	0	0	0	0	0	0	0	0	0	0	0
20A	0	0	0	0	0	0	0	0	0	0	0	0
21A	0	0	0	0	0	0	0	0	0	0	0	0
22A	0	0	0	0	0	0	0	0	0	0	0	0
23A	0	0	0	0	0	0	0	0	0	0	0	0
24A	0	0	0	0	0	0	0	0	0	0	0	0
25A	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26A	0	0	0	0	0	0	0	0	0	0	0	0
27A	0	0	0	0	0	0	0	0	0	0	0	0
28A	0	0	0	0	0	0	0	0	0	0	0	0
29A	0	0	0	0	0	0	0	0	0	0	0	0
30A	0	0	0	0	0	0	0	0	0	0	0	0
31A	0	0	Discontinued									
32A	0	0	0	0	0	0	0	0	0	0	0	0
33A	0	0	0	0	0	0	0	0	0	0	0	0
34A	0	0	0	0	0	0	0	0	0	0	0	0
35A	0	0	0	0	0	0	0	0	0	0	0	0
36A	0	0	0	0	0	0	0	0	0	0	0	0
37A	0	0	0	0	0	0	0	0	0	0	0	0
38A	0	0	0	0	0	0	0	0	0	0	0	0
39A	0	0	0	0	0	0	0	0	0	0	0	0
40A	0	Discontinued										
41A	0	0	0	0	0	0	0	0	0	0	0	0
42A	0	0	0	0	0	0	0	0	0	0	0	0
43A	0	0	0	0	0	0	0	0	0	0	0	0
44A	0	0	0	0	0	0	0	0	0	0	0	0
45A	0	0	0	0	0	0	0	0	0	0	0	0
46A	0	0	0	0	0	0	0	0	0	0	0	0
47A	0	0	0	0	0	0	0	0	0	0	0	0
48A	0	0	0	0	0	0	0	0	0	0	0	0
49A	0	0	0	0	0	0	0	0	0	0	0	0
50A	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51A	0	0	0	0	0	0	0	0	0	0	0	0
52A	0	0	0	0	0	0	0	0	0	0	0	0
53A	0	0	0	0	0	0	0	0	0	0	0	0
54A	0	0	0	0	0	0	0	0	0	0	0	0
55A	0	0	0	0	0	0	0	0	0	0	0	0
56A	0	0	0	0	0	0	0	0	0	0	0	0
57A	0	0	0	0	0	0	0	0	0	0	0	0
58A	0	0	0	0	0	0	0	0	0	0	0	0
59A	0	0	0	0	0	0	0	0	0	0	0	0
60A	0	0	0	0	0	0	0	0	0	0	0	0
61A	0	0	0	0	0	0	0	0	0	0	0	0
62A	0	0	0	0	0	0	0	0	0	0	0	0
63A	0	0	0	0	0	0	0	0	0	0	0	0
64A	0	0	0	0	0	0	0	0	0	0	0	0
65A	0	0	0	0	0	0	0	0	0	0	0	0
66A	0	0	0	0	Discontinued							
67A	0	0	0	0	0	0	0	0	0	0	0	0
68A	0	0	0	0	0	0	0	0	0	0	0	0
69A	0	0	0	0	0	0	0	0	0	0	0	0
70A	0	0	0	0	0	0	0	0	0	0	0	0
71A	0	0	0	0	0	0	0	0	0	0	0	0
72A	0	0	0	0	0	0	0	0	0	0	0	0
73A	0	0	0	0	0	0	0	0	0	0	0	0
74A	0	0	0	0	0	0	0	0	0	0	0	0
75A	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76A	0	0	0	0	0	0	0	0	0	0	0	0
77A	0	0	0	0	0	0	0	0	0	0	0	0
78A	Discontinued											
79A	0	0	0	0	0	0	0	0	0	0	0	0
80A	0	0	0	0	0	0	0	0	0	0	0	0
81A	0	0	0	0	0	0	0	0	0	0	0	0
82A	0	0	0	0	0	0	0	0	0	0	0	0
83A	0	0	0	0	0	0	0	0	0	0	0	0
84A	0	0	0	0	0	0	0	0	0	0	0	0
85A	0	0	0	0	0	0	0	0	0	0	0	0
86A	0	0	0	0	0	0	0	0	0	0	0	0
87A	0	0	0	0	0	0	0	0	0	0	0	0
88A	0	0	0	0	0	0	0	0	0	0	0	0
89A	0	0	0	0	0	0	0	0	0	0	0	0
90A	0	0	0	0	0	0	0	0	0	0	0	0
91A	0	0	0	0	0	0	0	0	0	0	0	0
92A	0	0	0	0	0	0	0	0	0	0	0	0
93A	0	0	0	0	0	0	0	0	0	0	0	0
94A	0	0	0	0	0	0	0	0	0	0	0	0
95A	0	0	0	0	0	0	0	0	0	0	0	0
96A	0	0	0	0	0	0	0	0	0	0	0	0
97A	0	0	0	0	0	0	0	0	0	0	0	0
98A	0	0	0	0	0	0	0	0	0	0	0	0
99A	0	0	0	0	0	0	0	0	0	0	0	0
100A	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.



TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101A	0	0	0	0	0	0	0	0	0	0	0	0
102A	0	0	0	0	0	0	0	0	0	0	0	0
103A	0	0	0	0	0	0	0	0	0	0	0	0
104A	0	0	0	0	0	0	0	0	0	0	0	0
105A	0	0	0	0	0	0	0	0	0	0	0	0
106A	0	0	0	0	0	0	0	0	0	0	0	0
107A	0	0	0	0	0	0	0	0	0	0	0	0
108A	0	0	0	0	0	0	0	0	0	0	0	0
109A	0	0	0	0	0	0	0	0	0	0	0	0
110A	0	0	0	0	0	0	0	0	0	0	0	0
111A	0	0	0	0	0	0	0	0	0	0	0	0
112A	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1B	0	0	0	0	0	0	0	0	0	0	0	0
2B	0	0	0	0	0	0	0	0	0	0	0	0
3B	0	0	0	0	0	0	0	0	0	0	0	0
4B	0	0	0	0	0	0	0	0	0	0	0	0
5B	0	0	0	0	0	0	0	0	0	0	0	0
6B	0	0	0	0	Discontinued							
7B	0	0	0	0	0	0	0	0	0	0	0	0
8B	0	0	0	0	0	0	0	0	0	0	0	0
9B	0	0	0	0	0	0	0	0	0	0	0	0
10B	0	0	0	0	0	0	0	0	0	0	0	0
11B	0	0	0	0	0	0	0	0	0	0	0	0
12B	0	0	0	0	0	0	0	0	0	0	0	0
13B	0	0	0	0	0	0	0	0	0	0	0	0
14B	0	0	0	0	0	0	0	0	0	0	0	0
15B	0	0	0	0	0	0	0	0	0	0	0	0
16B	0	0	0	0	0	0	0	0	0	0	0	0
17B	0	0	0	0	0	0	0	0	0	0	0	0
18B	0	0	0	0	0	0	0	0	0	0	0	0
19B	0	0	0	0	0	0	0	0	0	0	0	0
20B	0	0	0	0	0	0	0	0	0	0	0	0
21B	0	0	Discontinued									
22B	0	0	0	0	0	0	0	0	0	0	0	0
23B	0	0	0	0	0	0	0	0	0	0	0	0
24B	0	0	0	0	0	0	0	0	0	0	0	0
25B	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26B	0	0	0	0	0	0	0	0	0	0	0	0
27B	0	0	0	0	0	0	0	0	0	0	0	0
28B	0	0	0	0	0	0	0	0	0	0	0	0
29B	0	0	0	0	0	0	0	0	0	0	0	0
30B	0	0	0	0	0	0	0	0	0	0	0	0
31B	0	0	0	0	0	0	0	0	0	0	0	0
32B	0	0	0	0	0	0	0	0	0	0	0	0
33B	0	0	0	0	0	0	0	0	0	0	0	0
34B	0	0	0	0	0	0	0	0	0	0	0	0
35B	0	0	0	0	0	0	0	0	0	0	0	0
36B	Discontinued											
37B	0	0	0	0	0	0	0	0	0	0	0	0
38B	0	0	0	0	0	0	0	0	0	0	0	0
39B	0	0	0	0	0	0	0	0	0	0	0	0
40B	0	0	0	0	0	0	0	0	0	0	0	0
41B	0	0	0	0	0	0	0	0	0	0	0	0
42B	0	0	0	0	0	0	0	0	0	0	0	0
43B	0	0	0	0	0	0	0	0	0	0	0	0
44B	0	0	0	0	0	0	0	0	0	0	0	0
45B	0	0	0	0	0	0	0	0	0	0	0	0
46B	0	0	0	0	0	0	0	0	0	0	0	0
47B	0	0	0	0	0	0	0	0	0	0	0	0
48B	0	0	0	0	0	0	0	0	0	0	0	0
49B	0	0	0	0	0	0	0	0	0	0	0	0
50B	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51B	0	0	0	0	0	0	0	0	0	0	0	0
52B	0	0	0	0	0	0	0	0	0	0	0	0
53B	0	0	0	0	0	0	0	0	0	0	0	0
54B	0	0	0	0	0	0	0	0	0	0	0	0
55B	0	0	0	0	0	0	0	0	0	0	0	0
56B	0	0	0	0	0	0	0	0	0	0	0	0
57B	0	0	0	0	0	0	0	0	0	0	0	0
58B	0	0	0	0	0	0	0	0	0	0	0	0
59B	0	0	Discontinued									
60B	0	0	0	0	0	0	0	0	0	0	0	0
61B	0	0	0	0	0	0	0	0	0	0	0	0
62B	0	0	0	0	0	0	0	0	0	0	0	0
63B	0	0	0	0	0	0	0	0	0	0	0	0
64B	0	0	0	0	0	0	0	0	0	0	0	0
65B	0	0	0	0	0	0	0	0	0	0	0	0
66B	0	0	0	0	0	0	0	0	0	0	0	0
67B	0	0	0	0	0	0	0	0	0	0	0	0
68B	0	0	0	0	0	0	0	0	0	0	0	0
69B	0	0	0	0	0	0	0	0	0	0	0	0
70B	0	0	0	0	0	0	0	0	0	0	0	0
71B	0	0	0	0	0	0	0	0	0	0	0	0
72B	0	0	0	0	0	0	0	0	0	0	0	0
73B	0	0	0	0	0	0	Discontinued					
74B	0	0	0	0	0	0	0	0	0	0	0	0
75B	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76B	0	0	0	0	0	0	0	0	0	0	0	0
77B	0	0	0	0	0	0	0	0	0	0	0	0
78B	0	0	0	0	0	0	0	0	0	0	0	0
79B	0	0	0	0	0	0	0	0	0	0	0	0
80B	0	0	0	0	0	0	0	0	0	0	0	0
81B	Discontinued											
82B	0	0	0	0	0	0	0	0	0	0	0	0
83B	0	0	0	0	0	0	0	0	0	0	0	0
84B	0	0	0	0	0	0	0	0	0	0	0	0
85B	0	0	0	0	0	0	0	0	0	0	0	0
86B	0	0	0	0	0	0	0	0	0	0	0	0
87B	0	0	0	0	0	0	0	0	0	0	0	0
88B	0	0	0	0	0	0	0	0	0	0	0	0
89B	0	0	0	0	0	0	0	0	0	0	0	0
90B	0	0	0	0	0	0	0	0	0	0	0	0
91B	0	0	0	0	0	0	0	0	0	0	0	0
92B	0	0	0	0	0	0	0	0	0	0	0	0
93B	0	0	0	0	0	0	0	0	0	0	0	0
94B	0	0	0	0	0	0	0	0	0	0	0	0
95B	0	0	0	0	0	0	0	0	0	0	0	0
96B	0	0	Discontinued									
97B	0	0	0	0	0	0	0	0	0	0	0	0
98B	0	0	0	0	0	0	0	0	0	0	0	0
99B	0	0	0	0	0	0	0	0	0	0	0	0
100B	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101B	0	0	0	0	0	0	0	0	0	0	0	0
102B	0	0	0	0	0	0	0	0	0	0	0	0
103B	0	0	0	0	0	0	0	0	0	0	0	0
104B	0	0	0	0	0	0	0	0	0	0	0	0
105B	0	0	0	0	0	0	0	0	0	0	0	0
106B	0	0	0	0	0	0	0	0	0	0	0	0
107B	0	0	0	0	0	0	0	0	0	0	0	0
108B	0	0	0	0	0	0	0	0	0	0	0	0
109B	0	0	0	0	0	0	0	0	0	0	0	0
110B	0	0	0	0	0	0	0	0	0	0	0	0
111B	0	0	0	0	0	0	0	0	0	0	0	0
112B	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1C	0	0	0	0	0	0	0	0	0	0	0	0
2C	0	0	0	0	0	0	0	0	0	0	0	0
3C	0	0	0	0	0	0	0	0	0	0	0	0
4C	0	0	0	0	0	0	0	0	0	0	0	0
5C	0	0	0	0	0	0	0	0	0	0	0	0
6C	0	0	0	0	0	0	0	0	0	0	0	0
7C	0	0	0	0	0	0	0	0	0	0	0	0
8C	0	0	0	0	0	0	0	0	0	0	0	0
9C	0	0	0	0	0	0	0	0	0	0	0	0
10C	0	0	0	0	0	0	0	0	0	0	0	0
11C	0	0	0	0	0	0	0	0	0	0	0	0
12C	0	0	0	0	0	0	0	0	0	0	0	0
13C	0	0	0	0	0	0	0	0	0	0	0	0
14C	0	0	0	0	0	0	0	0	0	0	0	0
15C	0	0	0	0	0	0	0	0	0	0	0	0
16C	0	0	0	0	0	0	0	0	0	0	0	0
17C	0	0	0	0	0	0	0	0	0	0	0	0
18C	0	0	0	0	0	0	0	0	0	0	0	0
19C	0	0	0	0	0	0	0	0	0	0	0	0
20C	0	0	0	0	0	0	0	0	0	0	0	0
21C	0	0	0	0	0	0	0	0	0	0	0	0
22C	0	0	0	0	0	0	0	0	0	0	0	0
23C	0	0	0	0	0	0	0	0	0	0	0	0
24C	0	0	0	0	0	0	0	0	0	0	0	0
25C	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26C	0	0	0	0	0	0	0	0	0	0	0	0
27C	0	0	0	0	0	0	0	0	0	0	0	0
28C	0	0	0	0	0	0	0	0	0	0	0	0
29C	0	0	0	0	0	0	0	0	0	0	0	0
30C	0	0	0	0	0	0	0	0	0	0	0	0
31C	0	0	0	0	0	0	0	0	0	0	0	0
32C	0	0	Discontinued									
33C	0	0	0	0	0	0	0	0	0	0	0	0
34C	0	0	0	0	0	0	0	0	0	0	0	0
35C	0	0	0	0	0	0	0	0	0	0	0	0
36C	0	0	0	0	0	0	0	0	0	0	0	0
37C	0	0	0	0	0	0	0	0	0	0	0	0
38C	0	0	0	0	0	0	0	0	0	0	0	0
39C	0	0	0	0	0	0	0	0	0	0	0	0
40C	0	0	0	0	0	0	0	0	0	0	0	0
41C	0	0	0	0	0	0	0	0	0	0	0	0
42C	0	0	0	0	0	0	0	0	0	0	0	0
43C	0	0	0	0	0	0	0	0	0	0	0	0
44C	0	0	0	0	0	0	0	0	0	0	0	0
45C	0	0	0	0	0	0	0	0	0	0	0	0
46C	0	0	0	0	0	0	0	0	0	0	0	0
47C	0	0	0	0	0	0	0	0	0	0	0	0
48C	0	0	0	0	0	0	0	0	0	0	0	0
49C	0	0	0	0	0	0	0	0	0	0	0	0
50C	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51C	0	0	0	0	0	0	0	0	0	0	0	0
52C	0	0	0	0	0	0	0	0	0	0	0	0
53C	0	0	0	0	0	0	0	0	0	0	0	0
54C	0	0	Discontinued									
55C	0	0	0	0	0	0	0	0	0	0	0	0
56C	0	0	0	0	0	0	0	0	0	0	0	0
57C	0	0	0	Discontinued								
58C	0	0	0	0	0	0	0	0	0	0	0	0
59C	0	0	0	0	0	0	0	0	0	0	0	0
60C	0	0	0	0	0	0	0	0	0	0	0	0
61C	0	0	0	0	0	0	0	0	0	0	0	0
62C	0	0	0	0	0	0	0	0	0	0	0	0
63C	0	0	0	0	0	0	0	0	0	0	0	0
64C	0	0	0	0	0	0	0	0	0	0	0	0
65C	0	0	0	0	0	0	0	0	0	0	0	0
66C	0	0	0	0	0	0	0	0	0	0	0	0
67C	0	0	0	0	0	0	0	0	0	0	0	0
68C	0	0	0	0	0	0	0	0	0	0	0	0
69C	0	0	0	0	0	0	0	0	0	0	0	0
70C	0	0	0	0	0	0	0	0	0	0	0	0
71C	0	0	0	0	0	0	0	0	0	0	0	0
72C	0	0	0	0	0	0	0	0	0	0	0	0
73C	0	0	0	0	0	0	0	0	0	0	0	0
74C	0	0	0	0	0	0	0	0	0	0	0	0
75C	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76C	0	0	0	0	0	0	0	0	0	0	0	0
77C	0	0	0	0	0	0	0	0	0	0	0	0
78C	0	0	0	0	0	0	0	0	0	0	0	0
79C	0	0	0	0	0	0	0	0	0	0	0	0
80C	0	0	0	0	0	0	0	0	0	0	0	0
81C	0	0	0	0	0	0	0	0	0	0	0	0
82C	0	0	0	0	0	0	0	0	0	0	0	0
83C	0	0	0	0	0	0	0	0	0	0	0	0
84C	0	Discontinued										
85C	0	0	0	0	0	0	0	0	0	0	0	0
86C	0	0	0	0	0	0	0	0	0	0	0	0
87C	0	0	0	0	0	0	0	0	0	0	0	0
88C	0	0	0	0	0	0	0	0	0	0	0	0
89C	0	0	0	0	0	0	0	0	0	0	0	0
90C	0	0	0	0	0	0	0	0	0	0	0	0
91C	0	0	0	0	0	0	0	0	0	0	0	0
92C	0	0	0	0	0	0	0	0	0	0	0	0
93C	0	0	0	0	0	0	0	0	0	0	0	0
94C	0	0	0	0	0	0	0	0	0	0	0	0
95C	0	0	0	0	0	0	0	0	0	0	0	0
96C	0	0	0	0	0	0	0	0	0	0	0	0
97C	0	0	0	0	0	0	0	0	0	0	0	0
98C	0	0	0	0	0	0	0	0	0	0	0	0
99C	0	0	0	0	0	0	0	0	0	0	0	0
100C	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101C	0	0	0	0	0	0	0	0	0	0	0	0
102C	0	0	Discontinued									
103C	0	0	0	0	0	0	0	0	0	0	0	0
104C	0	0	0	0	0	0	0	0	0	0	0	0
105C	0	0	0	0	0	0	0	0	0	0	0	0
106C	0	0	0	0	0	0	0	0	0	0	0	0
107C	0	0	0	0	0	0	0	0	0	0	0	0
108C	0	0	0	0	0	0	0	0	0	0	0	0
109C	0	0	0	0	0	0	0	0	0	0	0	0
110C	0	0	0	0	0	0	0	0	0	0	0	0
111C	0	0	0	0	0	0	0	0	0	0	0	0
112C	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1D	0	0	0	0	0	0	0	0	0	0	0	0
2D	0	0	0	0	0	0	0	0	0	0	0	0
3D	0	0	0	0	0	0	0	0	0	0	0	0
4D	0	0	0	0	0	0	0	0	0	0	0	0
5D	0	0	0	0	0	0	0	0	0	0	0	0
6D	0	0	0	0	0	0	0	0	0	0	0	0
7D	0	0	0	0	0	0	0	0	0	0	0	0
8D	0	0	0	0	0	Discontinued						
9D	0	0	0	0	0	0	0	0	0	0	0	0
10D	0	0	0	0	0	0	0	0	0	0	0	0
11D	0	0	0	0	0	0	0	0	0	0	0	0
12D	0	0	0	0	0	0	0	0	0	0	0	0
13D	0	0	0	0	0	0	0	0	0	0	0	0
14D	0	0	0	0	0	0	0	0	0	0	0	0
15D	0	0	0	0	0	0	0	0	0	0	0	0
16D	0	0	0	0	0	0	0	0	0	0	0	0
17D	0	0	0	0	0	0	0	0	0	0	0	0
18D	0	0	0	0	0	0	0	0	0	0	0	0
19D	0	0	0	0	0	0	0	0	0	0	0	0
20D	0	0	0	0	0	0	0	0	0	0	0	0
21D	0	0	0	0	0	0	0	0	0	0	0	0
22D	0	0	0	0	0	0	0	0	0	0	0	0
23D	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0
25D	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26D	0	0	0	0	0	0	0	0	0	0	0	0
27D	0	Discontinued										
28D	0	0	0	0	0	0	0	0	0	0	0	0
29D	0	0	0	0	0	0	0	0	0	0	0	0
30D	0	0	0	0	0	0	0	0	0	0	0	0
31D	0	0	0	0	0	0	0	0	0	0	0	0
32D	0	0	0	0	0	0	0	0	0	0	0	0
33D	0	0	0	0	0	0	0	0	0	0	0	0
34D	0	0	0	0	0	0	0	0	0	0	0	0
35D	0	0	0	0	0	0	0	0	0	0	0	0
36D	0	0	0	0	0	0	0	0	0	0	0	0
37D	0	0	0	0	0	0	0	0	0	0	0	0
38D	0	0	0	0	0	0	0	0	0	0	0	0
39D	0	0	0	0	0	0	0	0	0	0	0	0
40D	0	0	0	0	0	0	0	0	0	0	0	0
41D	0	0	0	0	0	0	0	0	0	0	0	0
42D	0	0	0	0	0	0	0	0	0	0	0	0
43D	0	0	0	0	0	0	0	0	0	0	0	0
44D	0	0	0	0	0	0	0	0	0	0	0	0
45D	0	Discontinued										
46D	0	0	0	0	0	0	0	0	0	0	0	0
47D	0	0	0	0	0	0	0	0	0	0	0	0
48D	0	0	0	0	0	0	0	0	0	0	0	0
49D	0	0	0	0	0	0	0	0	0	0	0	0
50D	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51D	0	0	0	0	0	0	0	0	0	0	0	0
52D	0	0	0	0	0	0	0	0	0	0	0	0
53D	0	0	0	0	0	0	0	0	0	0	0	0
54D	0	0	0	0	0	0	0	0	0	0	0	0
55D	0	0	0	0	0	0	0	0	0	0	0	0
56D	0	0	0	0	0	0	0	0	0	0	0	0
57D	0	Discontinued										
58D	0	0	0	0	0	0	0	0	0	0	0	0
59D	0	0	0	0	0	0	0	0	0	0	0	0
60D	0	0	0	0	0	0	0	0	0	0	0	0
61D	0	0	0	0	0	0	0	0	0	0	0	0
62D	0	0	0	0	0	0	0	0	0	0	0	0
63D	0	0	0	0	0	0	0	0	0	0	0	0
64D	0	0	0	0	0	0	0	0	0	0	0	0
65D	0	0	0	0	0	0	0	0	0	0	0	0
66D	0	0	0	0	0	0	0	0	0	0	0	0
67D	0	0	0	0	0	0	0	0	0	0	0	0
68D	0	0	0	0	0	0	0	0	0	0	0	0
69D	0	0	0	0	0	Discontinued						
70D	0	0	0	0	0	0	0	0	0	0	0	0
71D	0	0	0	0	0	0	0	0	0	0	0	0
72D	0	0	0	0	0	0	0	0	0	0	0	0
73D	0	0	0	0	0	0	0	0	0	0	0	0
74D	0	0	0	0	0	0	0	0	0	0	0	0
75D	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76D	0	0	0	0	0	0	0	0	0	0	0	0
77D	0	0	0	0	0	0	0	0	0	0	0	0
78D	0	0	0	0	0	0	0	0	0	0	0	0
79D	0	0	0	0	0	0	0	0	0	0	0	0
80D	0	0	0	0	0	0	0	0	0	0	0	0
81D	0	0	0	0	0	0	0	0	0	0	0	0
82D	0	0	0	0	0	0	0	0	0	0	0	0
83D	0	0	0	0	0	0	0	0	0	0	0	0
84D	0	0	0	0	0	0	0	0	0	0	0	0
85D	0	0	0	0	0	0	0	0	0	0	0	0
86D	0	0	0	0	0	0	0	0	0	0	0	0
87D	0	0	0	0	0	0	0	0	0	0	0	0
88D	0	0	0	0	0	0	0	0	0	0	0	0
89D	0	0	0	0	0	0	0	0	0	0	0	0
90D	0	0	0	0	0	0	0	0	0	0	0	0
91D	0	0	0	0	0	0	0	0	0	0	0	0
92D	0	0	0	0	0	0	0	0	0	0	0	0
93D	0	0	0	0	0	0	0	0	0	0	0	0
94D	0	0	0	0	0	0	0	0	0	0	0	0
95D	0	0	0	0	0	0	0	0	0	0	0	0
96D	0	0	0	0	0	0	0	0	0	0	0	0
97D	0	0	0	0	0	0	0	0	0	0	0	0
98D	0	0	0	0	0	0	0	0	0	0	0	0
99D	0	0	0	0	0	0	0	0	0	0	0	0
100D	0	0	0	0	0	0	0	0	0	0	0	0



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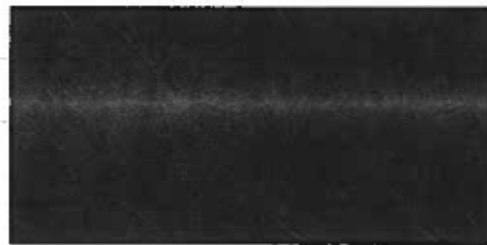


TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101D	0	0	0	0	0	0	0	0	0	0	0	0
102D	0	0	0	0	0	0	0	0	0	0	0	0
103D	0	0	0	0	0	0	0	0	0	0	0	0
104D	0	0	0	0	0	0	0	0	0	0	0	0
105D	0	0	0	0	0	0	0	0	0	0	0	0
106D	0	0	0	0	0	0	0	0	0	0	0	0
107D	0	0	0	0	0	0	0	0	0	0	0	0
108D	0	0	0	0	0	0	0	0	0	0	0	0
109D	0	Discontinued										
110D	0	0	0	0	0	0	0	0	0	0	0	0
111D	0	0	0	0	0	0	0	0	0	0	0	0
112D	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1E	0	0	0	0	0	0	0	0	0	0	0	0
2E	0	0	0	0	0	0	0	0	0	0	0	0
3E	0	0	0	0	0	0	0	0	0	0	0	0
4E	0	0	0	0	0	0	0	0	0	0	0	0
5E	0	0	Discontinued									
6E	0	0	0	0	0	0	0	0	0	0	0	0
7E	0	0	0	0	0	0	0	0	0	0	0	0
8E	0	0	0	0	0	0	0	0	0	0	0	0
9E	0	0	0	0	0	0	0	0	0	0	0	0
10E	0	0	0	0	0	0	0	0	0	0	0	0
11E	0	0	0	0	0	0	0	0	0	0	0	0
12E	0	0	0	0	0	0	0	0	0	0	0	0
13E	0	0	0	0	0	0	0	0	0	0	0	0
14E	0	0	0	0	0	0	0	0	0	0	0	0
15E	0	0	0	0	0	0	0	0	0	0	0	0
16E	0	0	0	0	0	0	0	0	0	0	0	0
17E	0	0	0	0	0	0	0	0	0	0	0	0
18E	0	0	0	0	0	0	0	0	0	0	0	0
19E	0	0	0	0	0	0	0	0	0	0	0	0
20E	0	0	0	0	0	0	0	0	0	0	0	0
21E	0	0	0	0	0	0	0	0	0	0	0	0
22E	0	0	0	0	0	0	0	0	0	0	0	0
23E	0	0	0	0	0	0	0	0	0	0	0	0
24E	0	0	0	0	0	0	0	0	0	0	0	0
25E	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26E	0	0	0	0	0	0	0	0	0	0	0	0
27E	0	0	0	0	0	0	0	0	0	0	0	0
28E	0	0	0	0	0	0	0	0	0	0	0	0
29E	0	0	0	0	0	0	0	0	0	0	0	0
30E	0	0	0	0	0	0	0	0	0	0	0	0
31E	0	0	0	0	0	0	0	0	0	0	0	0
32E	0	0	0	0	0	0	0	0	0	0	0	0
33E	0	0	0	0	0	0	0	0	0	0	0	0
34E	0	0	0	0	0	0	0	0	0	0	0	0
35E	0	0	0	0	0	0	0	0	0	0	0	0
36E	0	0	0	0	0	0	0	0	0	0	0	0
37E	0	0	0	0	0	0	0	0	0	0	0	0
38E	0	0	0	0	0	0	0	0	0	0	0	0
39E	0	0	0	0	0	0	0	0	0	0	0	0
40E	0	0	0	0	0	0	0	0	0	0	0	0
41E	0	0	0	0	0	0	0	0	0	0	0	0
42E	0	0	0	0	0	0	0	0	0	0	0	0
43E	0	0	0	0	0	0	0	0	0	0	0	0
44E	0	0	0	0	0	0	0	0	0	0	0	0
45E	0	0	0	0	0	0	0	0	0	0	0	0
46E	0	0	0	0	0	0	0	0	0	0	0	0
47E	0	0	0	0	0	Discontinued						
48E	0	0	0	0	0	0	0	0	0	0	0	0
49E	0	0	0	0	0	0	0	0	0	0	0	0
50E	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51E	0	0	0	0	0	0	0	0	0	0	0	0
52E	0	0	0	0	0	0	0	0	0	0	0	0
53E	0	0	0	0	0	0	0	0	0	0	0	0
54E	0	0	0	0	0	0	0	0	0	0	0	0
55E	0	0	0	0	0	0	0	0	0	0	0	0
56E	0	0	0	0	0	0	0	0	0	0	0	0
57E	0	0	0	0	0	0	0	0	0	0	0	0
58E	0	0	0	0	0	0	0	0	0	0	0	0
59E	0	0	0	0	0	0	0	0	0	0	0	0
60E	0	0	0	0	0	0	0	0	0	0	0	0
61E	0	0	0	0	0	0	0	0	0	0	0	0
62E	0	0	0	0	0	0	0	0	0	0	0	0
63E	0	0	Discontinued									
64E	0	0	0	0	0	0	0	0	0	0	0	0
65E	0	0	0	0	0	0	0	0	0	0	0	0
66E	0	0	0	0	0	0	0	0	0	0	0	0
67E	0	Discontinued										
68E	0	0	0	0	0	0	0	0	0	0	0	0
69E	0	0	0	0	0	0	0	0	0	0	0	0
70E	0	0	0	0	0	0	0	0	0	0	0	0
71E	0	0	0	0	0	0	0	0	0	0	0	0
72E	0	0	0	0	0	0	0	0	0	0	0	0
73E	0	0	0	0	0	0	0	0	0	0	0	0
74E	0	0	0	0	0	0	0	0	0	0	0	0
75E	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76E	0	0	0	0	0	0	0	0	0	0	0	0
77E	0	0	0	0	0	0	0	0	0	0	0	0
78E	0	0	0	0	0	0	0	0	0	0	0	0
79E	0	0	0	0	0	0	0	0	0	0	0	0
80E	0	0	0	0	0	0	0	0	0	0	0	0
81E	0	0	0	0	0	0	0	0	0	0	0	0
82E	0	0	0	0	0	0	0	0	0	0	0	0
83E	0	0	0	0	0	0	0	0	0	0	0	0
84E	0	0	0	0	0	0	0	0	0	0	0	0
85E	0	0	0	0	0	0	0	0	0	0	0	0
86E	0	0	0	0	0	0	0	0	0	0	0	0
87E	0	0	0	0	0	0	0	0	0	0	0	0
88E	0	0	0	0	0	0	0	0	0	0	0	0
89E	0	0	0	0	0	0	0	0	0	0	0	0
90E	0	0	0	0	0	0	0	0	0	0	0	0
91E	0	0	0	0	0	0	0	0	0	0	0	0
92E	0	0	0	0	0	0	0	0	0	0	0	0
93E	0	0	0	0	0	0	0	0	0	0	0	0
94E	0	0	0	0	0	0	0	0	0	0	0	0
95E	0	0	0	0	0	0	0	0	0	0	0	0
96E	0	0	0	0	0	0	0	0	0	0	0	0
97E	0	0	0	0	0	0	0	0	0	0	0	0
98E	0	0	0	0	0	0	0	0	0	0	0	0
99E	0	0	0	0	Discontinued							
100E	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101E	0	0	0	0	0	0	0	0	0	0	0	0
102E	0	0	0	0	0	0	0	0	0	0	0	0
103E	0	0	0	0	0	0	0	0	0	0	0	0
104E	0	0	0	0	0	0	0	0	0	0	0	0
105E	0	0	0	0	0	0	0	0	0	0	0	0
106E	0	0	0	0	0	0	0	0	0	0	0	0
107E	0	0	0	0	0	0	0	0	0	0	0	0
108E	0	0	0	0	0	0	0	0	0	0	0	0
109E	0	0	0	0	0	0	0	0	0	0	0	0
110E	0	0	0	0	0	0	0	0	0	0	0	0
111E	0	0	0	0	0	0	0	0	0	0	0	0
112E	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1F	0	0	0	0	0	0	0	0	0	0	0	0
2F	0	0	0	0	0	0	0	0	0	0	0	0
3F	0	0	0	0	0	0	0	0	0	0	0	0
4F	0	0	0	0	0	0	0	0	0	0	0	0
5F	0	0	0	0	0	0	0	0	0	0	0	0
6F	0	0	0	0	0	0	0	0	0	0	0	0
7F	0	0	0	0	0	0	0	0	0	0	0	0
8F	0	0	0	0	0	0	0	0	0	0	0	0
9F	0	0	0	0	0	0	0	0	0	0	0	0
10F	0	0	0	0	0	0	0	0	0	0	0	0
11F	0	0	0	0	0	0	0	0	0	0	0	0
12F	0	0	0	0	0	0	0	0	0	0	0	0
13F	0	0	0	0	0	0	0	0	0	0	0	0
14F	0	0	0	0	0	0	0	0	0	0	0	0
15F	0	0	0	0	0	0	0	0	0	0	0	0
16F	0	0	0	0	0	0	0	0	0	0	0	0
17F	0	0	0	0	0	0	0	0	0	0	0	0
18F	0	0	0	0	0	0	0	0	0	0	0	0
19F	0	0	0	0	0	0	0	0	0	0	0	0
20F	0	0	0	0	0	0	0	0	0	0	0	0
21F	0	0	0	0	0	0	0	0	0	0	0	0
22F	0	0	0	0	0	0	0	0	0	0	0	0
23F	0	0	0	0	0	0	0	0	0	0	0	0
24F	0	0	0	0	0	0	0	0	0	0	0	0
25F	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26F	0	0	0	0	0	0	0	0	0	0	0	0
27F	0	0	0	0	0	0	0	0	0	0	0	0
28F	0	0	0	0	0	0	0	0	0	0	0	0
29F	0	0	0	0	0	0	0	0	0	0	0	0
30F	0	0	0	0	0	0	0	0	0	0	0	0
31F	0	0	0	0	0	0	0	0	0	0	0	0
32F	0	0	0	0	0	0	0	0	0	0	0	0
33F	0	0	0	0	0	0	0	0	0	0	0	0
34F	0	0	0	0	0	0	0	0	0	0	0	0
35F	0	0	0	0	0	0	0	0	0	0	0	0
36F	0	0	0	0	0	0	0	0	0	0	0	0
37F	0	0	0	0	0	0	0	0	0	0	0	0
38F	0	0	0	0	0	0	0	0	0	0	0	0
39F	0	0	0	0	0	0	0	0	0	0	0	0
40F	0	0	0	0	0	0	0	0	0	0	0	0
41F	0	0	0	0	0	0	0	0	0	0	0	0
42F	0	0	0	0	0	0	0	0	0	0	0	0
43F	0	0	0	Discontinued								
44F	0	0	0	0	0	0	0	0	0	0	0	0
45F	0	0	0	0	0	0	0	0	0	0	0	0
46F	0	0	0	0	0	0	0	0	0	0	0	0
47F	0	0	0	0	0	0	0	0	0	0	0	0
48F	0	0	0	0	0	0	0	0	0	0	0	0
49F	0	0	0	0	0	0	0	0	0	0	0	0
50F	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51F	0	0	0	0	0	0	0	0	0	0	0	0
52F	0	0	0	0	0	0	0	0	0	0	0	0
53F	0	0	0	0	0	0	0	0	0	0	0	0
54F	0	0	0	0	0	0	0	0	0	0	0	0
55F	0	0	0	0	0	0	0	0	0	0	0	0
56F	0	0	0	0	0	0	0	0	0	0	0	0
57F	0	0	0	0	0	0	0	0	0	0	0	0
58F	0	0	0	0	0	0	0	0	0	0	0	0
59F	0	0	0	0	0	0	0	0	0	0	0	0
60F	0	0	0	0	0	0	0	0	0	0	0	0
61F	0	0	0	0	0	0	0	0	0	0	0	0
62F	0	0	0	0	0	0	0	0	0	0	0	0
63F	0	0	0	0	0	0	0	0	0	0	0	0
64F	0	0	0	0	0	0	0	0	0	0	0	0
65F	0	0	0	0	0	0	0	0	0	0	0	0
66F	0	0	0	0	0	0	0	0	0	0	0	0
67F	0	0	0	0	0	0	0	0	0	0	0	0
68F	0	0	0	0	0	0	0	0	0	0	0	0
69F	0	0	0	0	0	0	0	0	0	0	0	0
70F	0	Discontinued										
71F	0	0	0	0	0	0	0	0	0	0	0	0
72F	0	0	0	0	0	0	0	0	0	0	0	0
73F	0	0	0	0	0	0	0	0	0	0	0	0
74F	0	0	0	0	0	0	0	0	0	0	0	0
75F	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76F	0	0	0	0	0	0	0	0	0	0	0	0
77F	0	0	0	0	0	0	0	0	0	0	0	0
78F	0	0	0	0	0	0	0	0	0	0	0	0
79F	0	0	0	0	0	0	0	0	0	0	0	0
80F	Discontinued											
81F	0	0	0	0	0	0	0	0	0	0	0	0
82F	0	0	0	0	0	0	0	0	0	0	0	0
83F	0	0	0	0	0	0	0	0	0	0	0	0
84F	0	0	0	0	0	0	0	0	0	0	0	0
85F	0	0	0	0	0	0	0	0	0	0	0	0
86F	0	0	0	0	0	0	0	0	0	0	0	0
87F	0	0	0	0	0	0	0	0	0	0	0	0
88F	0	0	0	0	0	0	0	0	0	0	0	0
89F	0	0	0	0	0	0	0	0	0	0	0	0
90F	0	0	0	0	0	0	0	0	0	0	0	0
91F	0	0	0	0	0	0	0	0	0	0	0	0
92F	0	0	0	0	0	0	0	0	0	0	0	0
93F	0	0	0	0	0	0	0	0	0	0	0	0
94F	0	0	0	0	0	0	0	0	0	0	0	0
95F	0	0	0	0	0	0	0	0	0	0	0	0
96F	0	0	0	0	0	0	0	0	0	0	0	0
97F	0	0	0	0	0	0	0	0	0	0	0	0
98F	0	0	0	0	0	0	0	0	0	0	0	0
99F	0	0	0	0	0	0	0	0	0	0	0	0
100F	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101F	0	0	0	0	0	0	0	0	0	0	0	0
102F	0	0	0	0	0	0	0	0	0	0	0	0
103F	0	0	0	0	0	0	0	0	0	0	0	0
104F	0	0	0	0	0	0	0	0	0	0	0	0
105F	0	0	0	0	0	0	0	0	0	0	0	0
106F	0	0	0	0	0	0	0	0	0	0	0	0
107F	0	0	0	0	0	0	0	0	0	0	0	0
108F	0	0	0	0	0	0	0	0	0	0	0	0
109F	0	0	0	0	0	0	0	0	0	0	0	0
110F	0	0	0	0	0	0	0	0	0	0	0	0
111F	0	0	0	0	0	0	0	0	0	0	0	0
112F	0	0	0	0	0	0	0	0	0	0	0	0



PRODUCT INVESTIGATIONS, INC.

151 East Tenth Avenue
Conshohocken, PA 19428
610-825-5855 • fax 610-825-7288



lip gloss contains 25.9% Ethylhexyl Stearate

DETERMINATION OF THE IRRITATING AND SENSITIZING PROPENSITIES

OF  **ON HUMAN SKIN**

PREPARED FOR

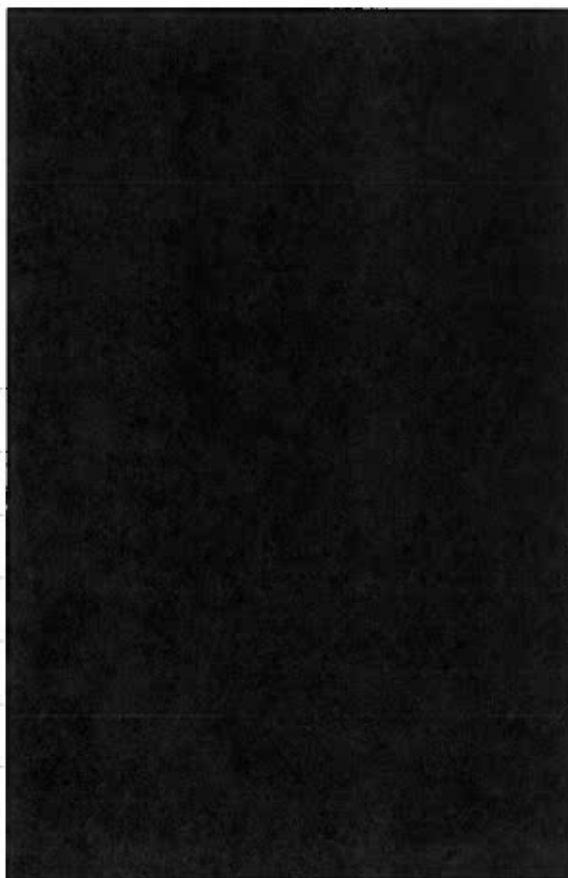


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DETERMINATION OF THE IRRITATING AND SENSITIZING PROPENSITIES OF [REDACTED] ON HUMAN SKIN

1.00 OBJECTIVES:

- .01 To identify and characterize the skin-damaging propensities that [REDACTED] can be induced to exercise under the conditions of this modified patch test procedure.
- .02 To adjudge whether the exercise of such propensities under the test conditions contraindicates the kind of skin contact that would be occasioned during the appropriate use of the product.

2.00 DESIGN:

- .01 A modified version of the Repeated Insult Patch Test [REDACTED] was conducted under double blind conditions on a panel composed of more than one hundred subjects at the outset.
- .02 The regimen comprised nine sequential 24-hour induction applications and two concurrently conducted 24-hour challenge applications, one on the initial induction site and one on a naive site.
- .03 During the initial phase, the skin of the contact sites was graded and the grades recorded on Wednesdays, Fridays (i.e. twenty-four hours after patches had been removed), and Mondays (i.e. forty-eight hours after patches had been removed).
- .04 During the challenge phase, the skin of the contact sites was graded within moments after the patches had been removed (24 hours post application) and again twenty-four hours later. Follow-up examinations were conducted thereafter only if adverse effects were present.
- .05 This study was conducted in compliance with the standards of good clinical practices generally applicable for the protection of the privileges and well-being of individuals who participate in patch test procedures.

3.00 SPONSOR:

Project Director:
Authorization:
Purchase Order:

4.00 STUDY PRODUCT:

Type of Product: Lipgloss
Sponsor Identification: [REDACTED]
Date received: 6/31/08
Quantity rec'd: >451 g. gross wt.
Form used in study: As supplied
[REDACTED]

5.00 SITE OF STUDY:

Product Investigations, Inc.
142 North Ninth Street
Suite 16
Modesto, CA 95350

Study Personnel:

Medical Director: Morris V. Shelanski, MDCM
Dir. Derm. Services: Joseph E. Nicholson III
Dermatologist: Clinton E. Prescott Jr., MD
Technicians: Lisa Cortez, Henry Cortez
Quality Assurance: Samuel J. Charles III

6.00 DATES OF STUDY:

Started: 7 July 2008
Completed: 6 August 2008

7.00 SELECTION OF SUBJECTS:**.01 RECRUITING:**

Prospective subjects were recruited from surrounding localities via phone, posters and personal contact.

.02 INFORMED CONSENT:

All individuals who expressed interest in participating were given an informed consent document to read. This document, which each candidate had to read and sign before being entered into the study, presented the following information:

- a. How many subjects were to be enrolled in the study;
- b. The intended use of the product;
- c. Why the product was being tested;
- d. How the test was to be performed;
- e. That the regimen was not intended to benefit a subject's health, well being, or quality of life.
- f. The different ways that participation may be detrimental to a subject's health, well being, or quality of life.
- g. That not all detrimental effects could be foreseen and made known at the time the informed consent was presented for the prospective subject's signature.
- h. What commitments a subject had to make to be in compliance; and
- i. What considerations a subject was entitled to receive and the conditions for receiving them.

.03 DETERMINATION OF ELIGIBILITY:

Information concerning a prospective subject's qualifications was obtained from the answers the subject gave in filling out a medical history form and in responding to specific questions. Those who did not meet the following criteria were rejected.

a. Inclusion Criteria: Satisfaction of all the following items was obligatory:

- i. The candidate was at least eighteen years old, and
- ii. agreed to comply fully with the scheduled study regimen, and
- iii. expressed awareness that a participant would incur risks that would affect her/his well-being, and
- iv. denied that the amount of the stipend had induced her/him to participate against her/his better judgment, and
- v. had read the informed consent agreement, and
- vi. had assured the interviewer that she/he had no questions about the informed consent's contents that had not been answered to her/his satisfaction, and
- vii. had signed the consent form willingly and without reservation.

b. Exclusion Criteria: Any one of the following items was cause for rejection:

- i. The candidate had an illness that contraindicated participation; or
- ii. a condition that rendered the skin unsuitable for use in this study; or
- iii. was using dosages of medications that could alter the skin's tolerance; or
- iv. had a documented history of intolerance to the category of products submitted for study; or
- v. was a female who was pregnant or was breast feeding an infant.

.04 PANEL INFORMATION:

[REDACTED]

b. Demographics:

SEX	Number	Age Range
Female	74	20 - 74
Male	36	18 - 64

c. Dedication: This was a shared panel, i.e. the subjects were engaged in the evaluation of materials submitted by sponsors other than [REDACTED]

8.00 SITE INFORMATION:**.01 LOCATION:**

[REDACTED] was assigned Band #2 on the right side of the back of each subject.

.02 IDENTIFICATION OF A CONTACT SITE:

At each visit the skin around the contact site was marked to facilitate examinations after the device was removed and positioning of subsequently-applied devices as precisely as was feasible on the same site.

9.00 PATCHING DEVICES:**.01 TYPE OF DEVICE:**

Partially-occlusive patching devices consisting of a 2 cm x 2 cm absorbent pad centered on the adhesive-coated surface of a 2 cm x 4 cm plastic film were used to convey and maintain the product on the skin.

.02 PREPARATION OF A PATCHING DEVICE:

The webril pad of a patching device was evenly coated with 150mg of the test material.

.03 POSITIONING AND REMOVING A PATCHING DEVICE:

- a. A prepared device was positioned on its designated site on each subject with the product-treated surface of the pad in contact with the skin.
- b. Firm pressure was applied to the backing of the device to effect intimate contact of the pad with the skin and to bond the flanges of the device securely to the skin.
- c. When the time came for removing the device, the device was peeled off the skin as gently as was feasible under the circumstances.

10.00 DATA ACQUISITION:**.01 GRADING PROCEDURE:**

- a. Examinations of the contact sites to grade the effects elicited by the product were conducted on Mondays, Wednesday and Fridays. When a subject came in on a scheduled examination day, the technician examined the skin of the contact site.
 - i. If no adverse effect was detected, a "0" was recorded in the subject's Case Report Form.
 - ii. If an adverse effect was detected, the technician entered a grade indicating her assessment of the response's intensity.
- b. The subject was then sent into the patching room where the site was examined again by a second technician to ascertain independently whether or not the site should be used again. If she disagreed with the first technician's assessment, the application was held in abeyance until the issue could be resolved with the help of the supervisor and/or the investigator.
- c. The supervisor or the investigator was called in not only when a disagreement had to be resolved, but also to validate substantial sudden changes, e.g. when a response is deemed to merit a grade ≥ 3 or when a response has been judged to have decreased by two or more points from the previous day's status.

.02 CRITERIA FOR GRADING RESPONSE INTENSITY:

The following scale was used in this procedure to designate the intensities of those gross skin changes that may be occasioned by exposing the surface of the skin to a product.

<u>Morphology</u>	<u>Visible Change</u>	<u>Grade</u>
<u>Subclinical Stage</u>	None	0
<u>Inflammation</u>		
<u>Vascular Dilation:</u>	Faint redness with poorly defined margins	1
	Redness with well-defined margins	2
<u>Infiltration:</u>	Redness plus well-defined edema	3
	Redness plus papules, or vesicles or ulceration	4

.04 SITE CHANGES:

- a. Switch to a Naive Site:
 - i. If the product had elicited a Grade 2 response on a subject, application of the product would have been switched immediately to a naive site on the subject.
- b. Discontinuation of Applications:
 - i. If the product had elicited a second Grade 2 on a subject, application of the product would have been discontinued immediately for the remainder of the initial phase on the affected subject.
 - ii. If the product had elicited a Grade 3 response on a subject, application of the product would have been discontinued immediately for the remainder of the initial phase on the affected subject.

11.00 OVERVIEW OF STUDY REGIMEN:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Week #1	Apply	Remove	Grade/Apply	Remove	Grade/Apply	(Removed)	—
Week #2	Grade/Apply	Remove	Grade/Apply	Remove	Grade/Apply	(Removed)	—
Week #3	Grade/Apply	Remove	Grade/Apply	Remove	Grade/Apply	(Removed)	—
Week #4	Grade	—	—	—	—	—	—
Week #5	Apply	Remove/Grade	Grade	Grade*	Grade*	—	—

*If necessary

12.00 STUDY REGIMEN:**.01 INITIAL/INDUCTION PHASE-****Week #1:****Monday:**

- i. As each subject presented herself/himself at the clinic, the skin of the contact site assigned to the product submitted for study was examined and ascertained to be suitable before applications were begun.
- i. A freshly-prepared patching device was applied on its assigned site.
- ii. The skin around the device was marked and the subject was instructed to return on Tuesday.

Tuesday:

- i. As each subject returned, the site-identifying marks were reinforced.
- ii. The patching device was removed by a technician and the subject was instructed to return on Wednesday

Wednesday:

- i. As each subject returned, the skin of the contact site was graded. The grade was recorded.
- ii. A freshly-prepared patching device was applied on the same site.
- iii. The site-identifying marks were reinforced and the subject was instructed to return on Thursday

Thursday:

- i. As each subject returned, the site-identifying marks were reinforced.
- ii. The patching device was removed by a technician and the subject was instructed to return on Friday.

Friday:

- i. As each subject returned, the skin of the contact site was graded. The grade was recorded.
- i. A freshly-prepared patching device was applied on the same site.
- ii. The site-identifying marks were reinforced.
- iv. The subject was dismissed with instructions to remove the patching device on Saturday, to record the time of removal, and to return to the clinic on the following Monday for resumption of the regimen.

Week #2:**Monday:**

- i. As each subject returned, the skin of the contact site was graded. The grade was recorded.
- ii. The time at which the patch was removed on Saturday was recorded.
- iii. A freshly-prepared patching device was applied on the same site.
- iv. The site-identifying marks were reinforced and the subject was instructed to return on Tuesday.

Tuesday, Wednesday, Thursday, Friday:

The procedures followed were the same as those followed on corresponding days during Week 1.

Week #3:**Monday:**

- i. As each subject returned, the skin of the contact site was graded. The grade was recorded.
- ii. The time at which the patch was removed on Saturday was recorded.
- iii. A freshly-prepared patching device was applied on the same site.
- iv. The site-identifying marks were reinforced and the subject was instructed to return on Tuesday.

Tuesday, Wednesday, Thursday, Friday:

The procedures followed were the same as those followed on corresponding days during Week 1.

Week #4:**Monday:**

- i. As each subject returned, the skin of the contact site was graded. The grade was recorded.
- ii. The time at which the patch was removed on Saturday was recorded.
- iii. a) If the subject had undergone all nine induction applications, she/he was dismissed after being instructed as follows:
 - i) to report back to the clinic on the following Monday to receive the challenge applications, and
 - ii) to notify the investigator without delay should any significant changes occur in the skin of the contact site before Monday of the challenge week.
- b) If the subject had not received the required number of induction applications and was deficient without valid reason, applications were continued. As many as two missed applications could be made up during this week. When the subject had undergone the required number of make up applications, she/he was dismissed after being instructed as in section a) ii, above.

.02 HIATUS/MAKE UP PHASE-**Week # 4:**

After the examination on Monday of Week 4, no procedures other than make-up cycles were scheduled during this period.

.03 CHALLENGE PHASE-**Week #5:****Monday:**

- i. As each subject returned, the skin of the initial induction site was examined and ascertained to be free of any conditions that would have rendered it unfit for undergoing the challenge applications.
- ii. A prepared device was applied on the initial induction site.
- iii. A second prepared device was applied on a naive site.
- iv. The skin around both devices was marked and the subject was instructed to return on Tuesday.

Tuesday: (Note: If a subject was absent on Monday, she/he was patched on Tuesday.)

- i. As each subject returned, the site-identifying marks around both contact sites were reinforced.
- ii. Both patching devices were removed by a technician.
- iii. The skin of both contact sites was graded; the grades were recorded.
- iv. The subject was instructed to return on Wednesday.

Wednesday:

- i. As each subject returned, the skin of both contact sites was graded; the grades were recorded.
- ii. If follow-up was indicated, the subject was instructed to return on Thursday, otherwise the subject was dismissed from the study of this material.

.04 FOLLOW-UP PHASE:**Week No. 6 and Week No. 7:**

During the two weeks following the exit examination, the subjects were given the opportunity to relay any information concerning effects that were relevant to the characterization of the product as well as to communicate the need for treatment of persistent or newly-occurring responses.

13.00 PROCEDURE DEVIATIONS:

No deviations in procedure were necessary.

14.00 COMPLIANCE

PHASE	No. Of AEC's	EXCUSED	COMPLIANT	
	Required		YES	NO
Induction	8	0	106	4
Challenge	1/1	0	104	6

106 of the 110 Subjects were in compliance with the number of required application/examination cycles during induction.
104 of the 110 Subjects were in compliance with the number of required application/examination cycles during challenge.

15.00 INCIDENCE OF RESPONSES:

GRADE	TYPE OF RESPONSE	INDUCTION PHASE	CHALLENGE PHASE	
			ORIGINAL CONTACT SITE	NAIVE CONTACT SITE
0	NO VISIBLE CHANGE	110 SUBJECTS	104 SUBJECTS	104 SUBJECTS
1	FAINT REDNESS, UNDEFINED BORDER	0 "	0 "	0 "
2	INTENSE REDNESS, DEFINED BORDER	0 "	0 "	0 "
3	REDNESS + DEFINITE EDEMA	0 "	0 "	0 "
4	REDNESS + PAPULES, OR VESICLES,	0 "	0 "	0 "
	NO. OF RESPONDERS	0 SUBJECTS	0 SUBJECTS	0 SUBJECTS
	NO DATA ACQUIRED	0 SUBJECTS	6 SUBJECTS	6 SUBJECTS

16.00 SIGNIFICANCE OF THE RESPONSES:**.01 INITIAL/INDUCTION PHASE:**

No responses were noted on any of the 110 subjects who underwent at least one post-application examination. The absence of responses characterizes the product as one which is devoid of clinically significant skin-irritating propensities.

.02 CHALLENGE PHASE:**a. Original Contact Sites:**

No responses were noted on any of the 104 subjects who participated in this phase of the study. The absence of responses characterizes the product as one which is devoid of clinically significant skin sensitizing propensities.

b. Naive Contact Sites:

No responses were noted on any of the 104 subjects who participated in this phase of the study. The absence of responses characterizes the product as one which is devoid of clinically significant skin sensitizing propensities.

17.00 CONCLUSIONS:

- .01 [REDACTED] was found to be neither a clinically significant skin irritant nor a skin sensitizer under the conditions of this study.
- .02 [REDACTED] is not contraindicated for usages entailing repeated applications on human skin under conditions appropriate for such products.

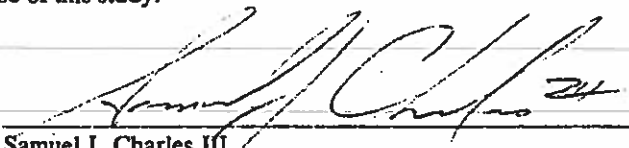
PRODUCT INVESTIGATIONS, INC.

8/23/08
Date


Joseph E. Nicholson III
Director, Dermatological Studies

18.00 COMPLIANCE WITH GOOD QUALITY ASSURANCE STANDARDS:

I have audited the results presented in this report and believe that, to the best of my knowledge, they accurately reflect the raw data acquired during the course of this study.


Samuel J. Charles III
Director, Quality Assurance

Subj #	INDUCTION PHASE														HIATUS/MAKEUPS							CHALLENGE PHASE															
	WEEK 1							WEEK 2							WEEK 3							WEEK 4							WEEK 5								
	M	T	W	TH	F	S	M	T	W	TH	F	S	M	T	W	TH	F	S	M	T	W	TH	F	S	M	T	W	TH	F	S	M	T	W	TH	F	S	
1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
4	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
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25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

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33	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
34	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
35	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
36	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
37	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
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39	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
40	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
41	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
42	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
43	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
44	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
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52	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
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54	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
55	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
56	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
57	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
58	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
59	B		0		0		0				0		0				0		0				0		0		0				0		0		0		
60	B		0		0		0				0		0				0		0				0		0		0				0		0		0		

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	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	
61	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
62	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
63	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
64	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
65	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
66	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
67	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
68	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
69	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
70	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
71	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
72	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
73	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
74	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
75	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
76	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
77	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
78	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
79	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
80	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
81	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
82	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
83	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
84	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
85	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
86	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
87	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
88	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
89	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
90	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

Subj #	INDUCTION PHASE																												HIATUS/MAKEUPS							CHALLENGE PHASE						
	WEEK 1							WEEK 2							WEEK 3							WEEK 4							WEEK 5													
	M	T	W	TH	F	M	T	W	TH	F	M	T	W	TH	F	M	T	W	TH	F	M	T	W	TH	F	M	T	W	TH	F												
91	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0			F										
92	B		0		Dropped																																					
93	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
94	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
95	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
96	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
97	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
98	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
99	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
100	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
101	B		0		0	0		0		0	0		0		0	0		0		A	A		A		A	A	A	A	A	A												
102	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
103	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
104	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
105	B		0		0	A		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	A													
106	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
107	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
108	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
109	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													
110	B		0		0	0		0		0	0		0		0	0		0		0	0		0		0	0	B	0/0	0/0													



Memorandum

TO: F. Alan Andersen, Ph.D.
Director - COSMETIC INGREDIENT REVIEW (CIR)

FROM: Halyna Breslawec, Ph.D.
Industry Liaison to the CIR Expert Panel 

DATE: October 15, 2012

SUBJECT: HRIPT on a Product Containing Isocetyl Myristate

Consumer Product Testing Co. 2005. Repeated insult patch test of a concealer containing 29.5% Isocetyl Myristate.



Consumer Product Testing Co.

FINAL REPORT

CLIENT:

ATTENTION:


TEST:


Repeated Insult Patch Test

Protocol No.: 1.01 concealer containing 22.5% Isocetyl Myristate

TEST MATERIAL:

**EXPERIMENT
REFERENCE NUMBER:**


Richard R. Eisenberg, M.D.
Board Certified Dermatologist


Joy Frank, R.N.
Executive Vice President, Clinical Evaluations

This report is submitted for the exclusive use of the person, partnership, or corporation to whom it is addressed, and neither the report nor the name of these Laboratories nor any member of its staff, may be used in connection with the advertising or sale of any product or process without written authorization.

70 New Dutch Lane • Fairfield, New Jersey 07004-2514 • (973) 808-7111 • Fax (973) 808-7234




Consumer Product Testing Co.

QUALITY ASSURANCE UNIT STATEMENT



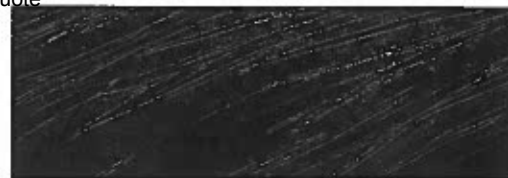
The objective of the Quality Assurance Unit (QAU) is to monitor the conduct and reporting of clinical laboratory studies. These studies have been performed with adherence to the applicable ICH Guideline E6 for Good Clinical Practice and requirements provided for in 21 CFR parts 50 and 56 and in accordance to standard operating procedures and applicable protocols. The QAU maintains copies of study protocols and standard operating procedures and has inspected this study. All data pertinent to this study will be stored in the Consumer Product Testing Company archive, unless specified otherwise, in writing by the Sponsor.

Quality Assurance personnel involved:


Quality Assurance


Date

The representative signature of the Quality Assurance Unit signifies that this study has been performed in accordance with standard operating procedures and study protocol as well as government regulations regarding such procedures and protocols.



Objective: To determine by repetitive epidermal contact the potential of a test material to induce primary or cumulative irritation and/or allergic contact sensitization.

Participants: One hundred sixteen (116) qualified subjects, male and female, ranging in age from 16 to 78 years, were selected for this evaluation. One hundred-four (104) subjects completed this study. The remaining subjects discontinued their participation for various reasons, none of which were related to the application of the test material.

Inclusion Criteria:

- a. Male and female subjects, age 16^a and over.
- b. Absence of any visible skin disease which might be confused with a skin reaction from the test material.
- c. Prohibition of use of topical or systemic steroids and/or antihistamines for at least seven days prior to study initiation.
- d. Completion of a Medical History form and the understanding and signing of an Informed Consent form.
- e. Considered reliable and capable of following directions.

Exclusion Criteria:

- a. Ill health.
- b. Under a doctor's care or taking medication(s) which could influence the outcome of the study.
- c. Females who are pregnant or nursing.
- d. A history of adverse reactions to cosmetics or other personal care products.

Test Material:



Study Schedule:	<u>Panel #</u>	<u>Initiation Date</u>	<u>Completion Date</u>
	20050226	May 16, 2005	June 23, 2005
	20050233	May 16, 2005	June 30, 2005

^aWith parental or guardian consent

Methodology:

The upper back between the scapulae served as the treatment area. Approximately 0.2 g of the test material, or an amount sufficient to cover the contact surface, was applied to the 1" x 1" absorbent pad portion of a clear adhesive dressing*. This was then applied to the appropriate treatment site to form a semi-occlusive patch.

Induction Phase:

Patches were applied three (3) times per week (e.g., Monday, Wednesday, and Friday) for a total of nine (9) applications. The site was marked to ensure the continuity of patch application. Following supervised removal and scoring of the first Induction patch, participants were instructed to remove all subsequent Induction patches at home, twenty-four hours after application. The evaluation of this site was made again just prior to re-application. If a participant was unable to report for an assigned test day, one (1) makeup day was permitted. This day was added to the Induction period. It was noted that due to a holiday weekend which occurred during the Induction Phase, subjects who required a makeup day experienced a delay between applications.

With the exception of the first supervised Induction Patch reading, if any test site exhibited a moderate (2-level) reaction during the Induction Phase, application was moved to an adjacent area. Applications are discontinued for the remainder of this test phase, if a moderate (2-level) reaction was observed on this new test site. Applications would also be discontinued if marked (3-level) or severe (4-level) reactivity was noted.

Rest periods consisted of twenty-four hours following each Tuesday and Thursday removal, and forty-eight hours following each Saturday removal.

Challenge Phase:

Approximately two (2) weeks after the final Induction patch application, a Challenge patch was applied to a virgin test site adjacent to the original Induction patch site, following the same procedure described for Induction. The patch was removed and the site scored at the clinic twenty-four and seventy-two hours post-application.

*Manufactured by TruMed Technologies, Inc., Burnsville, MN



Evaluation Key:

- 0 = No visible skin reaction
- + = Barely perceptible or spotty erythema
- 1 = Mild erythema covering most of the test site
- 2 = Moderate erythema, possible presence of mild edema
- 3 = Marked erythema, possible edema
- 4 = Severe erythema, possible edema, vesiculation, bullae and/or ulceration

Results:

The results of each participant are appended (Table 1).

Observations remained negative throughout the test interval.

Summary:

Under the conditions of this study, test material, [REDACTED]
Concealer + SPF did not indicate a ~~significant~~ potential for dermal irritation or
allergic contact sensitization. *significant*



Subject Number	24*hr	Induction Phase									Virgin Challenge Site	
		1	2	3	4	5	6	7	8	9	24*hr	72 hr
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0 ^m	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	DID NOT COMPLETE STUDY											

24* = Supervised removal of 1st Induction and Challenge Patch

m = Additional makeup day granted at the discretion of the clinic supervisor



Subject Number	24*hr	Induction Phase									Virgin Challenge Site	
		1	2	3	4	5	6	7	8	9	24*hr	72 hr
30		DID NOT COMPLETE STUDY										
31	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0 ^m	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	DID NOT COMPLETE STUDY									
39	0	0	0	0	0	0	DID NOT COMPLETE STUDY					
40	0	0	0	0	0	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0
56		DID NOT COMPLETE STUDY										
57	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0

24* = Supervised removal of 1st Induction and Challenge Patch

m = Additional makeup day granted at the discretion of the clinic supervisor



Subject Number	24*hr	Induction Phase									Virgin Challenge Site	
		1	2	3	4	5	6	7	8	9	24*hr	72 hr
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0 ^m	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	DID NOT COMPLETE STUDY							
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	DID NOT COMPLETE STUDY										
11	0	DID NOT COMPLETE STUDY										
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	DID NOT COMPLETE STUDY									
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	DID NOT COMPLETE STUDY									
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0


24* = Supervised removal of 1st Induction and Challenge Patch

m = Additional makeup day granted at the discretion of the clinic supervisor



Subject Number	24*hr	Induction Phase									Virgin Challenge Site	
		1	2	3	4	5	6	7	8	9	24*hr	72 hr
30	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	-----DID NOT COMPLETE STUDY-----					
41	0	0	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0
46	-----DID NOT COMPLETE STUDY-----											
47	0	0	0	0	0	0	0	0	0	0	0	0*
48	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0

24* = Supervised removal of 1st Induction and Challenge Patch
 * = Observation recorded 48 hours post challenge application



Subject Number	Initials	Age	Sex
1	LS	28	F
2	JM	67	M
3	PR	48	M
4	KL	18	F
5	TR	17	F
6	CR	47	F
7	EL	50	F
8	JL	52	M
9	DR	59	F
10	PV	60	M
11	NM	60	F
12	AA	47	M
13	LS	48	F
14	LS	49	M
15	DP	47	M
16	JB	55	F
17	AA	53	F
18	JA	42	M
19	MV	19	F
20	LL	16	F
21	CB	25	F
22	CM	18	F
23	JP	62	M
24	MH	19	F
25	RD	20	M
26	LS	45	F
27	PG	19	F
28	RH	32	F
29	AW	63	F



Subject Number	Initials	Age	Sex
30	PW	38	F
31	TL	46	F
32	NT	43	F
33	RL	47	M
34	MM	71	F
35	SH	39	F
36	DD	39	F
37	WS	35	M
38	PQ	60	M
39	MH	18	M
40	NH	46	F
41	LC	52	M
42	CQ	25	M
43	JL	72	M
44	YC	41	F
45	JY	46	M
46	AM	38	F
47	YA	26	F
48	JD	65	F
49	LS	46	F
50	AB	48	F
51	YC	35	F
52	EH	71	F
53	MC	69	F
54	TD	43	F
55	JB	67	F
56	DJ	44	M
57	IZ	46	F
58	HC	73	F
59	JC	78	M



Subject Number	Initials	Age	Sex
1	GJ	41	F
2	BC	43	F
3	MS	46	F
4	MP	39	F
5	BC	34	F
6	DS	45	F
7	TC	64	F
8	BP	19	F
9	GC	37	F
10	YC	30	F
11	RM	29	M
12	JF	70	M
13	JA	54	F
14	LP	59	F
15	ST	33	F
16	IT	42	F
17	DM	48	F
18	LF	45	F
19	CS	47	F
20	TC	38	F
21	IH	57	F
22	RC	36	F
23	MA	58	F
24	AC	45	M
25	CL	47	F
26	LO	61	F
27	SV	55	F
28	WM	45	M
29	CC	43	F



Subject Number	Initials	Age	Sex
30	JA	34	F
31	GC	40	F
32	AC	39	M
33	RC	66	M
34	KC	62	F
35	DM	39	F
36	PM	33	F
37	MW	71	F
38	TP	64	F
39	MC	38	M
40	RS	49	F
41	NC	56	F
42	TD	24	F
43	JD	40	F
44	EK	56	M
45	JS	70	F
46	VA	68	M
47	HM	53	F
48	CS	44	M
49	RM	59	F
50	AC	71	F
51	JS	68	M
52	PC	61	F
53	CD	74	F
54	AD	77	M
55	JS	29	F
56	MP	59	F
57	JG	31	M



Memorandum

TO: F. Alan Andersen, Ph.D.
Director - COSMETIC INGREDIENT REVIEW (CIR)

FROM: Halyna Breslawec, Ph.D.
Industry Liaison to the CIR Expert Panel *HBreslawec*

DATE: September 25, 2012

SUBJECT: HRIPT of a Product Containing Cetyl Ricinoleate

Clinical Research Laboratories, Inc. 2011. Repeated insult patch test of a lipstick containing 15.2% Cetyl Ricinoleate.



Clinical Research Laboratories, Inc.

Final Report

Repeated Insult Patch Test

Cetyl Ricinoleate 15.2% - RIPT (0/621)
Product Type: Lipstick

CLIENT:


ATTENTION:

TEST MATERIAL:

CRL STUDY NUMBER:

AUTHORIZED SIGNATURES:


Bruce E. Kanengiser, M.D.
President/Medical Director


Anita Chan, M.D.
Dermatologist


Michael J. Muscatello, Ph.D.
Executive Vice President/COO

REPORT DATE:



Clinical Research Laboratories, Inc.

Good Clinical Practice Quality Assurance Audit Statement

Clinical Study Number: [REDACTED]

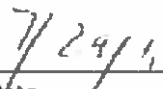
Start Date: April 18, 2011

Completion Date: July 11, 2011

The clinical study listed above was conducted in accordance with Clinical Research Laboratories, Inc. Standard Operating Procedures, which incorporate the principles of Good Clinical Practice defined by applicable guidelines and regulations established by U.S. Regulatory Agencies. The conduct of the study was monitored for compliance, and the associated records, including source documents or raw data, were reviewed for documentation practices and accuracy by a Project Manager/Study Director and/or a Quality Assurance Representative. Standard Quality Assurance audit procedures for this final report and study related documents were conducted, as indicated below.



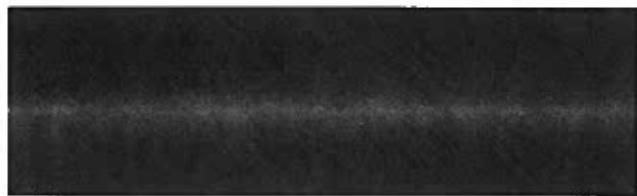
Signature of QA Auditor



Date



Clinical Research Laboratories, Inc.



FINAL REPORT

REPEATED INSULT PATCH TEST

PURPOSE

The purpose of this study was to determine the dermal irritation and sensitization potential of a test material.

INVESTIGATIVE SITE

Clinical Research Laboratories, Inc.
371 Hoes Lane
Piscataway, New Jersey 08854
732-981-1616

TEST MATERIAL

The following test material was provided by [REDACTED] and was received by Clinical Research Laboratories, Inc. on April 14th, 2011:

Test Material	Test Condition	Patch Type
[REDACTED] Lipstick	Test as received.	Semi-occlusive*

The test material was coded with the following CRL identification number:



STUDY DATES

This study was initiated on April 18, 2011 and was completed on July 11, 2011.

* Semi-occlusive Strip (TruMed Technologies Inc., Burnsville, Minnesota)



Clinical Research Laboratories, Inc.

PANEL SELECTION

Each subject was assigned a permanent CRI identification number. All subjects signed an Informed Consent Form in compliance with 21 CFR Part 30: "Protection of Human Subjects" and a HIPAA Authorization Form in compliance with 45 CFR Parts 160 and 164. All subjects completed a Subject Profile/Medical History Form provided by Clinical Research Laboratories, Inc. prior to the study (Subject Demographics - Appendix 1). Subjects who met the following Inclusion Criteria and none of the Exclusion Criteria were impaneled:

Inclusion Criteria

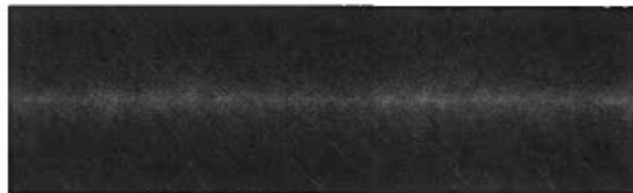
- a. Male and female subjects between the ages of 18 and 70 years;
- b. Subjects who do not exhibit any skin diseases which might be confused with a skin reaction from the test material;
- c. Subjects who agree to avoid exposure of the test sites to the sun and to refrain from visits to tanning salons during the course of this study;
- d. Subjects willing to sign an Informed Consent in conformance with 21CFR Part 30: "Protection of Human Subjects;"
- e. Subjects who have completed a HIPAA Authorization Form in conformance with 45CFR Parts 160 and 164;
- f. Subjects in generally good health who have a current Subject Profile/Medical History on file;
- g. Subjects who are dependable and able to follow directions as outlined in the protocol.

Exclusion Criteria

- a. Female subjects who are pregnant or nursing;
- b. Subjects who are currently using any systemic or topical corticosteroids, anti-inflammatory drugs, or antihistamines on a regular basis;
- c. Subjects exhibiting any skin disorder, sunburn, scars, excessive tattoos, etc. in the test area.



Clinical Research Laboratories, Inc.



TEST METHOD

Prior to the application of the patch, the test area was wiped with 70% isopropyl alcohol and allowed to dry. The test material, which was prepared as described in the Test Material section of the report, was applied to the upper back (between the scapulae) and was allowed to remain in direct skin contact for a period of 24 hours.

Patches were applied to the same site on Monday, Wednesday, and Friday for a total of 9 applications during the Induction Period. This schedule may have been modified to allow for missed visits or holidays. If a subject was unable to report on an assigned test date, the test material was applied on 2 consecutive days during the Induction Phase and/or a makeup day was added at the end of the Induction Phase.

The sites were graded by a CRL technician for dermal irritation 24 hours after removal of the patches by the subjects on Tuesday and Thursday and 48 hours after removal of the patches on Saturday, unless the patching schedule was altered as described above.

The sites were graded according to the following scoring system:

Dermal Scoring Scale

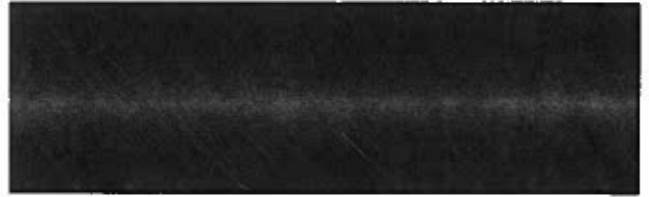
- 0 No visible skin reaction
- 1 Barely perceptible erythema
- 1+ Mild erythema
- 2 Well defined erythema
- 3+ Erythema and edema
- 4 Erythema and edema with vesiculation

If a "2+" reaction or greater occurred, the test material was applied to an adjacent virgin site. If a "2+" reaction or greater occurred on the new site, the subject was not patched again during the Induction Phase but was challenged on the appropriate day of the study. At the discretion of the Study Director, patch sites with scores less than a "2+" may have been changed.

Following approximately a 2-week rest period, the challenge patches were applied to previously untreated test sites on the back. After 24 hours, the patches were removed by a CRL technician and the test sites were evaluated for dermal reactions. The test sites were re-evaluated at 48 and 72 hours. Subjects exhibiting reactions during the Challenge Phase of the study may have been asked to return for a 96-hour reading.



Clinical Research Laboratories, Inc.



RESULTS

This study was initiated with 672 subjects. Fifty-one subjects discontinued study participation for reasons unrelated to the test material. A total of 621 subjects completed the study.

Individual dermal scores recorded during the Induction and Challenge Phases appear in Table I.

CONCLUSION

Based on the test population of 621 subjects and under the conditions of this study, the test material identified as [REDACTED] Lipstick did not demonstrate a clinically significant potential for eliciting dermal irritation or sensitization.

RETENTION

Test materials and all original forms of this study will be retained by Clinical Research Laboratories, Inc. as specified in CRL Standard Operating Procedures 30.6 and 30.6C, unless designated otherwise by the Sponsor.



Clinical Research Laboratories, Inc.

TABLE I

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1A	0	0	0	0	0	0	0	0	0	0	0	0
2A	0	0	0	0	0	0	0	0	0	0	0	0
3A	0	0	0	0	0	0	0	0	0	0	0	0
4A	0	0	0	0	0	0	0	0	0	0	0	0
5A	0	0	0	0	0	0	0	0	0	0	0	0
6A	0	0	0	0	0	0	0	0	0	0	0	0
7A	0	0	0	0	0	0	0	0	0	0	0	0
8A	0	0	0	0	0	0	0	0	0	0	0	0
9A	0	Discontinued										
10A	0	0	0	0	0	0	0	0	0	0	0	0
11A	0	0	0	0	0	0	0	0	0	0	0	0
12A	0	0	0	0	0	0	0	0	0	0	0	0
13A	0	0	0	0	0	0	0	0	0	0	0	0
14A	0	0	0	0	0	0	0	0	0	0	0	0
15A	0	0	0	0	0	0	0	0	0	0	0	0
16A	0	0	0	0	0	0	0	0	0	0	0	0
17A	0	0	0	0	0	0	0	0	0	0	0	0
18A	0	0	0	0	0	0	0	0	0	0	0	0
19A	0	0	0	0	0	0	0	0	0	0	0	0
20A	0	0	0	0	0	0	0	0	0	0	0	0
21A	0	0	0	0	0	0	0	0	0	0	0	0
22A	0	0	0	0	0	0	0	0	0	0	0	0
23A	0	Discontinued										
24A	0	0	0	0	0	0	0	0	0	0	0	0
25A	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26A	0	0	0	0	0	0	0	0	0	0	0	0
27A	0	0	0	0	0	0	0	0	0	0	0	0
28A	0	0	0	0	0	0	0	0	0	0	0	0
29A	0	0	0	0	0	0	0	0	0	0	0	0
30A	0	0	0	0	0	0	0	0	0	0	0	0
31A	0	0	0	0	0	0	0	0	0	0	0	0
32A	0	0	0	0	0	0	0	0	0	0	0	0
33A	0	0	0	0	0	0	0	0	0	0	0	0
34A	0	0	Discontinued									
35A	0	0	0	0	0	0	0	0	0	0	0	0
36A	0	0	0	0	0	0	0	0	0	0	0	0
37A	0	0	0	0	0	0	0	0	0	0	0	0
38A	0	0	0	0	0	0	0	0	0	0	0	0
39A	0	0	0	0	0	0	0	0	0	0	0	0
40A	0	0	0	0	0	0	0	0	0	0	0	0
41A	0	0	0	0	0	0	0	0	0	0	0	0
42A	0	0	0	0	0	0	0	0	0	0	0	0
43A	0	0	0	0	0	0	0	0	0	0	0	0
44A	0	0	0	0	0	0	0	0	0	0	0	0
45A	0	0	0	0	Discontinued							
46A	0	0	0	0	0	0	0	0	0	0	0	0
47A	0	0	0	0	0	0	0	0	0	0	0	0
48A	0	0	0	0	0	0	0	0	0	0	0	0
49A	0	0	0	0	0	0	0	0	0	0	0	0
50A	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE 1
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51A	0	0	0	0	0	0	0	0	0	0	0	0
52A	0	0	0	0	0	0	0	0	0	0	0	0
53A	0	0	0	0	0	0	0	0	0	0	0	0
54A	0	0	0	0	0	0	0	0	0	0	0	0
55A	0	0	0	0	0	0	0	0	0	0	0	0
56A	0	0	Discontinued									
57A	0	0	0	0	0	0	0	0	0	0	0	0
58A	0	0	0	0	0	0	0	0	0	0	0	0
59A	0	0	0	0	0	0	0	0	0	0	0	0
60A	0	0	0	0	0	0	0	0	0	0	0	0
61A	0	0	0	0	0	0	0	0	0	0	0	0
62A	0	0	0	0	0	0	0	0	0	0	0	0
63A	0	0	0	0	0	0	0	0	0	0	0	0
64A	0	0	0	0	0	0	0	0	0	0	0	0
65A	0	0	0	Discontinued								
66A	0	0	0	0	0	0	0	0	0	0	0	0
67A	0	0	0	0	0	0	0	0	0	0	0	0
68A	0	0	0	0	0	0	0	0	0	0	0	0
69A	0	0	0	0	0	0	0	0	0	0	0	0
70A	0	0	0	0	0	0	0	0	0	0	0	0
71A	0	0	0	0	0	0	0	0	0	0	0	0
72A	0	Discontinued										
73A	0	0	0	0	0	0	0	0	0	0	0	0
74A	0	0	0	0	0	0	0	0	0	0	0	0
75A	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76A	0	0	0	0	0	0	0	0	0	0	0	0
77A	0	0	0	0	0	0	0	0	0	0	0	0
78A	0	0	0	0	0	0	0	0	0	0	0	0
79A	0	0	0	0	0	0	0	0	0	0	0	0
80A	0	0	Discontinued									
81A	0	0	0	0	0	0	0	0	0	0	0	0
82A	0	0	0	0	0	0	0	0	0	0	0	0
83A	0	0	0	0	0	0	0	0	0	0	0	0
84A	0	0	0	0	0	0	0	0	0	0	0	0
85A	0	0	0	0	0	0	0	0	0	0	0	0
86A	0	0	0	0	0	0	0	0	0	0	0	0
87A	0	0	0	0	0	0	0	0	0	0	0	0
88A	0	0	0	0	0	0	0	0	0	0	0	0
89A	0	0	0	0	0	0	0	0	0	0	0	0
90A	0	0	0	0	Discontinued							
91A	0	0	0	0	0	0	0	0	0	0	0	0
92A	0	0	0	0	0	0	0	0	0	0	0	0
93A	0	0	0	0	0	0	0	0	0	0	0	0
94A	0	0	0	0	0	0	0	0	0	0	0	0
95A	0	0	0	0	0	0	0	0	0	0	0	0
96A	0	0	0	0	0	0	0	0	0	0	0	0
97A	0	0	0	0	0	0	0	0	0	0	0	0
98A	0	0	0	0	0	0	0	0	0	0	0	0
99A	0	0	0	0	0	0	0	0	0	0	0	0
100A	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material:												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101A	0	0	0	0	0	0	0	0	0	0	0	0
102A	0	0	0	0	0	0	0	0	0	0	0	0
103A	0	0	0	0	0	0	0	0	0	0	0	0
104A	0	0	0	0	0	0	0	0	0	0	0	0
105A	0	0	0	0	0	0	0	0	0	0	0	0
106A	0	0	Discontinued									
107A	0	0	0	0	0	0	0	0	0	0	0	0
108A	0	0	0	0	0	0	0	0	0	0	0	0
109A	0	0	0	0	0	0	0	0	0	0	0	0
110A	0	0	0	0	0	0	0	0	0	0	0	0
111A	0	0	0	0	0	0	0	0	0	0	0	0
112A	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1B	0	0	0	0	0	0	0	0	0	0	0	0
2B	0	0	0	0	0	0	0	0	0	0	0	0
3B	0	0	Discontinued									
4B	0	0	0	0	0	0	0	0	0	0	0	0
5B	0	0	0	0	0	0	0	0	0	0	0	0
6B	0	0	0	0	0	0	0	0	0	0	0	0
7B	0	0	0	0	0	0	0	0	0	0	0	0
8B	0	0	0	0	0	0	0	0	0	0	0	0
9B	0	0	0	0	0	0	0	0	0	0	0	0
10B	0	0	0	0	0	0	0	0	0	0	0	0
11B	0	0	0	0	0	0	0	0	0	0	0	0
12B	0	0	0	0	0	0	0	0	0	0	0	0
13B	0	0	0	0	0	0	0	0	0	0	0	0
14B	0	0	0	0	0	0	0	0	0	0	0	0
15B	0	0	0	0	0	0	0	0	0	0	0	0
16B	0	0	0	0	0	0	0	0	0	0	0	0
17B	0	0	0	0	0	0	0	0	0	0	0	0
18B	0	0	0	0	0	0	0	0	0	0	0	0
19B	0	0	0	0	0	0	0	0	0	0	0	0
20B	0	0	0	0	0	0	0	0	0	0	0	0
21B	0	0	0	0	0	0	0	0	0	0	0	0
22B	0	0	0	0	0	0	0	0	0	0	0	0
23B	0	0	Discontinued									
24B	0	0	0	0	0	0	0	0	0	0	0	0
25B	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material:												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26B	0	0	0	0	0	0	0	0	0	0	0	0
27B	0	0	0	0	0	0	0	0	0	0	0	0
28B	0	0	0	0	0	0	0	0	0	0	0	0
29B	0	0	0	0	0	0	0	0	0	0	0	0
30B	0	0	0	0	0	0	0	0	0	0	0	0
31B	0	0	0	0	0	0	0	0	0	0	0	0
32B	0	0	0	0	0	0	0	0	0	0	0	0
33B	0	0	0	0	0	0	0	0	0	0	0	0
34B	0	0	0	0	0	0	0	0	0	0	0	0
35B	0	0	Discontinued									
36B	0	0	0	0	0	0	0	0	0	0	0	0
37B	0	0	0	0	0	0	0	0	0	0	0	0
38B	0	0	0	0	0	0	0	0	0	0	0	0
39B	0	0	0	0	0	0	0	0	0	0	0	0
40B	0	0	0	0	0	0	0	0	0	0	0	0
41B	0	0	0	0	0	0	0	0	0	0	0	0
42B	0	0	0	0	0	0	0	0	0	0	0	0
43B	0	0	0	0	0	0	0	0	0	0	0	0
44B	0	Discontinued										
45B	0	0	0	0	0	0	0	0	0	0	0	0
46B	0	0	0	0	0	0	0	0	0	0	0	0
47B	0	0	0	0	0	0	0	0	0	0	0	0
48B	0	0	0	0	0	0	0	0	0	0	0	0
49B	0	0	0	0	0	0	0	0	0	0	0	0
50B	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE 1
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51B	0	0	0	0	0	0	0	0	0	0	0	0
52B	0	0	0	0	0	0	0	0	0	0	0	0
53B	0	0	0	0	0	0	0	0	0	0	0	0
54B	0	0	0	0	0	0	0	0	0	0	0	0
55B	0	0	0	0	0	0	0	0	0	0	0	0
56B	0	0	0	0	0	0	0	0	0	0	0	0
57B	0	0	0	0	0	0	0	0	0	0	0	0
58B	0	0	0	0	0	0	0	0	0	0	0	0
59B	0	0	Discontinued									
60B	0	0	0	0	0	0	0	0	0	0	0	0
61B	0	0	0	0	0	0	0	0	0	0	0	0
62B	0	0	0	0	0	0	0	0	0	0	0	0
63B	0	0	0	0	0	0	0	0	0	0	0	0
64B	0	0	0	0	0	0	0	0	0	0	0	0
65B	0	0	0	0	0	0	0	0	0	0	0	0
66B	0	0	0	0	0	0	0	0	0	0	0	0
67B	0	0	0	0	0	0	0	0	0	0	0	0
68B	0	0	0	0	0	0	0	0	0	0	0	0
69B	0	0	0	0	0	0	0	0	0	0	0	0
70B	0	0	0	0	0	0	0	0	0	0	0	0
71B	0	0	0	0	0	0	0	0	0	0	0	0
72B	0	0	0	0	0	0	0	0	0	0	0	0
74B	0	0	0	0	0	0	0	0	0	0	0	0
74B	0	0	0	0	0	0	0	0	0	0	0	0
75B	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76B	0	0	0	0	0	0	0	0	0	0	0	0
77B	0	0	0	0	0	0	0	0	0	0	0	0
78B	0	0	0	0	0	0	0	0	0	0	0	0
79B	0	0	0	0	0	0	0	0	0	0	0	0
80B	0	0	0	0	0	0	0	0	0	0	0	0
81B	0	Discontinued										
82B	0	0	0	0	0	0	0	0	0	0	0	0
83B	0	0	0	0	0	0	0	0	0	0	0	0
84B	0	0	0	0	0	0	0	0	0	0	0	0
85B	0	0	0	0	0	0	0	0	0	0	0	0
86B	0	0	0	0	0	0	0	0	0	0	0	0
87B	0	0	0	0	0	0	0	0	0	0	0	0
88B	0	0	0	0	0	0	0	0	0	0	0	0
89B	0	0	0	0	0	0	0	0	0	0	0	0
90B	0	0	0	0	0	0	0	0	0	0	0	0
91B	0	0	0	0	0	0	0	0	0	0	0	0
92B	0	0	Discontinued									
93B	0	0	0	0	0	0	0	0	0	0	0	0
94B	0	0	0	0	0	0	0	0	0	0	0	0
95B	0	0	0	0	0	0	0	0	0	0	0	0
96B	0	0	0	0	0	0	0	0	0	0	0	0
97B	0	0	0	0	0	0	0	0	0	0	0	0
98B	0	0	0	0	0	0	0	0	0	0	0	0
99B	0	0	0	0	0	0	0	0	0	0	0	0
100B	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material:												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101B	0	0	0	0	0	0	0	0	0	0	0	0
102B	0	0	0	0	0	0	0	0	0	0	0	0
103B	0	0	0	0	0	0	0	0	0	0	0	0
104B	0	0	0	0	0	0	0	0	0	0	0	0
105B	0	0	0	0	0	0	0	0	0	0	0	0
106B	0	0	0	0	0	0	0	0	0	0	0	0
107B	0	0	0	0	0	0	0	0	0	0	0	0
108B	0	0	0	0	0	0	0	0	0	0	0	0
109B	0	0	0	0	Discontinued							
110B	0	0	0	0	0	0	0	0	0	0	0	0
111B	0	0	0	0	0	0	0	0	0	0	0	0
112B	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1C	0	0	0	0	0	0	0	0	0	0	0	0
2C	0	0	0	0	0	0	0	0	0	0	0	0
3C	0	0	0	0	0	0	0	0	0	0	0	0
4C	0	0	0	0	0	0	0	0	0	0	0	0
5C	0	0	0	0	0	0	0	0	0	0	0	0
6C	0	0	Discontinued									
7C	0	0	0	0	0	0	0	0	0	0	0	0
8C	0	0	0	0	0	0	0	0	0	0	0	0
9C	0	0	0	0	0	0	0	0	0	0	0	0
10C	0	0	0	0	0	0	0	0	0	0	0	0
11C	0	0	0	0	0	0	0	0	0	0	0	0
12C	0	0	0	0	0	0	0	0	0	0	0	0
13C	0	0	0	0	0	0	0	0	0	0	0	0
14C	0	0	0	0	0	0	0	0	0	0	0	0
15C	0	0	0	0	0	0	0	0	0	0	0	0
16C	0	0	0	0	0	0	0	0	0	0	0	0
17C	0	0	0	0	0	0	0	0	0	0	0	0
18C	0	0	0	0	0	0	0	0	0	0	0	0
19C	0	0	0	0	0	0	0	0	0	0	0	0
20C	0	0	0	0	0	0	0	0	0	0	0	0
21C	0	0	0	Discontinued								
22C	0	0	0	0	0	0	0	0	0	0	0	0
23C	0	0	0	0	0	0	0	0	0	0	0	0
24C	0	0	0	0	0	0	0	0	0	0	0	0
25C	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26C	0	0	0	0	0	0	0	0	0	0	0	0
27C	0	0	0	0	0	0	0	0	0	0	0	0
28C	0	0	0	0	0	0	0	0	0	0	0	0
29C	0	0	0	0	0	0	0	0	0	0	0	0
30C	0	0	0	0	0	0	0	0	0	0	0	0
31C	0	0	0	0	0	0	0	0	0	0	0	0
32C	0	0	0	0	0	0	0	0	0	0	0	0
33C	0	0	0	0	0	0	0	0	0	0	0	0
34C	0	0	0	0	0	0	0	0	0	0	0	0
35C	0	Discontinued										
36C	0	0	0	0	0	0	0	0	0	0	0	0
37C	0	0	0	0	0	0	0	0	0	0	0	0
38C	0	0	0	0	0	0	0	0	0	0	0	0
39C	0	0	0	Discontinued								
40C	0	0	0	0	0	0	0	0	0	0	0	0
41C	0	0	0	0	0	0	0	0	0	0	0	0
42C	0	0	0	0	0	0	0	0	0	0	0	0
43C	0	0	0	0	0	0	0	0	0	0	0	0
44C	0	0	0	0	0	0	0	0	0	0	0	0
45C	0	0	0	0	0	0	0	0	0	0	0	0
46C	0	0	0	0	0	0	0	0	0	0	0	0
47C	0	0	0	0	0	0	0	0	0	0	0	0
48C	0	0	0	0	0	0	0	0	0	0	0	0
49C	0	0	0	0	0	0	0	0	0	0	0	0
50C	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE J
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51C	0	0	0	0	0	0	0	0	0	0	0	0
52C	0	0	0	0	0	0	0	0	0	0	0	0
53C	0	0	0	0	0	0	0	0	0	0	0	0
54C	0	0	0	0	0	0	0	0	0	0	0	0
55C	0	0	0	0	0	0	0	0	0	0	0	0
56C	0	0	0	0	0	0	0	0	0	0	0	0
57C	0	Discontinued										
58C	0	0	0	0	0	0	0	0	0	0	0	0
59C	0	0	0	0	0	0	0	0	0	0	0	0
60C	0	0	0	0	0	0	0	0	0	0	0	0
61C	0	0	0	0	0	0	0	0	0	0	0	0
62C	0	0	0	0	0	0	0	0	0	0	0	0
63C	0	0	0	0	0	0	0	0	0	0	0	0
64C	0	0	0	0	0	0	0	0	0	0	0	0
65C	0	0	0	0	0	0	0	0	0	0	0	0
66C	0	0	0	0	0	0	0	0	0	0	0	0
67C	0	0	0	0	0	0	0	0	0	0	0	0
68C	0	Discontinued										
69C	0	0	0	0	0	0	0	0	0	0	0	0
70C	0	0	0	0	0	0	0	0	0	0	0	0
71C	0	0	0	0	0	0	0	0	0	0	0	0
72C	0	0	0	0	0	0	0	0	0	0	0	0
73C	0	0	0	0	0	0	0	0	0	0	0	0
74C	0	0	0	0	0	0	0	0	0	0	0	0
75C	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76C	0	0	0	0	0	0	0	0	0	0	0	0
77C	0	0	0	0	0	0	0	0	0	0	0	0
78C	0	0	0	0	0	0	0	0	0	0	0	0
79C	0	0	0	0	0	0	0	0	0	0	0	0
80C	0	0	0	0	0	0	0	0	0	0	0	0
81C	0	0	0	Discontinued								
82C	0	0	0	0	0	0	0	0	0	0	0	0
83C	0	0	0	0	0	0	0	0	0	0	0	0
84C	0	0	Discontinued									
85C	0	0	0	0	0	0	0	0	0	0	0	0
86C	0	0	0	0	0	0	0	0	0	0	0	0
87C	0	0	0	0	0	0	0	0	0	0	0	0
88C	0	0	0	0	0	0	0	0	0	0	0	0
89C	0	0	0	0	0	0	0	0	0	0	0	0
90C	0	0	0	0	0	0	0	0	0	0	0	0
91C	0	0	0	0	0	0	0	0	0	0	0	0
92C	0	0	0	0	0	0	0	0	0	0	0	0
93C	0	0	0	0	0	0	0	0	0	0	0	0
94C	0	0	0	0	0	0	0	0	0	0	0	0
95C	0	0	0	0	0	0	0	0	0	0	0	0
96C	0	0	0	0	0	0	0	0	0	0	0	0
97C	0	0	0	0	0	0	0	0	0	0	0	0
98C	0	0	0	0	0	0	0	0	0	0	0	0
99C	0	0	0	0	0	0	0	0	0	0	0	0
100C	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE 1
(Continued)

Summary of Dermal Scores

Test Material:												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101C	0	0	0	0	0	0	0	0	0	0	0	0
102C	0	0	0	0	0	0	0	0	0	0	0	0
103C	0	0	Discontinued									
104C	0	0	0	0	0	0	0	0	0	0	0	0
105C	0	0	0	0	0	0	0	0	0	0	0	0
106C	0	0	0	0	0	0	0	0	0	0	0	0
107C	0	0	0	0	0	0	0	0	0	0	0	0
108C	0	0	0	0	0	0	0	0	0	0	0	0
109C	0	0	0	0	0	0	0	0	0	0	0	0
110C	0	0	0	0	0	0	0	0	0	0	0	0
111C	0	0	0	0	0	0	0	0	0	0	0	0
112C	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1D	0	0	0	0	0	0	0	0	0	0	0	0
2D	0	0	0	0	0	0	0	0	0	0	0	0
3D	0	0	0	0	0	0	0	0	0	0	0	0
4D	0	0	0	0	0	0	0	0	0	0	0	0
5D	0	0	0	0	0	0	0	0	0	0	0	0
6D	0	0	0	0	0	0	0	0	0	0	0	0
7D	0	0	0	0	0	0	0	0	0	0	0	0
8D	0	0	0	0	0	0	0	0	0	0	0	0
9D	0	0	0	0	0	0	0	0	0	0	0	0
10D	0	0	0	Discontinued								
11D	0	0	0	0	0	0	0	0	0	0	0	0
12D	0	0	0	0	0	0	0	0	0	0	0	0
13D	0	0	0	0	0	0	0	0	0	0	0	0
14D	0	0	0	0	0	0	0	0	0	0	0	0
15D	0	0	0	0	0	0	0	0	0	0	0	0
16D	0	0	0	0	0	0	0	0	0	0	0	0
17D	0	0	0	0	0	0	0	0	0	0	0	0
18D	0	0	0	0	0	0	0	0	0	0	0	0
19D	0	0	0	0	0	0	0	0	0	0	0	0
20D	0	0	0	0	0	0	0	0	0	0	0	0
21D	0	0	0	0	0	0	0	0	0	0	0	0
22D	0	0	0	0	0	0	0	0	0	0	0	0
23D	0	0	0	0	0	0	0	0	0	0	0	0
24D	0	0	0	0	0	0	0	0	0	0	0	0
25D	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26D	0	0	0	0	0	0	0	0	0	0	0	0
27D	0	0	0	0	0	0	0	0	0	0	0	0
28D	0	0	0	0	0	0	0	0	0	0	0	0
29D	0	0	0	0	0	0	0	0	0	0	0	0
30D	0	0	0	0	0	0	0	0	0	0	0	0
31D	0	0	0	0	0	0	0	0	0	0	0	0
32D	0	0	0	0	0	0	0	0	0	0	0	0
33D	0	0	0	0	0	0	0	0	0	0	0	0
34D	0	0	0	0	0	0	0	0	0	0	0	0
35D	0	Discontinued										
36D	0	0	0	0	0	0	0	0	0	0	0	0
37D	0	0	0	0	0	0	0	0	0	0	0	0
38D	0	0	0	0	0	Discontinued						
39D	0	0	0	0	0	0	0	0	0	0	0	0
40D	0	0	0	0	0	0	0	0	0	0	0	0
41D	0	0	0	0	0	0	0	0	0	0	0	0
42D	0	0	0	0	0	0	0	0	0	0	0	0
43D	0	0	0	0	0	0	0	0	0	0	0	0
44D	0	0	0	0	0	0	0	0	0	0	0	0
45D	0	0	0	0	0	0	0	0	0	0	0	0
46D	0	0	0	0	0	0	0	0	0	0	0	0
47D	0	0	0	0	0	0	0	0	0	0	0	0
48D	0	0	0	0	0	0	0	0	0	0	0	0
49D	0	0	0	0	0	0	0	0	0	0	0	0
50D	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51D	0	0	0	0	0	0	0	0	0	0	0	0
52D	0	0	0	0	0	0	0	0	0	0	0	0
53D	0	0	0	0	0	0	0	0	0	0	0	0
54D	0	0	0	0	0	0	0	0	0	0	0	0
55D	0	0	0	0	0	0	0	0	0	0	0	0
56D	0	0	Discontinued									
57D	0	0	0	0	0	0	0	0	0	0	0	0
58D	0	0	0	0	0	0	0	0	0	0	0	0
59D	0	0	0	0	0	0	0	0	0	0	0	0
60D	0	0	0	0	0	0	0	0	0	0	0	0
61D	0	Discontinued										
62D	0	0	0	0	0	0	0	0	0	0	0	0
63D	0	0	0	0	0	0	0	0	0	0	0	0
64D	0	0	0	0	0	0	0	0	0	0	0	0
65D	0	0	0	0	0	0	0	0	0	0	0	0
66D	0	0	0	0	0	0	0	0	0	0	0	0
67D	0	0	0	0	0	0	0	0	0	0	0	0
68D	0	0	Discontinued									
69D	0	0	0	0	0	0	0	0	0	0	0	0
70D	0	0	0	0	0	0	0	0	0	0	0	0
71D	0	0	0	0	0	0	0	0	0	0	0	0
72D	0	0	0	0	0	0	0	0	0	0	0	0
73D	0	0	0	0	0	0	0	0	0	0	0	0
74D	0	0	0	0	0	0	0	0	0	0	0	0
75D	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76D	0	0	0	0	0	0	0	0	0	0	0	0
77D	0	0	0	0	0	0	0	0	0	0	0	0
78D	0	0	0	0	0	0	0	0	0	0	0	0
79D	0	0	0	0	0	0	0	0	0	0	0	0
80D	0	0	0	0	0	0	0	0	0	0	0	0
81D	0	0	0	0	0	0	0	0	0	0	0	0
82D	0	0	0	0	0	0	0	0	0	0	0	0
83D	0	0	0	0	0	0	0	0	0	0	0	0
84D	0	0	0	0	0	0	0	0	0	0	0	0
85D	0	0	0	0	0	0	0	0	0	0	0	0
86D	0	0	0	0	0	0	0	0	0	0	0	0
87D	0	0	0	0	0	0	0	0	0	0	0	0
88D	0	0	0	0	0	0	0	0	0	0	0	0
89D	0	0	0	0	0	0	0	0	0	0	0	0
90D	0	0	0	0	0	0	0	0	0	0	0	0
91D	0	0	0	0	0	0	0	0	0	0	0	0
92D	0	0	0	0	0	0	0	0	0	0	0	0
93D	0	0	0	0	0	0	0	0	0	0	0	0
94D	0	0	0	0	0	0	0	0	0	0	0	0
95D	0	0	0	0	0	0	0	0	0	0	0	0
96D	0	0	0	0	0	0	0	0	0	0	0	0
97D	0	0	Discontinued									
98D	0	0	0	0	0	0	0	0	0	0	0	0
99D	0	0	0	0	0	0	0	0	0	0	0	0
100D	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material:												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101D	0	0	0	0	0	0	0	0	0	0	0	0
102D	0	0	0	0	0	0	0	0	0	0	0	0
103D	0	0	0	0	0	0	0	0	0	0	0	0
104D	0	0	0	0	0	0	0	0	0	0	0	0
105D	0	0	Discontinued									
106D	0	0	0	0	0	0	0	0	0	0	0	0
107D	0	0	0	0	0	0	0	0	0	0	0	0
108D	0	0	0	0	0	0	0	0	0	0	0	0
109D	0	0	0	0	0	0	0	0	0	0	0	0
110D	0	0	0	0	0	0	0	0	0	0	0	0
111D	0	0	0	0	0	0	0	0	0	0	0	0
112D	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material:												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1E	0	0	0	0	0	0	0	0	0	0	0	0
2E	0	0	0	0	0	0	0	0	0	0	0	0
3E	0	0	0	0	0	0	0	0	0	0	0	0
4E	0	0	0	0	0	0	0	0	0	0	0	0
5E	0	0	0	0	0	0	0	0	0	0	0	0
6E	0	0	0	0	0	0	0	0	0	0	0	0
7E	0	0	Discontinued									
8E	0	0	0	0	0	0	0	0	0	0	0	0
9E	0	0	0	0	0	0	0	0	0	0	0	0
10E	0	0	0	0	0	0	0	0	0	0	0	0
11E	0	0	0	0	0	0	0	0	0	0	0	0
12E	0	0	0	0	0	0	0	0	0	0	0	0
13E	0	0	0	0	0	0	0	0	0	0	0	0
14E	0	0	0	0	0	0	0	0	0	0	0	0
15E	0	0	0	0	0	0	0	0	0	0	0	0
16E	0	0	0	0	0	0	0	0	0	0	0	0
17E	0	0	0	0	0	0	0	0	0	0	0	0
18E	0	0	0	0	0	0	0	0	0	0	0	0
19E	0	0	0	0	0	0	0	0	0	0	0	0
20E	0	0	0	0	0	0	0	0	0	0	0	0
21E	0	0	0	0	0	0	0	0	0	0	0	0
22E	0	0	0	Discontinued								
23E	0	0	0	0	0	0	0	0	0	0	0	0
24E	0	0	0	0	0	0	0	0	0	0	0	0
25E	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26E	0	0	0	0	0	0	0	0	0	0	0	0
27E	0	0	0	0	0	0	0	0	0	0	0	0
28E	0	0	0	0	0	0	0	0	0	0	0	0
29E	0	0	0	0	0	0	0	0	0	0	0	0
30E	0	0	0	0	0	0	0	0	0	0	0	0
31E	0	0	0	0	0	0	0	0	0	0	0	0
32E	0	0	0	0	0	0	0	0	0	0	0	0
33E	0	0	0	0	0	0	0	0	0	0	0	0
34E	0	0	0	0	0	0	0	0	0	0	0	0
35E	0	0	0	0	0	0	0	0	0	0	0	0
36E	0	0	0	0	0	0	0	0	0	0	0	0
37E	0	0	0	0	0	0	0	0	0	0	0	0
38E	0	0	0	0	0	0	0	0	0	0	0	0
39E	0	0	0	0	0	0	0	0	0	0	0	0
40E	0	0	0	0	0	0	0	0	0	0	0	0
41E	0	0	0	0	0	0	0	0	0	0	0	0
42E	0	0	0	0	0	0	0	0	0	0	0	0
43E	0	0	0	0	0	0	0	0	0	0	0	0
44E	0	0	Discontinued									
45E	0	0	0	0	0	0	0	0	0	0	0	0
46E	0	0	0	0	0	0	0	0	0	0	0	0
47E	0	0	0	0	0	0	0	0	0	0	0	0
48E	0	0	0	0	0	0	0	0	0	0	0	0
49E	0	0	0	0	0	0	0	0	0	0	0	0
50E	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51E	0	0	0	0	0	0	0	0	0	0	0	0
52E	0	0	0	0	0	0	0	0	0	0	0	0
53E	0	0	0	0	0	0	0	0	0	0	0	0
54E	0	0	0	0	0	0	0	0	0	0	0	0
55E	0	0	0	0	0	0	0	0	0	0	0	0
56E	0	0	0	0	0	0	0	0	0	0	0	0
57E	0	Discontinued										
58E	0	0	0	0	0	0	0	0	0	0	0	0
59E	0	0	0	0	0	0	0	0	0	0	0	0
60E	0	0	0	0	0	0	0	0	0	0	0	0
61E	0	0	0	0	0	Discontinued						
62E	0	0	0	0	0	0	0	0	0	0	0	0
63E	0	0	0	0	0	0	0	0	0	0	0	0
64E	0	0	0	0	0	0	0	0	0	0	0	0
65E	0	0	0	0	0	0	0	0	0	0	0	0
66E	0	0	Discontinued									
67E	0	0	0	0	0	0	0	0	0	0	0	0
68E	0	0	0	0	0	0	0	0	0	0	0	0
69E	0	0	0	0	0	0	0	0	0	0	0	0
70E	0	0	0	0	0	0	0	0	0	0	0	0
71E	0	0	0	0	0	0	0	0	0	0	0	0
72E	0	0	0	0	0	0	0	0	0	0	0	0
73E	0	0	0	0	0	0	0	0	0	0	0	0
74E	0	0	0	0	0	0	0	0	0	0	0	0
75E	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material:												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76E	0	0	0	0	0	0	0	0	0	0	0	0
77E	0	0	0	0	0	0	0	0	0	0	0	0
78E	0	Discontinued										
79E	0	0	0	0	0	0	0	0	0	0	0	0
80E	0	0	0	0	0	0	0	0	0	0	0	0
81E	0	0	0	0	0	0	0	0	0	0	0	0
82E	0	0	0	0	0	0	0	0	0	0	0	0
83E	0	0	0	0	0	0	0	0	0	0	0	0
84E	0	0	0	0	0	0	0	0	0	0	0	0
85E	0	0	0	0	0	0	0	0	0	0	0	0
86E	0	0	0	0	0	0	0	0	0	0	0	0
87E	0	Discontinued										
88E	0	0	0	0	0	0	0	0	0	0	0	0
89E	0	0	0	0	0	0	0	0	0	0	0	0
90E	0	0	0	0	0	0	0	0	0	0	0	0
91E	0	0	0	0	0	0	0	0	0	0	0	0
92E	0	0	0	0	0	0	0	0	0	0	0	0
93E	0	0	0	0	0	0	0	0	0	0	0	0
94E	0	0	0	0	0	0	0	0	0	0	0	0
95E	0	0	0	0	0	0	0	0	0	0	0	0
96E	0	0	0	0	0	0	0	0	0	0	0	0
97E	0	0	0	0	0	0	0	0	0	0	0	0
98E	0	0	0	0	0	0	0	0	0	0	0	0
99E	0	0	0	0	0	0	0	0	0	0	0	0
100E	0	0	0	0	0	0	0	0	0	0	0	0



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TABLE 1
(Continued)

Summary of Dermal Scores

Test Material:												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101E	0	0	0	0	0	0	0	0	0	0	0	0
102E	0	0	0	0	0	0	0	0	0	0	0	0
103E	0	0	0	0	0	0	0	0	0	0	0	0
104E	0	0	0	0	0	0	0	0	0	0	0	0
105E	0	0	0	0	0	0	0	0	0	0	0	0
106E	0	0	0	0	0	0	0	0	0	0	0	0
107E	0	0	0	0	0	0	0	0	0	0	0	0
108E	0	0	0	0	0	0	0	0	0	0	0	0
109E	0	Discontinued										
110E	0	0	0	0	0	0	0	0	0	0	0	0
111E	0	0	0	0	0	0	0	0	0	0	0	0
112E	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
1F	0	0	0	0	0	0	0	0	0	0	0	0
2F	0	0	0	0	0	0	0	0	0	0	0	0
3F	0	0	0	0	0	0	0	0	0	0	0	0
4F	0	0	0	0	0	0	0	0	0	0	0	0
5F	0	0	0	0	0	0	0	0	0	0	0	0
6F	0	Discontinued										
7F	0	0	0	0	0	0	0	0	0	0	0	0
8F	0	0	0	0	0	0	0	0	0	0	0	0
9F	0	0	0	0	0	0	0	0	0	0	0	0
10F	0	0	0	0	0	0	0	0	0	0	0	0
11F	0	0	0	0	0	0	0	0	0	0	0	0
12F	0	0	0	0	0	0	0	0	0	0	0	0
13F	0	0	0	0	0	0	0	0	0	0	0	0
14F	0	0	0	0	0	0	0	0	0	0	0	0
15F	0	0	0	0	0	0	0	0	0	0	0	0
16F	0	0	0	0	0	0	0	0	0	0	0	0
17F	0	0	0	0	0	0	0	0	0	0	0	0
18F	0	0	0	0	0	0	0	0	0	0	0	0
19F	0	0	0	0	0	0	0	0	0	0	0	0
20F	0	0	0	Discontinued								
21F	0	0	0	0	0	0	0	0	0	0	0	0
22F	0	0	0	0	0	0	0	0	0	0	0	0
23F	0	0	0	0	0	0	0	0	0	0	0	0
24F	0	0	0	0	0	0	0	0	0	0	0	0
25F	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: 												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
26F	0	0	0	0	0	0	0	0	0	0	0	0
27F	0	0	0	0	0	0	0	0	0	0	0	0
28F	0	0	0	0	0	0	0	0	0	0	0	0
29F	0	0	0	0	0	0	0	0	0	0	0	0
30F	0	0	0	0	0	0	0	0	0	0	0	0
31F	0	0	0	0	0	0	0	0	0	0	0	0
32F	0	0	0	0	0	0	0	0	0	0	0	0
33F	0	0	0	0	0	0	0	0	0	0	0	0
34F	0	0	0	0	0	0	0	0	0	0	0	0
35F	0	0	0	0	0	0	0	0	0	0	0	0
36F	0	0	0	0	0	0	0	0	0	0	0	0
37F	0	0	0	0	0	0	0	0	0	0	0	0
38F	0	0	0	0	0	0	0	0	0	0	0	0
39F	0	0	0	0	0	0	0	0	0	0	0	0
40F	0	0	0	0	0	0	0	0	0	0	0	0
41F	0	Discontinued										
42F	0	0	0	0	0	0	0	0	0	0	0	0
43F	0	0	0	0	0	0	0	0	0	0	0	0
44F	0	0	0	0	0	0	0	0	0	0	0	0
45F	0	0	0	0	0	0	0	0	0	0	0	0
46F	0	0	0	0	0	0	0	0	0	0	0	0
47F	0	0	0	0	0	0	0	0	0	0	0	0
48F	0	0	0	0	0	0	0	0	0	0	0	0
49F	0	0	0	0	0	0	0	0	0	0	0	0
50F	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE 1
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
51F	0	0	0	0	0	0	0	0	0	0	0	0
52F	0	0	0	0	0	0	0	0	0	0	0	0
53F	0	0	0	Discontinued								
54F	0	0	0	0	0	0	0	0	0	0	0	0
55F	0	0	0	0	0	0	0	0	0	0	0	0
56F	0	0	0	0	0	0	0	0	0	0	0	0
57F	0	0	0	0	0	0	0	0	0	0	0	0
58F	0	0	0	0	0	0	0	0	0	0	0	0
58F	0	0	0	0	0	0	0	0	0	0	0	0
59F	0	0	Discontinued									
61F	0	0	0	0	0	0	0	0	0	0	0	0
62F	0	0	0	0	0	0	0	0	0	0	0	0
63F	0	0	0	0	0	0	0	0	0	0	0	0
64F	0	0	0	0	0	0	0	0	0	0	0	0
65F	0	0	0	0	0	0	0	0	0	0	0	0
66F	0	0	0	0	0	0	0	0	0	0	0	0
67F	0	0	0	0	0	0	0	0	0	0	0	0
68F	0	0	0	0	0	0	0	0	0	0	0	0
69F	0	0	0	0	0	0	0	0	0	0	0	0
70F	0	0	0	0	0	0	0	0	0	0	0	0
71F	0	0	0	0	0	0	0	0	0	0	0	0
72F	0	0	0	0	0	0	0	0	0	0	0	0
73F	0	0	0	0	0	0	0	0	0	0	0	0
74F	0	0	0	0	0	0	0	0	0	0	0	0
75F	0	0	0	0	0	0	0	0	0	0	0	0



Clinical Research Laboratories, Inc.

TABLE I
(Continued)

Summary of Dermal Scores

Test Material: [REDACTED]												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
76F	0	0	0	0	0	0	0	0	0	0	0	0
77F	0	0	0	0	0	0	0	0	0	0	0	0
78F	0	0	0	0	0	0	0	0	0	0	0	0
79F	0	0	0	0	0	0	0	0	0	0	0	0
80F	0	0	Discontinued									
81F	0	0	0	0	0	0	0	0	0	0	0	0
82F	0	0	0	0	0	0	0	0	0	0	0	0
83F	0	0	0	0	0	0	0	0	0	0	0	0
84F	0	0	0	0	0	0	0	0	0	0	0	0
85F	0	0	0	0	0	0	0	0	0	0	0	0
86F	0	0	0	0	0	0	0	0	0	0	0	0
87F	0	0	0	0	0	0	0	0	0	0	0	0
88F	0	0	0	0	0	0	0	0	0	0	0	0
89F	0	0	0	0	0	0	0	0	0	0	0	0
90F	0	0	0	0	0	0	0	0	0	0	0	0
91F	0	0	0	0	0	0	0	0	0	0	0	0
92F	0	0	0	0	0	0	0	0	0	0	0	0
93F	0	0	0	0	0	0	0	0	0	0	0	0
94F	0	0	0	0	0	0	0	0	0	0	0	0
95F	0	0	0	0	0	0	0	0	0	0	0	0
96F	0	0	Discontinued									
97F	0	0	0	0	0	0	0	0	0	0	0	0
98F	0	0	0	0	0	0	0	0	0	0	0	0
99F	0	0	0	0	0	0	0	0	0	0	0	0
100F	0	0	0	0	0	0	0	0	0	0	0	0

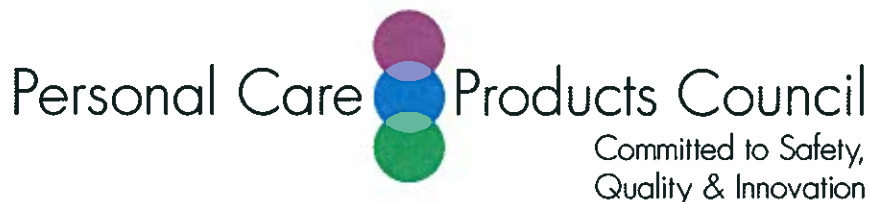


Clinical Research Laboratories, Inc.

TABLE 1
(Continued)

Summary of Dermal Scores

Test Material: 												
Subject Number	Induction Scores									Challenge Scores		
	1	2	3	4	5	6	7	8	9	24 Hour	48 Hour	72 Hour
101F	0	0	0	0	0	0	0	0	0	0	0	0
102F	0	0	0	0	0	0	0	0	0	0	0	0
103F	0	0	0	0	0	0	0	0	0	0	0	0
104F	0	0	0	0	0	0	0	0	0	0	0	0
105F	0	0	0	0	0	0	0	0	0	0	0	0
106F	0	0	0	0	0	0	0	0	0	0	0	0
107F	0	0	0	0	0	0	0	0	0	0	0	0
108F	0	0	0	0	0	0	0	0	0	0	0	0
109F	0	0	0	0	0	0	0	0	0	0	0	0
110F	0	0	0	0	0	0	0	0	0	0	0	0
111F	0	0	0	0	0	0	0	0	0	0	0	0
112F	0	0	0	0	0	0	0	0	0	0	0	0



Memorandum

TO: F. Alan Andersen, Ph.D.
Director - COSMETIC INGREDIENT REVIEW (CIR)

FROM: Halyna Breslawec, Ph.D. *H. Breslawec*
Industry Liaison to the CIR Expert Panel

DATE: September 6, 2012

SUBJECT: Comments on the Draft Report on the Alkyl Ester Ingredients Prepared for the September 10-11, 2012 CIR Expert Panel Meeting

Key Issue

p.2 - When describing the use of Category 3 classified products in cosmetics please also state "A substance classified in category 3 may be used in cosmetics if the substance has been evaluated by the SCCNFP [now called SCCS for Scientific Committee on Consumer Safety] and found acceptable for use in cosmetic products." This sentence is the last sentence of the Background section of reference 14 as cited in the CIR report.

Additional Comments

- p.1 - In the Introduction, please state the number of alkyl esters in this report that have been previously reviewed by CIR.
- p.1 - In the Chemistry section, it may also be helpful to state that some of the alkyl chains are saturated and some are unsaturated.
- p.1 - In the Physical and Chemical Properties section, is there anything else that can be said about trends based on structure?
- p.3 - In the last sentence under Isopropyl Myristate subheading please correct "an dvalbe"; in the second paragraph under Penetration Enhancement, please correct "hydropholic"
- p.3 - What concentrations of Isopropyl Myristate are used to enhance penetration of other compounds (reference 17)?
- p.5 - What were the axes for the "area under the curve" used to assess clinical scores in reference 19?
- p.6 - In the first line please correct "result stat" to "results state"; under the Propylheptyl Caprylate subheading please correct "does" to "doses"
- p.7 - What concentration of Isostearyl Isostearate was used in reference 31?
- p.7-8 - If someone just read the Summary of this report as currently written, they would not know that 60 of the ingredients have been previously reviewed CIR and that the information on these previously reviewed ingredients can be found in Table 2.
- p.8 - In the Draft Discussion, it is not clear what is meant by "similar structural activity relationships".

- p.9 - As there are multiple ethylhexanoate ingredients in this report, it is not clear why only Cetearyl Ethylhexanoate is mentioned in the first complete paragraph of this page.
- p.9 - As some of these ingredients are used at relatively high concentrations in spray products, relying on concentration to minimize exposure is not helpful. Rather than stating “concentrations at which the ingredients were used”, please state “short duration of exposure”.
- p.38, Table 2 - What species was used in the Cetyl Palmitate study in which the compound was found in the feces?
- p.41, Table 2 - What was the concentration of Isopropyl Myristate in the antiperspirant to which monkeys were exposed?
- p.46-55, Table 5 - Although the heading of the table states: “(italicized text generated by CIR)”, very little text in this table is italicized (although it appears some text for each ingredient should be italicized).
- p.65-76, Table 8 - Rather than including old concentration of use information in Table 2, it would be more helpful if this information was included in Table 8 (just the previous maximums in leave-on and rinse-off product for the previously reviewed ingredients would be helpful).