FACI®
GROUP

FACI ADDITIVES:

cosmetic industry

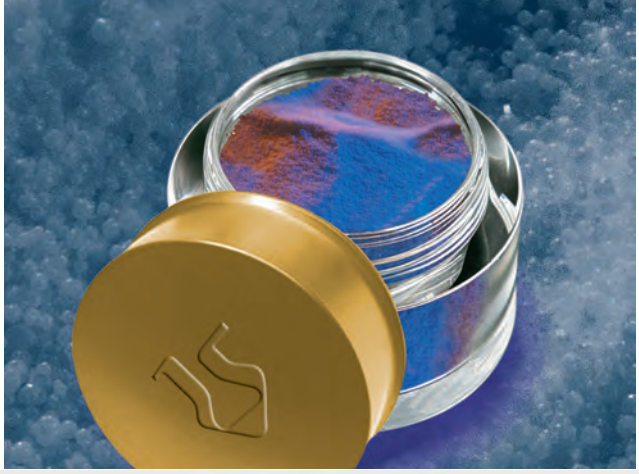
FACI Group the solution for Cosmetic

FACI is a global Group of Companies, active in the production and marketing of natural-based oleo chemical additives from renewable feedstock since 1943.

The continuous desire and propensity for finding the best balance between quality, competitiveness and sustainability is the driver of our daily activities and has existed in the company's culture since its foundation.

The keys to our success are: continuous technical development, close attention to the quality standards of our chemicals and their production process, an open-minded approach to local and international markets and a close cooperation with our customers.

All our production sites have an ISO 9001 certification that is the basis of our quality policy.



FACI Guaranteed Quality, Respect for the Environment

FACI Group cosmetic products

FACI provides a wide range of non-toxic metal soaps and esters from fatty acids available on the market, derived from both animal and vegetable based raw materials.

The Faci Group is strongly committed to working with the Cosmetic industry and can provide a wide range of possibilities for any need. Ingredients for Cosmetic applications are manufactured according to Good Manufacturing Practices in production units located in: Italy, Spain, UK, Singapore and China.

Metal stearates properties

The Stearate salts, including Aluminum Stearate, Magnesium Stearate, Potassium Stearate, Sodium Stearate and Zinc Stearate are fine, white powders with a slight fatty odour.

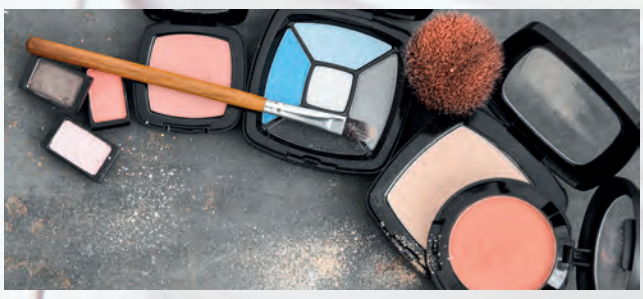
The commercial grade of stearic acid used to produce the Stearate salts contains fatty acids that range from C12 carbon atoms to C22 carbon atoms. The major components being C18 (stearic) and C16 (palmitic).

In cosmetics and personal care products, Stearate salts are used mainly in the formulation of make-up products, such as eyeliner, eye-shadow, mascara, lipsticks, blushers, face powders and foundations. They are also used in fragrances, deodorants, and hair and skin care products.

The benefit of these products is related to lubricating properties that enable them to operate as: emulsion stabilizers, non-aqueous viscosity increasing agents and opacifying agents. They also help to keep emulsions from separating into their oil and liquid components.
The Stearate salts increase the thickness of the lipid (oil) portion of cosmetics and personal care products and reduce the clear or transparent appearance of finished products. The water-insoluble metallic stearates are also water repellant and adhesive and have good "covering" properties.

Concerning the physical and chemical properties, it is observed that as alkyl chain lengths increase in fatty acids, melting points and boiling points increase, while water solubility and vapor pressure decrease. Additionally, within a given carbon chain length, melting points increase with increasing saturation and decrease with increasing unsaturation.

The safety of the Stearate salts has been assessed by the Cosmetic Ingredient Review (CIR) Expert Panel.
'The re-evaluation and final report on the 'Safety Assessment of Fatty Acids & Fatty Acid Salts as Used in Cosmetics' was released on May 15th 2019. The CIR concluded that the above mentioned stearate salts are safe for use as cosmetic ingredients.'



Properties of Fatty Acid Esters

Stearate esters are oily liquids or waxy solids. In cosmetics and personal care products, stearate esters are used most frequently in the formulation of: eye make-up, skin make-up, lipstick and skin care products.

Stearate esters act primarily as: lubricants, thickeners, solvents, coating film formers, emulsifiers and also water repellents.
Stearate esters have the unique properties of low viscosity and an oily nature, which results in a non-greasy, hydrophobic film when applied to the skin or lips.

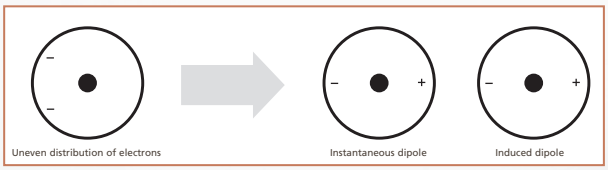
Esters provide a drier feel than traditional oils, reducing greasy feel and improving the sensory properties of skin care formulations.
Esters excel in the solubilization of organic UV-filters and in pigment wetting. They tend to have lower surface tension than other oils (marking them effective pigment wetting agents) and can also achieve pigment wetting with lower levels of additives than other oils. A lower surface tension not only results in easier pigment wetting but also leads to improved spreadability. These properties enable esters to be highly beneficial to sun care and color cosmetics.
The properties of stearate esters are directly connected to their chemical molecule structure and chain length. The Stearate esters manufactured by Faci are in the medium chain length, with a carbon number within 15 to 30.

The feel of an ester is dependent on its chemical structure and intermolecular attractions, because they affect its sensory properties.

Mechanism of electrostatic interaction birth

It is known that as the electrostatic attraction between the molecules increases, more force has to be applied in order for the layers of molecules to slide against each other, leading to lower spreadability.
This effect is emphasized by the increasing of the molecule chain-length, that generally causes the strengthening of the London dispersion forces.

London dispersion forces are the attractions between molecules due to instantaneous areas of charge as a result of localized electron movement. Individually these forces are very weak but as molecules start to get bigger, the degree of interaction increases and the sum of the forces start to become significant. These interactions are the reasons of the increase of boiling point of esters as their molecular weights increase. (Felix Wilson, Dani Loughran - Aston Chemicals, UK- November 2017)



The effect of branching and the effect of unsaturation also influence and modify the properties and behavior, generally giving a lighter skin-feel due to a reduction in the strength of London dispersion forces.

Esters, derived from natural fats and oils, also have the potential to provide functional alternatives to silicones, for formulators who wish to avoid cyclic silicones or silicones in general.

Almost all of the esters used in cosmetic products are non-sensitizing and in most cases are quite beneficial for dry skin.

Available products for cosmetic applications are shown in the

PRODUCT NAME	INCI Name EC/EINECS Number
Aluminum Stearate M-132 HG/HGV, M-136 TH/BF/BFN	Aluminum Stearate 206-101-8
Calcium Stearate S/DW/WLC/SP SM	Calcium Stearate 216-472-8
Magnesium Stearate S/M-125/SM	Magnesium Stearate 209-150-3
Magnesium Myristate	Magnesium Myristate 223-817-6
Sodium Stearate S/FU/FUY M-526 ND	Sodium Stearate 212-490-5
Zinc Stearate TM/TMD/SP DA/PM	Zinc Stearate 209-151-9
Potassium Stearate	Potassium Stearate 209-786-1
Potassium Myristate	Potassium Myristate 236-550-5
Glycerylmonostearate	Glyceryl Stearate 250-705-4/286-490-9
Glycerylmonostearate SE	Glyceryl Stearate 250-705-4/286-490-9
Glycerylmonoleate	Glyceryl Oleate 247-038-6
Pentaerithrytol Esters	Pentaerythrityl Tetrastearate 204-110-1
Ethylenglycolmonostearate	Glycol Stearate 203-886-9
Ethylenglycoldistearate	Glycol Distearate 211-014-3
Diethyleneglycol monostearate	Peg - 2 Stearate 203-363-5
Stearic acid	Stearic acid 200-313-4
Oleic acid	Oleic acid 204-007-1
Glycerine	Glycerin 200-289-5
Ethylene Bis-stearamide	Ethylene Distearamide 203-755-6/931-299-4

PRODUCT NAME	INCI Name EC/EINECS Number
Ethyl Hexyl Cocoate	Ethyl Hexyl Cocoate 295-366-3
Ethyl Hexyl Palmitate	Ethyl Hexyl Palmitate 249-862-1
Ethyl Hexyl Stearate	Ethyl Hexyl Stearate 244-754-0
Ethyl Hexyl Oleate	Ethyl Hexyl Oleate 247-655-0
Di Octyl Sebacate	Diethyl Hexyl Sebacate 204-558-8
Di Octyl Adipate	Diethyl Hexyl Adipate 203-090-1
N Butyl Stearate	Butyl Stearate 204-666-5
Iso Butyl Stearate	Isobutyl Stearate 211-466-1
Di Butyl Sebacate	DiButyl Sebacate 203-672-5
N Butyl Oleate	Butyl Oleate 205-559-6
Iso Tridecyl Stearate	IsoTridecyl Oleate 250-703-3
Di Isodecyl Adipate	Diisodecyl Adipate 248-299-9
Isodecyl Oleate	Isodecyl Oleate 261-673-6

table below:

Physical form	FACI SpA Italy	FACI METALEST, S.L.U. Spain	FACI UK Chemicals Ltd UK	FACI Asia Pacific Pte Ltd Singapore	FACI Chemicals Co Ltd China
Solid/powder		•			
Solid/powder	•	•	•	•	•
Solid/powder	•	•	•	•	•
Solid/powder	•				
Solid/powder	•	•	•	•	•
Solid/powder	•	•	•	•	
Solid/powder	•			•	
Solid/powder	•				
Solid/powder	•			•	
Solid/powder	•			•	
Liquid	•				
Solid/powder	•			•	
Solid/powder	•			•	
Solid/powder	•			•	
Solid	•			•	
Solid/powder	•				
Solid/powder	•				
Liquid	•				
Solid	•				

Physical form	FACI METALEST, S.L.U. Spain	FACI eChem Ltd UK
Liquid		•
Liquid	•	•
Liquid	•	•
Liquid	•	•
Liquid	•	•
Liquid	•	
Liquid	•	•
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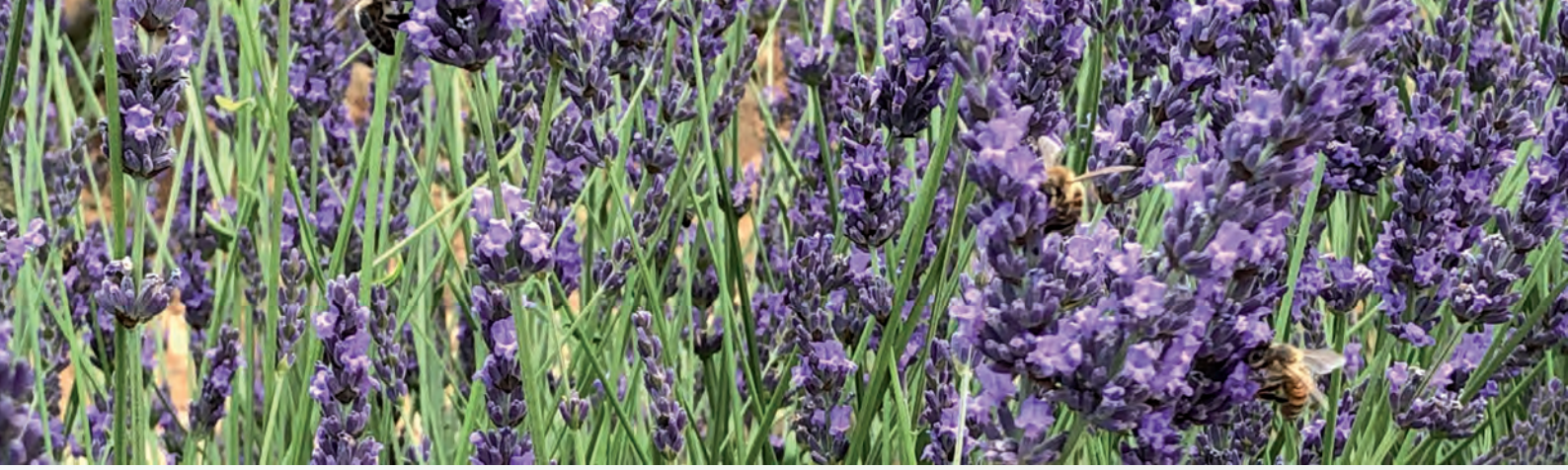


FACI can supply **natural-based** products for cosmetic applications, produced from both vegetable and animal raw materials:

- Compliant to Regulation EC 1223/2009 & Regulation (EU) 2019/831
- Vegetable based products
- Available RSPO Mass Balance (MB) and Segregated (SG) certified vegetable grade
- Vegetable grade suitable for Vegans
- GMO, Allergen and preservative free
- CMR free
- Nanomaterial free
- Animal testing free products
- Tallow Based products: BSE/TSE free

Manufacturing - Site	Vegetable based	Animal based
FACI S.p.A. - Italy	•	•
FACI METALEST S.L.U. – Spain	•	•
FACI UK Chemicals Ltd – UK	•	•
FACI eChem Ltd - UK	•	
FACI Asia Pacific PTE Ltd - Singapore	•	
FACI Chemicals Co Ltd - China	•	

THE APPLIED CERTIFICATIONS ARE REPORTED IN THE TABLE:

Manufacturing - Site	STANDARD	RSPO	OTHERS
FACI S.p.A. Italy	ISO 9001:2015 ISO 14001:2015 ISO 45001:2018 OHSAS18001	MB-SG	
FACI METALEST S.L.U. Spain	ISO 9001:2015 ISO 22000	MB-SG	
FACI UK Chemicals Ltd UK	ISO 9001:2015 ISO 14001:2015		
FACI eChem Ltd UK	ISO 9001:2015 ISO 14001:2015		
FACI Asia Pacific PTE Ltd Singapore	ISO 9001:2015 OHSAS18001 FSSC 22000	MB-SG	HALAL KOSHER
FACI Chemicals Co Ltd China	ISO 9001:2015	MB	HALAL

OUR PROCESS

Experience and development of an optimized in-house process using selected and audited raw material suppliers, for high quality and consistent products with a very low heavy metal content.

The first production of Stearate started in the early seventies and the company has succeeded in supplying specialties according to market requirement and change ever since.

The FACI Group provides support to a wide number of customers in the Cosmetic Industries with different kinds of applications/productions.

Dedicated equipment and lines are used for each class of product.

COSMETIC APPLICATIONS

Salts and esters of both animal and vegetable grade fatty acids are used in a very wide variety of applications in Cosmetics.

FACI Group cosmetic products find their use in the following applications:

- Emulsifier, co-emulsifier / Stabilizer (mainly o/w)
- Gelification agents
- Pearlizing/opacifying agent
- Viscosity controlling / Rheology modifier
- Anticaking agent/ dry binder
- Lubricant
- Surfactant
- Emollient
- Defoamer
- Skin conditioner
- Hair conditioner
- Film forming
- Moisturizers
- Processing aid
- Dispersant
- Solvents, coupler agents, carrier
- Cleansing agent for bar soaps, liquid soaps, etc.

Aluminum Stearate

Aluminum Stearate finds its main uses in cosmetic applications in the preparation of clear cosmetic gels and pomades. In lotions it can be used as emulsion stabilizer and de-foamer agent, in creams for its rheology modifier and surfactant characteristics, to achieve a creamy texture.

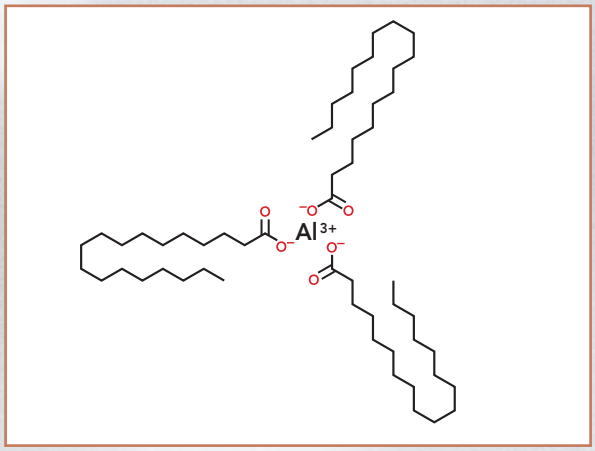
Properties:

- Viscosity controlling
- Opacifying
- Cosmetic colorant
- Emulsion stabilizing
- Anticaking
- Thickening agent
- Texture enhancer
- Defoamer

Applications:

- Clear cosmetic gels and pomades
- Make-up products such as eyeliner, eyeshadow, mascara, lipsticks, blushers, face powders and foundations
- Formulation of creams
- Formulation of lotions

Ingredient/product	Manufacturing - Site	Ashes %	Melting Point °C	Free Fatty Acids %	Description	Fatty acid origin
Aluminum Stearate M-132 HG/HGV	FACI METALEST, S.L.U. Spain	10.5 – 12.5	160 – 170	≤5.8	Distearate High gel viscosity	Tallow / Veg
Aluminum Stearate M-136	FACI METALEST, S.L.U. Spain	8.0 – 10.0	120 – 140	10 – 15	Tri-stearate Lower gel viscosity	Tallow
Aluminum Stearate M-136 TH	FACI METALEST, S.L.U. Spain	7.0 – 9.0	125 – 140	12.0 – 16.0	Tri-stearate Lower gel viscosity	Tallow
Aluminum Stearate M-136 BF	FACI METALEST, S.L.U. Spain	7.5 – 9.0	–	16.0 – 20.0	Tri-stearate Lower gel viscosity	Vegetable
Aluminum Stearate M-136 BFN	FACI METALEST, S.L.U. Spain	7.5 – 9.0	–	12.0 – 16.0	Tri-stearate Lower gel viscosity	Vegetable



METALLIC SOAPS

Sodium Stearate

Sodium Stearate is the only substance that is completely soluble in water and is mainly used for its viscosity controlling properties; it is also an adjuvant in ointments and creams for its rheology modifier and surfactant characteristics.
In lotions, it can be used as emulsion stabilizer.

Sodium Stearate finds its leading use as a gelling agent for deodorant sticks and is available with numerous fatty acid compositions, in order to suit all application requirements.

Properties:
- Cleansing
- Emulsifying
- Surfactant
- Viscosity Controlling

Applications:
- Gelling agent for deodorant sticks
- Formulation of creams and ointments
- Formulation of lotions
- Bar soaps

Ingredient/product	Manufacturing - Site	Sieve Residue 100 mesh (150 µm)	FFA%	Bulk Density (g/l)
Sodium Stearate FU	FACI S.p.A. - Italy FACI Asia Pacific- Singapore	≤0.5	0.3 – 1.2	200 - 320
Sodium Stearate FU Y**	FACI S.p.A. - Italy	≤0.5	0.3 – 1.2	–
Sodium Stearate vegetable 35/65	FACI S.p.A. - Italy FACI Asia Pacific- Singapore	≤0.5	≤2.0	200 – 320
Sodium Stearate S	FACI S.p.A. - Italy FACI Asia Pacific- Singapore	≤0.5	≤2.0	200 – 320
Sodium Stearate M-526 ND	FACI METALEST, S.L.U. - Spain	≥40 (50 mesh)	≤1.0	450 – 650
Sodium Stearate B2	FACI UK Chemicals Ltd - UK	bead	≤1.2	600 – 800*

* *typical values*

** *Special Fatty acid distribution chain with high C20/C22 amount, developed as gelling agent for deodorant stick application*

Sodium Stearate is also available in microbeads physical form (Bulk Density 220 - 420 g/l)

Potassium salts

Potassium salts show different properties according to their chain length

Properties:

- Co-emulsifier (K Stearate)
- Cleansing (K Stearate - K Palmitate)
- Lubricant (K Stearate - K Palmitate)
- Emulsifying (K Stearate - K Palmitate - K Laurate - K Myristate)
- Surfactant (K Stearate - K Palmitate - K Laurate - K Myristate)

Applications:

- K Stearate - K Palmitate - Primary cleansing agent in various cleansing products for hair, face and body.
- K Myristate - K Laurate - eye make-up, soaps and detergents, hair care products, nail care products, shaving products and other skin care products

Appearance: free-flowing powder

Ingredient/product	Manufacturing - Site	Metal Content %	Free Alkalinity % (as Na2O)	Sieve Residue % (60 mesh)
Potassium Stearate	FACI S.p.A. - Italy	12.1 – 13.2	≤1.0	–
Potassium Palmitate	FACI S.p.A. - Italy	–	≤2.0	≥70
Potassium Myristate	FACI S.p.A. - Italy	–	≤2.0	≥70
Potassium Laurate	FACI S.p.A. - Italy	–	≤2.0	≤30

Magnesium Stearate and other Magnesium salts

Magnesium stearate, in addition to its known properties in tableting processes, finds some specific uses in cosmetics: It offers a matte finish due to its oil absorbing and adhesive properties, it creates a silky smooth effect when used as an additive to the finished product (especially for pressed mineral blusher, foundation or eye-shadow applications) and it improves adhesion, slip, and texture of cosmetic products. Magnesium Stearate is the primary anticaking agent used as anticaking in capsule production.

Properties:

- Anticaking
- Bulking
- Cosmetic colorant
- Moisturizing
- Lubricant
- Film-forming
- Thickening agent

Magnesium Myristate is frequently used to improve cosmetic pigment spreadability and wear in powder formulations, giving a moist softness. It also acts as a dry binder.

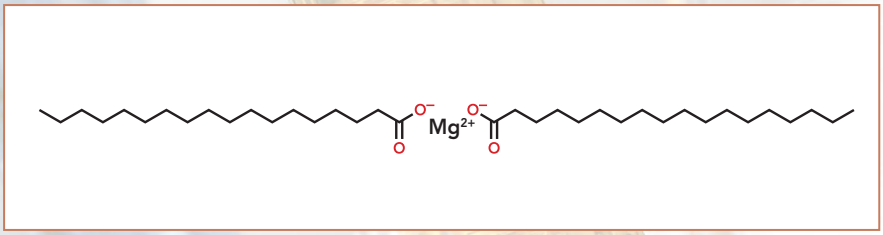
Properties:

- Opacifying
- Emulsion stabilizing
- Viscosity controlling

Applications of Magnesium Stearate and Myristate:

- Cosmetics and personal care products like lipsticks, mascara, eyeliner, eye-shadow, face powder
- Foundation, blushes
- Eye-shadow and pressed powders that can be stored in a compact
- Creams, hair pomades, and salves

Ingredient/product	Manufacturing - Site	Sieve Residue %	Oxide content %	Bulk Density (g/l)
Magnesium Stearate S	FACI S.p.A. - Italy FACI Asia Pacific- Singapore FACI Chemicals Zhangjiagang Co., Ltd	≤2.0 (200 mesh)	7.2 – 8.0	140 – 180
Magnesium Stearate SM	FACI UK Chemicals Ltd - UK	≤1.0 (100 mesh)	8.1 – 8.5	300 – 500 *
Magnesium Stearate M-125	FACI METALEST, S.L.U. - Spain	≤1.0 (325mesh)	6.65 – 8.3	300*
Magnesium Myristate	FACI S.p.A. - Italy	≤2.0 (200 mesh)	4.9 – 5.4 Metal content	120 –180



Calcium Stearate

Calcium Stearate is a possible alternative to magnesium stearate depending on the specific application. It finds use mainly as water-in-oil emulsifier.

Properties:

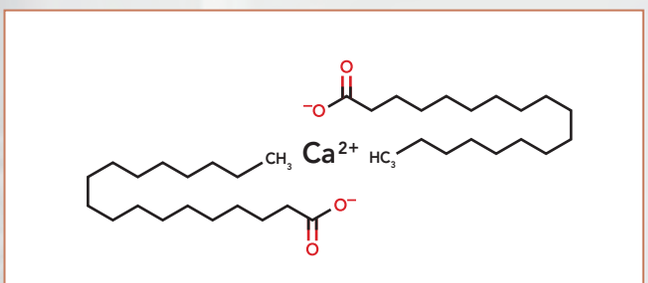
- Anticaking
- Cosmetic colorant
- Emusion stabilising
- Viscosity controlling

Main applications:

- Cosmetics and personal care products such as: lipsticks, mascara, eyeliner, eye-shadow, face powder
- Foundation, blushes
- Eye-shadow and pressed powders that can be stored in a compact
- Creams, hair pomades, and salves

Ingredient/product	Manufacturing - Site	Sieve Residue %	Oxide content %	Bulk Density (g/l)
Calcium Stearate S	FACI S.p.A. - Italy FACI Asia Pacific- Singapore FACI Chemicals Zhangjiagang Co., Ltd	≤1.0 (200 mesh)	9.2 – 10	200*
Calcium Stearate DW	FACI S.p.A. - Italy FACI Asia Pacific- Singapore	≤1.0 (325 mesh)	9.2 – 10	190*
Calcium Stearate SP	FACI S.p.A. - Italy FACI Asia Pacific- Singapore	Non dusting microbeads	9.2 – 10	500*
Calcium Stearate SM	FACI UK Chemicals Ltd - UK	≤1.0 (100 mesh)	6.7 – 7.7 metal	280-450*
Calcium Stearate M-205	FACI METALEST, S.L.U. - Spain	≤1.0 (325 mesh)	9.5 – 11.0 ashes	250-300*

* *typical values*



Zinc Stearate

Zinc Stearate finds interesting applications in cosmetic formulations such as a water-repellent and lubricant to improve texture and smoothness and as a protective agent in powders and ointments in the treatment of skin diseases; due to its antiseptic, astringent and topical protective properties.

Properties:

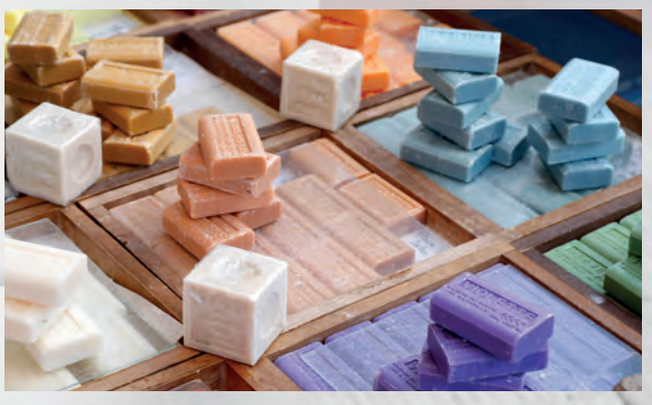
- Anticaking
- Cosmetic colorant (opacifying agent)
- Viscosity controlling
- Emulsion stabilizing (water-in-oil)

Applications:

- Personal care products: cleansing creams and shampoos
- Face powders as a dry binding agent due to its contribution to adherent qualities
- Bath powders as a dry lubricant to absorb moisture and prevent chafing
- Baby toiletries
- Deodorant creams, as an absorbent
- Deodorant powders, as a mild astringent and antiseptic

Ingredient/product	Manufacturing - Site	Sieve Residue %	Oxide content %	Bulk Density (g/l)
Zinc Stearate TM/TMD	FACI S.p.A. - Italy FACI Asia Pacific- Singapore FACI Chemicals Zhangjiagang Co., Ltd	≤ 0.5 (200 mesh, 75 µm)	13.5 – 14.2	260 – 360
Zinc Stearate PM (Finer particle size)	FACI UK Chemicals Ltd - UK	≤ 5.0 (270 mesh, 53 µm)	13.2 – 13.8	170 – 270*
Zinc Stearate DA	FACI UK Chemicals Ltd - UK	≤ 5.0 (270 mesh, 53µm)	13.2 – 13.8	200 – 270*
Zinc Stearate M-305	FACI METALEST, S.L.U. - Spain	≤ 1.0 (325 mesh, 45µm)		240 – 280*

* *typical values*



Glycerol Esters - Glycerol Monostearate & Glycerol Monooleate

Glycerol Monostearate and Monooleate find uses in the cosmetic industry as emulsifiers, typically to emulsify water and oil products and as a consistency agent.

Their surfactant properties actively help to form emulsions by reducing the surface tension of the substances to be emulsified.

They also function as a skin conditioning agent and emollient.

Properties:

- Emulsifier, typically to emulsify water and oil products and as a consistency agent
- Skin conditioning agent – emollient

Applications:

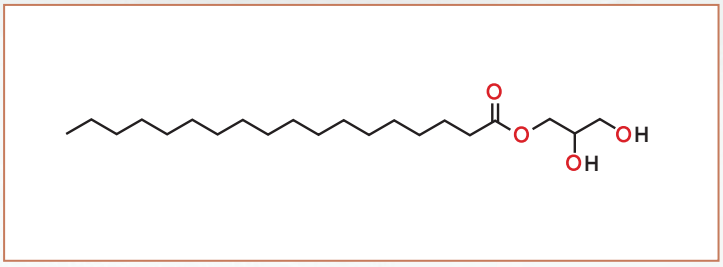
- Formulation of creams and lotions, moisturizers, and other skin care products
- Adjuvants in permanent waves, deodorants, bath soaps, eye make-up and foundations.

Ingredient/product	Manufacturing - Site	Monoglycerides %	Acid Value mg KOH/g	Soaps %	HLB Index Calculated	Physical form & properties
Glycerol Monostearate 40	FACI S.p.A. - Italy FACI Asia Pacific - Singapore	≥ 40	≤ 2.0	–	3.0	Solid (powder & pastilles)
Glycerol Monostearate 90	FACI S.p.A. - Italy FACI Asia Pacific - Singapore	≥ 90	≤ 3.0	–	4.2	Solid (powder & pastilles)
Glycerol Monostearate SE	FACI S.p.A. - Italy FACI Asia Pacific - Singapore	≥ 40	≤ 2.0	4 – 6	4.5 – 5.5*	Solid (powder & pastilles) self-emulsifiying
Glycerol Monostearate SE/A	FACI S.p.A. - Italy FACI Asia Pacific - Singapore	≥ 30	28 – 35	≤8.0	–	Solid (powder & pastilles) self-emulsifiying
Glycerol Monostearate SE/AG	FACI S.p.A. - Italy	30 – 40	30 – 36	6 – 8	–	Solid (powder & pastilles) self-emulsifiying

* *literature values*

Ingredient/product	Manufacturing - Site	Monoglycerides %	Acid Value mg KOH/g	Iodine Value gI_2/100g	HLB Index Calculated	Physical form & properties
Glycerol Monoleate C	FACI S.p.A. - Italy	≥ 40	≤ 2.5	90 –120	2.8	Liquid
Glycerol Monoleate 90 HO	FACI S.p.A. - Italy	≥ 90	≤ 3.0	150 –160	4.2	Liquid

* *HLB values calculated with the Griffin formula and obtained from literature data (*)*



Glycerol

Glycerol has a wide variety of applications and is one of the most valuable and versatile chemical substance in nature. It is very stable and can be easily stored under normal temperature.
It is non-irritating and has no adverse impact to the environment.

Properties:
- Emollient
- Humectant
- Skin conditioning agent
- Hair conditioning
- Oral care agent
- Denaturant
- Viscosity controlling
- Solvent

Applications:
- Formulation of creams and lotions, moisturizers, and other skin care products
- Formulation of hair care products
- Formulation of oral care products

Available in a range of different concentrations, EP-USP/NF conforming

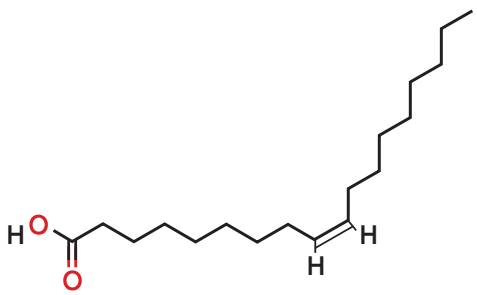
Ingredient /Product	Color- Hazen
Glycerine 86.5% EUR PHAR	≤10
Glycerine 99.5% EUR PHAR	≤10
Glycerine 99.7% EUR PHAR	≤10

Oleic Acid

Oleic acid is a mono-insaturated omega 9 fatty acid, which occurs naturally in many animals and vegetable sources. Oleic acid is a component of many skin care items, due to its potent moisturizing qualities.

Properties:
- Emollient
- Emulsifying

Applications:
- Emulsions, Liquid products and Lotions
- Formulations of body, face and hair care products



Ingredient product	Manufacturing Site	Iodine Value g12/100g	Acid Value mgKOH/g	Cloud Point °C
Oleic Acid	Faci S.p.A. - Italy	95-105	192-205	≤ 8

Stearic Acid

Stearic Acid, also known as Octadecanoic Acid, is obtained from animal and vegetable fats and oils.
Stearic Acid may be used to form the base of other ingredients intended to be incorporated into a formulation, such as: lubricants, emollients, and emulsifiers.
In emulsions, Stearic Acid is an effective stabilizer, thickener, and softener.

Properties:
- Cleansing
- Emulsifying
- Emulsion stabilising
- Masking
- Refatting
- Surfactant

Applications:
- Formulations of body, face and hair care products
- Formulations of sun care products
- Formulations of decorative cosmetics/make-up
- Formulations of perfumes & fragrances

Ingredient product	Manufacturing Site	Iodine Value gI2/100g	Acid Value mgKOH/g	Titre °C
Stearic Acid D1 animal grade	FACI S.p.A. - Italy	≤1	202 –206	57 – 60
Stearic Acid D1 vegetable grade	FACI S.p.A. - Italy	≤1	203 –210	53 – 58

AMIDES

Ethylene Bis-Stearamide

Ethylene Distearamide finds its use in cosmetic formulations as a processing aid to help incorporate ingredients with functional characteristics.

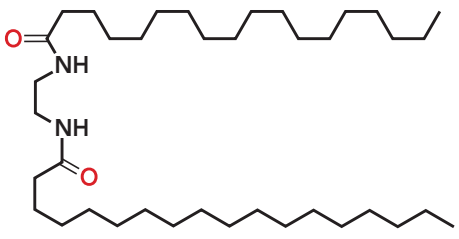
Properties:

- Viscosity controlling

Applications:

- Formulations of body, face and hair care products
- Formulations of perfumes & fragrances

Ingredient product	Manufacturing Site	Acid Value mgKOH/g	Anime Value mgKOH/g	Sieve Residue %
EDS -N powder	FACI S.p.A. Italy	≤8	≤2	≤0.5 (100 mesh)
EDSP - microbeads	FACI S.p.A. Italy	≤8	≤2	≥35 (60 mesh)



ESTERS

Ethyleneglycol Mono & Distearate

Ethylene glycol esters are suggested for use as an opacifier, pearlescent agent and viscosity modifier. They are also used in stick products to produce structure and in emulsions as the low HLB (Hydrophilic-Lipophilic Balance index) emulsifier component.

They find applications in the preparation of: creams, lotions, ointments and generally in applications which are soluble in water.

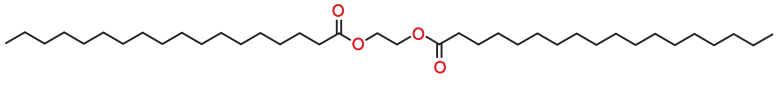
Typical properties/specifications:

Ingredient/product	Manufacturing - Site	Acid Value mgKOH/g	Hydroxyl Value mgKOH/g	Melting Point °C	HLB Index Calculated
Ethyleneglycol distearate	FACI S.p.A. - Italy	≤3.0	<10	67 – 68*	1.0
Ethyleneglycol distearate vegetable	FACI S.p.A. - Italy FACI Asia Pacific- Singapore	≤3.0	≤15	60 – 70	1.0
Ethyleneglycol distearate HA 50	FACI S.p.A. - Italy	12 – 18	–	62 – 68	1.0
Ethyleneglycol distearate H	FACI S.p.A. - Italy	≤3.0	18 – 35	58 – 64*	1.2
Ethyleneglycol distearate HAT	FACI S.p.A. - Italy FACI Asia Pacific- Singapore	20 – 25	–	63 – 66*	1.0
Ethyleneglycol monostearate vegetable - MSEV	FACI S.p.A. - Italy FACI Asia Pacific- Singapore	≤3.0	Monoester content ≥50	54 – 60	2.0
Diethyleneglycol monostearate**	FACI S.p.A. - Italy	≤4.0	Monoester content 45–60	43 – 50	3.8

** Softening point*

***SCCP is of the opinion that a maximum concentration of up to 0.1% DEG from impurities, in ingredients like glycerin and polyethylene glycols in finished cosmetic products, can be considered to be safe.*

(The SCCP, Scientific Committee on consuming Products adopted this opinion at its 16th plenary of 24 June 2008)



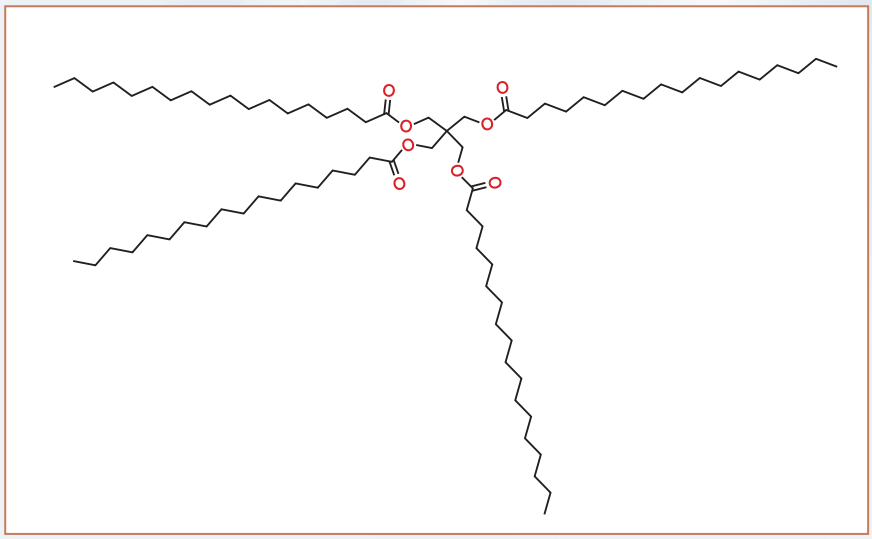
Pentaerythritol Tetrastearate

Esters derived from polyols are inherently more branched than ones derived from mono alcohols, so although they can be quite large molecules, they feel quite light on the skin.
These properties are directly connected to the three-dimensional structure conferred upon them by the central tetrahedral pentraerythritol molecule.
Pentaerythrityl esters give a more cushioned sensation on the skin so are good materials to use when aiming to achieve a soft skin feel.

Properties:
- Emollient
- Viscosity controlling
- Film former
- Lubricant

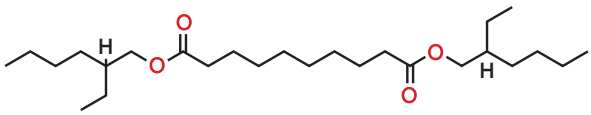
Applications:
- Skin Care
- Sun Care
- Hair care

Ingredient/product	Manufacturing - Site	Hydroxyl Value mgKOH/g	Acid Value mgKOH/g	Saponification Value mgKOH/g
Pentaerythritol tetrastearate S	FACI S.p.A. - Italy FACI Asia Pacific- Singapore	≤12	≤2.0	188 – 200
Pentaerythritol tetrastearate HS	FACI S.p.A. - Italy FACI Asia Pacific- Singapore	≤25	≤1.5	190 – 197



Ethyl Hexyl Esters

Hydroxyl groups are a fairly common functional group in ester compounds and are easily identifiable from the INCI name, such as Ethylhexyl Hydroxystearate. These groups tend to make the material feel heavier and more moisturizing, acting on the regulation of the skin water loss. When used as solvents they are effective wetting and binding agents for pigments and also UV filter solubilizing agents. Ethyl Hexyl Esters are substances well tolerated by the human skin and have little environmental impact.



Properties:

- Ethyl Hexyl Cocoate: emollient non-occlusive effects, it can be used also in non-comedogenic formulation
- Ethyl Hexyl Palmitate: emollient, perfuming,moisturizer, solvent (it helps to increase spreadability and it confers elasticity to the skin with reduced comedognic effects)
- Ethyl Hexyl Stearate: emollient, wetting agent, high spreadability capacity, without sticky effect
- Ethyl Hexyl Oleate: emollient, solvent
- DiOctyl Sebacate: emollient, film forming, masking, plasticiser, solvent
- DiOctyl Adipate: emollient, film forming, plasticiser, skin conditioning, solvent flavoring agent or adjuvant, it jellifies quickly; in lacquer applications it serves to eliminate cracks, increase resistance and provide a smooth surface.

Applications:

- Hair care
- Oral Care
- Skin Care
- Sun Care
- Make-up, eyes and lips
- Lacquer

Ingredient/product	Manufacturing - Site	Viscosity 40 °C (cStokes)	Cloud Point (°C)	Iodine Value (g I_2 /100 g)
Ethyl Hexyl Cocoate	FACI METALEST, S.L.U. - Spain	4.0 – 6.5	–27*	≤10
Ethyl Hexyl Palmitate	FACI METALEST, S.L.U. - Spain	7*	–3*	≤1*
Ethyl Hexyl Stearate	FACI METALEST, S.L.U. - Spain	8*	≤5	≤1*
Ethyl Hexyl Oleate	FACI METALEST, S.L.U. - Spain	7,0 – 9,0 (8,5*)	<–5 (–18*)	58 – 80
DiEthyl Hexyl Sebacate	FACI METALEST, S.L.U. - Spain	11*	– 4 6*	≤1*
DiEthyl Hexyl Adipate	FACI METALEST, S.L.U. - Spain	8*	– 4 5*	≤1*

** typical values*

OTHER EMOLLIENT ESTERS FOR COSMETIC APPLICATIONS:

This category includes simple esters used as functional ingredients in the preparation of creams and ointments for face and body, due to their moisturizing properties. They increase the water content of the skin, giving it a smooth appearance.
They help to replace the oils contained in the skin, creating a barrier against the loss of moisture. They also improve the feel of skin and hair.

Applications:
- Face, hair and body Creams/Lotions
- Skin Care Products (Powders and Sprays)

N Butyl Stearate:

Butyl Stearate is used in formulations, which give the skin a soft and smooth appearance. Butyl Stearate dries to form a thin coating on the skin. Butyl Stearate also decreases the thickness of lipsticks and imparts water-repelling characteristics to nail polishes.

Properties:
- Emollient
- Masking
- Skin conditioning

Ingredient product	Manufacturing - Site	Acid Value mgKOH/g	Hydroxyl Value mgKOH/g	Color APHA
N Butyl Stearate	FACI METALEST, S.L.U. Spain	≤0.2	≤1.0	≤50

Iso Butyl Stearate

IsoButyl Stearate mainly finds its uses in personal care formulations, flavors & fragrances, as a wetting agent for pigments and a film former.

Properties:
- Emollient
- Skin conditioning

Ingredient product	Manufacturing - Site	Acid Value mgKOH/g	Saponification Value mgKOH/g	Color APHA
IsoButyl Stearate	FACI METALEST, L.S.U. Spain	≤0.5	165 –180	≤130

Di Butyl Sebacate

Di Butyl Sebacate can be defined as a functional solvent with the properties reported below.

Properties:
- Emollient
- Film Forming
- Hair conditioning
- Masking
- Plasticiser
- Skin conditioning
- Solvent

Ingredient product	Manufacturing - Site	Acid Value mgKOH/g	Refractive Index (25°C)	Color APHA
Di Butyl Sebacate	FACI METALEST, L.S.U. Spain	≤0.3	1.440–1.448	≤100

N Butyl Oleate

N Butyl Oleate can be defined as a functional solvent with the properties reported below.

Properties:
- Emollient
- Masking
- Skin conditioning

Ingredient product	Manufacturing - Site	Acid Value mgKOH/g	Iodine Value $gI_2/100g$	Refractive Index (25°C)
N Butyl Oleate	FACI METALEST, L.S.U. Spain	≤1.0	69–78	1.450–1.453

IsoTridecyl Stearate

IsoTridecyl Stearate has a velvety after-feel and is recommended for use in all products which are left on throughout the day, such as moisturizers, lotions, make-ups, face creams and day creams.

Properties:
- Skin conditioning
- Lubricant

Ingredient product	Manufacturing - Site	Viscosity 40°C cSt	Hydroxyl Value mgKOH/g	Color APHA
IsoTridecyl Stearate	FACI METALEST, L.S.U. Spain	10 - 15	≤10.0	≤100

Di Isodecyl Adipate

Di Isodecyl Adipate mainly finds its uses as solvent/diluent for cosmetics and fragrance agents. It also shows a good flexibility and resistance to prevent lacquer marring.

Properties:
- Emollient
- Plasticiser
- Skin conditioning
- Solvent

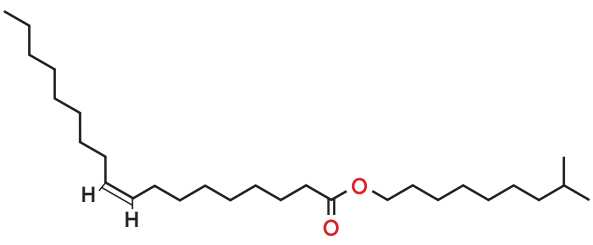
Ingredient product	Manufacturing Site	Viscosity 40°C cSt	Cloud point °C	Color APHA
Di Isodecyl Adipate	FACI METALEST, L.S.U. Spain	13 –15	≤–60	≤30

Isodecyl Oleate

Isodecyl Oleate is used in formulations of personal care products, including make-up and skin care products, thanks to its film forming property that gives the skin a soft and smooth appearance.

Properties:
- Emollient
- Skin conditioning
- Make-up cleaning

Ingredient product	Production site	Iodine Value gI2/100g	Hydroxyl Value mgKOH/g	Color APHA
Isodecyl Oleate	FACI METALEST, L.S.U. Spain	55 – 65	≤2	≤200



RSPO

PALM OIL POSITION PAPER

FACI Group identifies the urgent need to protect habitats for wildlife threatened by unsustainable palm oil production and believes that the palm oil industry plays an important role in employment and economic growth for developing countries. Unsustainable palm oil production results in massive deforestation, rapid biodiversity loss in tropical ecosystems and significant greenhouse gas emissions. Global consumption of palm oil and its derivatives is increasing, requiring strong conservation action to save species.

Additionally, the commitment of political and business leaders at the regional and local level could evolve into a successful and sustainable development plan for the palm oil industry.

It is critical that the agents involved in the palm oil supply chain will collaborate and work in an environmentally sustainable and responsible way.

The purpose of this paper is to define the FACI Group position on those issues and to describe better the achievement through its own supply chain and through its business activities, regarding:

- ZERO DEFORESTATION
- ROUNDTABLE ON SUSTAINABLE PALM OIL (RSPO)
- TRACEABILITY
- HUMAN RIGHTS INCLUDING LABOR RIGHTS

RSPO Mass Balance and Segregated Certified Products:

FACI S.p.A.: RSPO Mass Balance & segregated 172226-2015-AQ-ITA-ASI released 10/02/2015

FACI Asia Pacific Ltp: RSPO Mass Balance & segregated 2-0341-12-000-00

FACI Metalest, S.L.U.: RSPO Mass Balance & segregated 186045-2015-AQ-IBE-ASI released 15/09/2015

RSPO segregated new certification just obtained, waiting for official registration number

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