



**COSMETIC** ingredients  
Application guide



**IQL**

Industrial Química Lasem, sa

# CONTENTS

---

- INTRODUCTION
- GENERAL COSMETIC APPLICATIONS
- EMOLLIENTS
  - APPLICATION GUIDE
  - TYPICAL PRODUCT CHARACTERISTICS
- THICKENERS
- EMULSIFIERS



# INTRODUCTION

Industrial Química Lasem is a European Oleochemical producer. The company was founded in 1947 and from the beginning we have been providing solutions essentially for two sectors:

Cosmetics/Personal care, offering a wide range of emollients and emulsifiers, based mainly on vegetable and other renewable raw materials.

Industrial, offering esters designed specially for the lubricant industry, plastics, textile, inks and other sectors where a friendlier environmental solution could be required.

We are one of the largest fatty esters producers with a production capacity greater than 30,000 MT and an extensive portfolio of more than 150 different esters, including both commodities and specialities. Given our extensive history in oleochemistry, we are able to design new substances as per customer's request.

We are active in more than 50 countries, either directly or through our local distributor or agent, and in Asia via our affiliated company Lasem Asia.

## TECHNOLOGY

The new IQL facilities were set up in 2003. We designed a very flexible production site that operates with a reliable automated system. When drawing up the plans we took advantage of our more than 50 years of experience in producing esters and created technologically advanced reactors as well as the other needed production services. Different engineering design parameters were considered which now provide both soft and effective process conditions while at the same time a high degree of respect for the environment.

Operation units involved in the production of esters are:

- Esterification
- Neutralization/purification
- Deodorization

Our commitment is for continuous improvement of the processes and the utilization of fewer natural resources when producing our high quality esters. Our aim is to produce under safe conditions and in a sustainable manner. The production site is certified ISO 14001 (environmental management) and has also been awarded the international quality standard ISO 9001. We manufacture some of our esters under HACCP requirements and we also have Kosher certification.

## RESEARCH, DEVELOPMENT AND INNOVATION

After listening to customer requirements and taking into account new social trends, we continue to expand our range of esters with the intention of providing even more sustainable solutions.

In recent years our approach has been to correlate chemical structure with functional parameters, leading us to develop a wide range of esters fully adapted to the customer's requirements and providing the best solution based on natural oleochemical sources.

Considering the esters multifunctionality (Lubricity, Surfactancy and Solvency), and also due to the modularity when building an ester, we can design and create molecules that will perform a certain function.



TRADEMARK	CHEMICAL FAMILY	REMARKS
LASEMUL	Stearates	Saturated, highly stable, protection from oxidation.
WEICHOL	Oleates	Unsaturated esters, higher lubricity.
WAGLINOL	Coconut, palm, branched C8 and branched C9 esters	Saturated or slightly unsaturated, protection from oxidation.
DOCOIL	Polycarboxylic esters	Higher polarity. Esters with improved solvency.
SOLDOC	Single component special esters	Substances with improved properties, high renewable carbon ratio. Cold process oriented.
EMOLID	Formulated products	Pre-formulated ingredients. Suggestions for concrete applications. Products developed for specific customer requirements.



# EMOLLIENTS

Our product range is based on:

- Monohydric alcohol esters
- Polyhydric alcohol esters
- Monohydric alcohol diesters

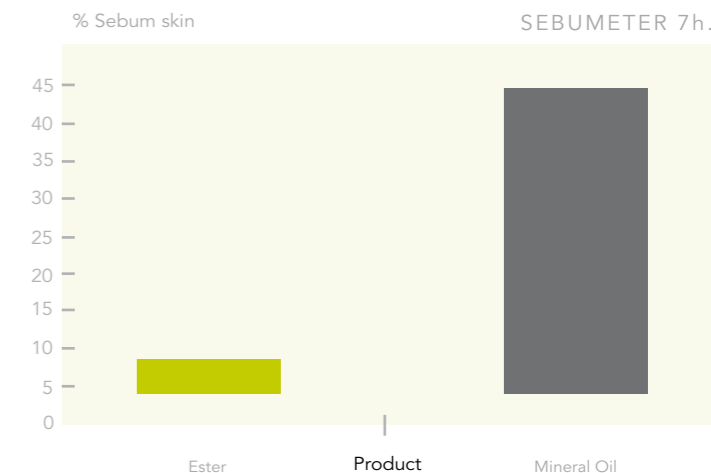
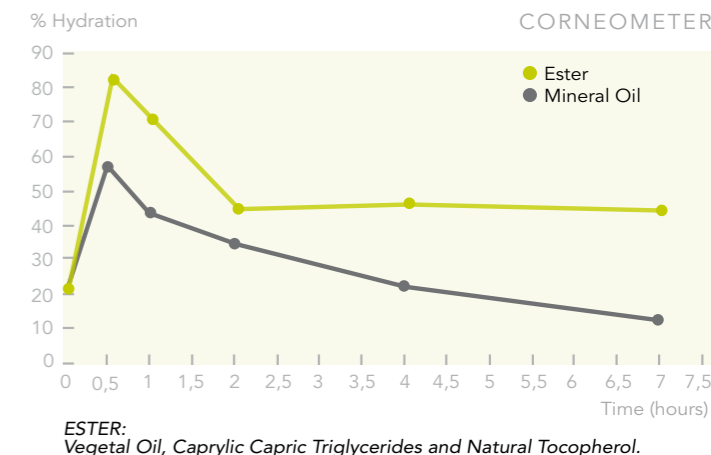
## emollients funcionality

Emollients are substances that remain in the stratum corneum to act as lubricants adding slip or glide across the skin. They help to maintain the soft, smooth, and pliable appearance of the skin. Emollients are often thought of as “filling in the crevices” between korneocytes that are in the process of desquamation (shedding).

Changes in skin moisture levels cause a reduction in the barrier function, which in turn increases water loss. Emollients produce an oily layer over the skin surface which traps water beneath it (occlusion). The resulting restoration of the skin’s barrier function by emollients prevents penetration of irritants, allergens and bacteria.

Esters are biocompatible substances and not only increase the static skin water level when applied, but also help to restore the natural hydrophobic barrier.

Additionally, esters are absorbed by the skin and as a consequence even when they present an occlusive effect, leave a minimal residue on the skin surface providing a dry feeling.



## emollients application guide

Industrial Química Lasem provides customers with performance emollients that are designed for diverse applications:

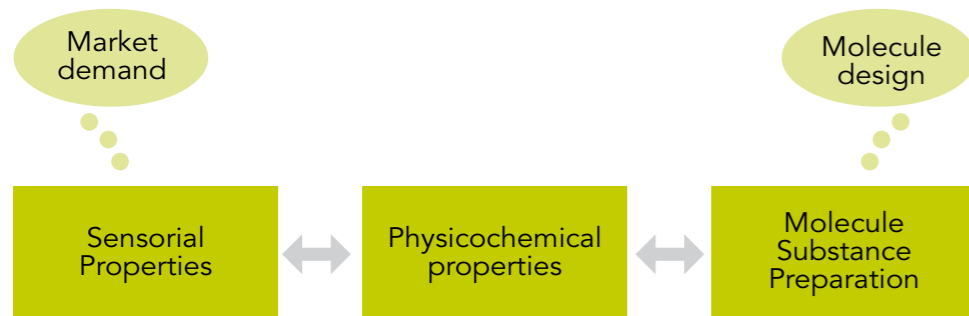
- **Skin Care**
  - Creams & Lotions
  - Massage products/Body Oils
  - Bath Oils
  - Make-up removers
  - Facial Toners
- **Hair Care**
  - Styling/Hair Sprays
  - Conditioners & Detangling products
  - Hair Creams & Pomades
- **Toiletries**
  - After shave lotions & Creams
  - Antipersistants & Deodorants
  - Foam Bath products
- **Decorative Cosmetics/Make-up**
  - Lipsticks & Glosses
  - Eye Shadows & Creams
  - Eye liners
  - Powders & Blushes
  - Foundations (creams and fluids)
- **Sun care**
  - Sunscreens
  - After sun lotions

TRADE NAME	FAMILY	INCI NAME	Skin Care	Hair Care	Toiletries	Decorative Cosmetics/Make-up	Sun Care
DOCOIL DIPA	MONOHYDRIC ALCOHOL DIESTERS	Diisopropyl Adipate	Facial Care (moisturizing & Toners); Body Care (Hand cream & lotions)	Styling/Hair Sprays	After shave lotions & Creams; Shower & Bath; Antipersistants & Deodorants	Nail varnishes; Colour cosmetics	
DOCOIL DIPS	MONOHYDRIC ALCOHOL DIESTERS	Diisopropyl Sebacate	Body care (hand creams & lotions)		After shave lotions & Creams		
DOCOIL IPDL	MONOHYDRIC ALCOHOL DIESTERS	Diisopropyl Dimer Dilinoleate	Facial Care (moisturizing creams & lotions)			Lipsticks & Glosses; Powders & Blushes	
LASEMUL 130	MONOHYDRIC ALCOHOL ESTERS	Ethylhexyl Stearate	Body care (Massage products/Body Oils)		Shower & Bath	Powders & Blushes	Sun Protection
LASEMUL 244	MONOHYDRIC ALCOHOL ESTERS	Isocetyl Stearate	Facial and Body Care		Shower & Bath (Foam bath)	Colour Cosmetics	Sun Screens-Physical
LASEMUL 60	MONOHYDRIC ALCOHOL ESTERS	Isopropyl Stearate					
LASEMUL 74 NP	MONOHYDRIC ALCOHOL ESTERS	Butyl Stearate		Conditioners & detangling products; Styling/Hair Sprays	Shower & Bath (Foam bath)	Masks; Lipsticks & Glosses; Eye shadows & Creams; Eye liners; Eye pencils	
SOLDOC 3/134	POLYHYDRIC ALCOHOL ESTERS	Trimethylolpropane Triisostearate	Massage products/ Body oils; Facial Care (moisturizing creams & lotions)			Lipsticks & Glosses	
SOLDOC 60 HG	MONOHYDRIC ALCOHOL ESTERS	Isopropyl Isostearate	Facial Care (moisturizing creams & lotions)		Shower & Bath (Foam bath)	Lipsticks & Glosses	
SOLDOC EB 29	MONOHYDRIC ALCOHOL ESTERS	Isostearyl Isostearate	Facial Care (moisturizing creams & lotions); Body and Facial Care (cleansing milk)			Lipsticks & Glosses; Eye shadows & Creams	Suntan lotions
SOLDOC EB 38	MONOHYDRIC ALCOHOL ESTERS	Octyldodecyl Isostearate	Facial care; Facial cleansing; Body care; Baby care	Shampoos, Conditioners & Styling		Lipsticks & Glosses; Eye shadows & Creams; Powders & Blushes	
SOLDOC VF 4/18 HG	POLYHYDRIC ALCOHOL ESTERS	Pentaerythrityl Tetraisostearate	Creams & Lotions; Bath oils			Lipsticks & Glosses; Powders & Blushes	Sunprotection products
SOLDOC VF 4/8	POLYHYDRIC ALCOHOL ESTERS	Pentaerythrityl Tetraethylhexanoate				Lipsticks & Glosses; Powders & Blushes	After sun lotions
SOLDOC VF 8	POLYHYDRIC ALCOHOL ESTERS	Neopentyl glycol Diethylhexanoate	Facial cleansing (Make-up remover); Facial Care (moisturizing creams & lotions); Facial Toners	Conditioners & detangling products	After shave lotions & Creams	Lipsticks & Glosses; Powders & Blushes	
SOLDOC VF 9	MONOHYDRIC ALCOHOL ESTERS	Ethylhexyl Isononanoate	Facial cleansing (cleansing milk); Facial and Body care (moisturizing creams & lotions)	Conditioners & detangling products; Styling/Hair Sprays	Shower & Bath (Foam bath); Antipersistants & Deodorants		
WAGLINOL 10212	MONOHYDRIC ALCOHOL ESTERS	Hexyl Laurate		Conditioners & detangling products			
WAGLINOL 13016	MONOHYDRIC ALCOHOL ESTERS	Ethylhexyl Palmitate	Body care (Massage products/Body Oils)		Shower & Bath	Powders & Blushes (Colour cosmetics)	Sunprotection products
WAGLINOL 13088	MONOHYDRIC ALCOHOL ESTERS	Ethylhexyl Cocoate	Creams & Lotions			Colour Cosmetics	Sunprotection products
WAGLINOL 1449 NF	MONOHYDRIC ALCOHOL ESTERS	Isononyl Isononanoate	Body care (Massage products/Body Oils); Skin care (Anti-acne products and Anti-aging products); Facial cleansing (Make-up remover)				After sun lotions
WAGLINOL 2/7680	POLYHYDRIC ALCOHOL ESTERS	Propylene Glycol Dicaprylate/Dicaprate	Facial cleansing (cleansing milk); Facial and Body care (moisturizing creams & lotions)		Shower & Bath (Foam bath); After shave lotions & Creams	Lipsticks & Glosses; Eye Liners; Powders & Blushes	Sun care products
WAGLINOL 20080	MONOHYDRIC ALCOHOL ESTERS	Coco-Caprylate/Caprate	Body care (Massage products/Body Oils)				Sun protection: Creams & lotions
WAGLINOL 242	MONOHYDRIC ALCOHOL ESTERS	Cetyl Ethylhexanoate	Skin care (creams & lotions); Facial cleansing (Make-up removers)	Conditioners & detangling products			Sun protection: Creams & lotions
WAGLINOL 250	MONOHYDRIC ALCOHOL ESTERS	Cetearyl Ethylhexanoate	Skin care (creams & lotions)			Colour Cosmetics	Sun protection: Creams & lotions
WAGLINOL 250 M	MONOHYDRIC ALCOHOL ESTERS	Cetearyl Ethylhexanoate (and) Isopropyl Myristate	Skin care (creams & lotions)				Sun protection: Creams & lotions
WAGLINOL 2559	MONOHYDRIC ALCOHOL ESTERS	Cetearyl Isononanoate	Body lotions; Facial cleansing (cleansing milks)				Sun protection: Creams & lotions
WAGLINOL 3/9208	POLYHYDRIC ALCOHOL ESTERS	Tricaprylin	Skin care (creams & lotions)				Sun care products (Chemical sunscreens)
WAGLINOL 3/9280	POLYHYDRIC ALCOHOL ESTERS	Caprylic/Capric Triglyceride	Massage oils & Bath oils			Foundations (creams and fluids)	Sun care products (Physical and chemical sunscreens)
WAGLINOL 6014	MONOHYDRIC ALCOHOL ESTERS	Isopropyl Myristate	Facial cleansing (cleansing milk); Facial and Body care (moisturizing creams & lotions)	Hair creams and pomades	Shower & Bath; Antipersistants & Deodorants	Lipsticks & Glosses; Eye Liners; Powders & Blushes	
WAGLINOL 6016	MONOHYDRIC ALCOHOL ESTERS	Isopropyl Palmitate	Facial and Body care (moisturizing creams & lotions); Bath Oils	Conditioners & detangling products	Pre- and Aftershave products; Foam bath	Liquid and cream make-up; Foundations (creams and fluids)	Suntan lotions and creams
WAGLINOL AB 1215	MONOHYDRIC ALCOHOL ESTERS	C12-15 Alkyl Benzoate		Conditioners & detangling products	Antipersistants & Deodorants		Sun care products (Physical and chemical sunscreens)
WAGLINOL THEX	POLYHYDRIC ALCOHOL ESTERS	Triethylhexanoin	Facial care (Toners)			Lipsticks & Glosses	Sun care products (Physical and chemical sunscreens)
WEICHOL 158	MONOHYDRIC ALCOHOL ESTERS	Isodecyl Oleate	Facial cleansing: Make up removers			Powders & Blushes	
WEICHOL 158 N	MONOHYDRIC ALCOHOL ESTERS	Decyl Oleate	Body care (Massage products/Body Oils)				

# emollients typical product characteristics

To best suit final application requirements specific physical and chemical data should be chosen.

It is possible to correlate sensorial attributes with physical properties related to the molecule structure.



Given our extensive history in oleochemistry, we are able to design new substances as per customer's request.

# emollients performance evaluation

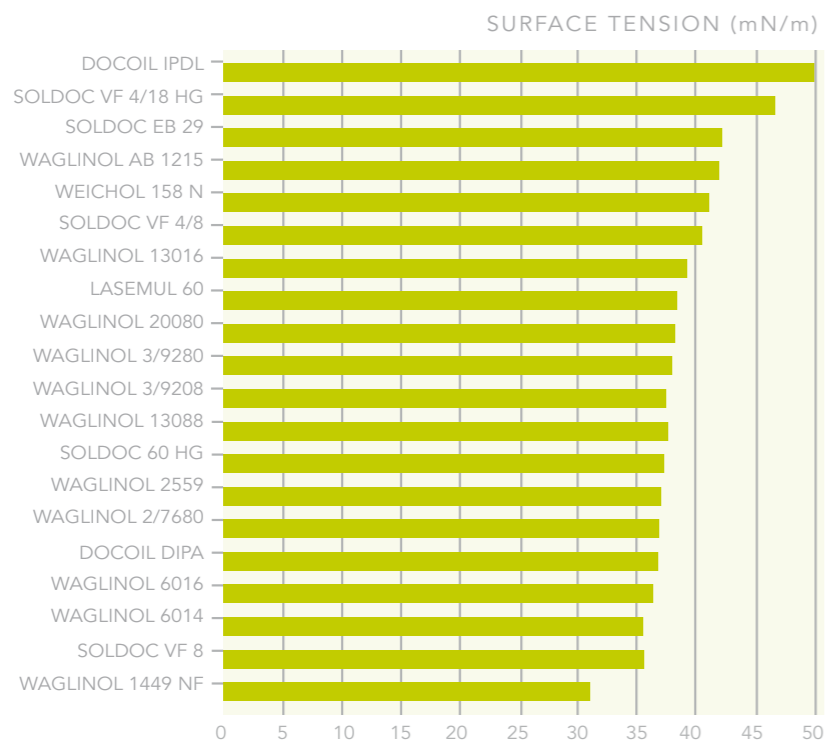
## SURFACE TENSION

Surface Tension has an impact on the spreadability and the penetrability of the emollient. This parameter also affects the dispersing capacity of an emollient as well as evenness of the emollient's film when applied on the skin.

Surface Tension is also related to vapour pressure. Molecules with low Surface Tension are more volatile, and this is one of the reasons for the fresh feeling when using such compounds.

Molecules with low Surface Tension may act as Mineral Oil replacers, while higher surface tension results in more uniform film on the skin.

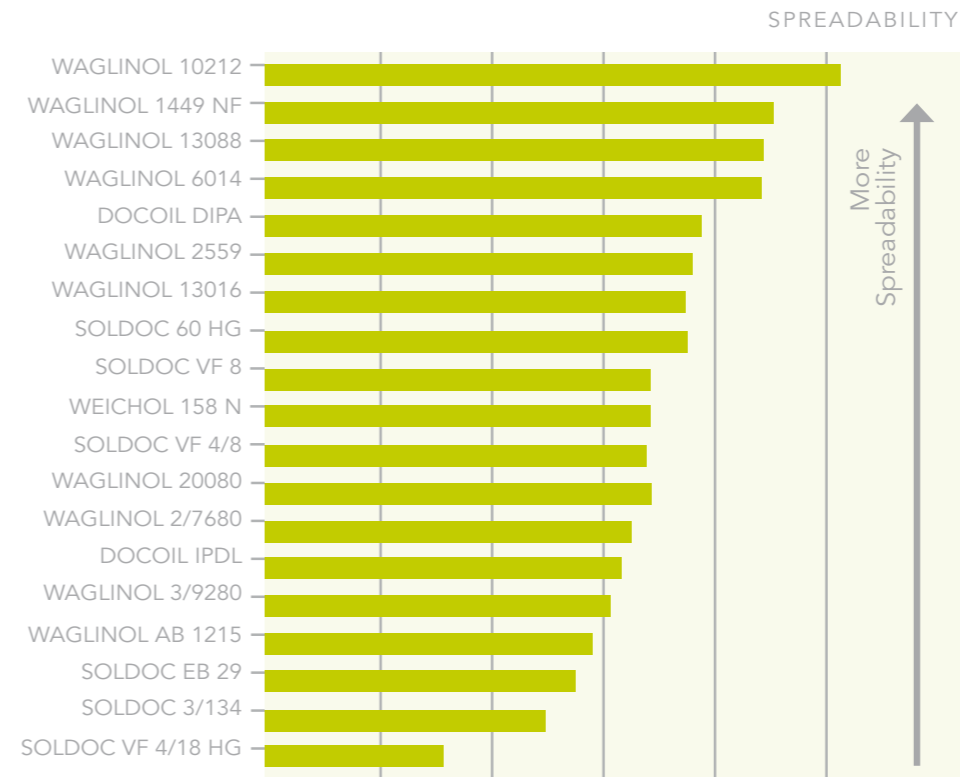
Emollients containing polar oxygen groups will show higher Surface Tension. Branched esters present lower Surface Tension than their straight chain equivalent.



## SPREADABILITY

Highly spreadable emollients present a dry feeling, while emollients with a lower value exhibit greater lubricity and a more persistent emollient skin feel. However the low spreadable emollients are more protective.

Spreadability correlates with Surface Tension and Viscosity.



## VISCOSITY

The viscosity of the emollient depends mainly on the molecular size/shape and intermolecular attractive forces.

More viscous emollients exhibit difficulty when spreading and stickiness after being applied, while light emollients on the skin present slipperiness and softness.

## POLARITY

The polarity of the emollient depends on the hydrocarbon chain branching, chain length, the presence of aromatic and oxygen-containing groups.

Polar branched chain emollients are better dispersants for pigments and inorganic sunscreens.

## monohydric alcohol esters

TRADE NAME	MAIN PROPERTIES	Linear	Branched	Saturated	INCI NAME	SURFACE TENSION (mN/m)	SPREADABILITY	VISCOSITY (mPa.s)	Relative Polarity	Cloud Point (°C)	End user benefits
<b>LIGHT WEIGHT ESTERS</b>											
WAGLINOL 6014	Readily absorbed into the skin. Acts as an emollient, lubricant and vehicle or diluent for active ingredients		X	X	Isopropyl Myristate	35.6	High	5.9	Low	4	High Spreadability and Lubrication
WAGLINOL 10212	Fast spreading emollient	X		X	Hexyl Laurate	32.6	High	6	Low	< -5	High Spreadability
SOLDOC VF 9	Acts as a light feeling emollient		XX	X	Ethylhexyl Isononanoate	32.8	High	6.7	Low	< -30	Dry feeling, non-tacky
WAGLINOL 1449 NF	Soft emollient and film former		XX	X	Isononyl Isononanoate	30.5	High	7.1	Low	< -30	Silky feel. Fresh feeling/cooling effect
WAGLINOL 6016	Feel enhancer and solubilizing agent	X	X	X	Isopropyl Palmitate	36.1	Med-High	7.7	Low	12	Dry feeling, softness, non-oily
WAGLINOL 13088	Acts as an emollient and a solvent. Film former	X	X		Ethylhexyl Cocoate	37.2	High	11.1	Low	< -5	Reduced tackiness. Non-occlusive
LASEMUL 60	Dry feeling emollient		X	X	Isopropyl Stearate	38.1	High	12.3	Low	20	High Spreadability
LASEMUL 74 NP	Acts as a emollient and wetting agent. Possesses fragrance solubilizing and lubricant properties	X		X	Butyl Stearate	39.7	High	12.5	Low-Med	22	Greasiness reducing, Gloss aid
WAGLINOL 20080	Acts as a dry feeling emollient with high penetration. Superfatting agent	X		X	Coco-Caprylate/Caprate	37.9	Medium	12.9	Low	15	Medium spreadability
WAGLINOL 13016	Acts as traditional medium-high spreadable emollient. Possesses solvent properties		X	X	Ethylhexyl Palmitate	38.3	Med-High	13.3	Low	-2	Pleasant skin feel. Good spreading properties. Light, silky and dry touch
LASEMUL 130	Traditional medium/high spreading emollient		X	X	Ethylhexyl Stearate	40.7	Med-High	14.1	Low	10	Spreading, dry velvety skin feel, non occlusive
SOLDOC 60 HG	Emollient that provides a light and smooth skin feel		XX	X	Isopropyl Isostearate	37.2	Med-High	15.4	Medium	< -10	Light feeling, smoothness, white residue reducing

**MEDIUM WEIGHT ESTERS**

WAGLINOL 250	Acts as emollient with good solvency and a non-oily feel		X	X	Cetearyl Ethylhexanoate	38.8	Medium	17	Low	-1	Good spreadability. Non greasy light skin feel. Water resistant
WEICHOL 158 N	Emollients with refatting properties	X			Decyl Oleate	40.4	Medium	17	Low	< 5	Dry emollient
WAGLINOL 250 M	Dry emollient with protective properties		X	X	Cetearyl Ethylhexanoate (and) Isopropyl Myristate	36.1	Med-High	17.2	Low	0	Water resistant, light feeling. Protection. Water resistant. Non sticky. Shine
WEICHOL 158	Light emollient		X		Isodecyl Oleate	39.5	Medium	19.1	Low	< 0	Good spreadability, fast absorbency and non-oily feel
WAGLINOL 242	Acts as emollient with good solvency and a non-oily feel		X	X	Cetyl Ethylhexanoate	37	Med-High	19.6	Low	-4	Good spreadability. Non greasy light skin feel
WAGLINOL AB 1215	Can help to reduce the oily skin feel of other oil phase ingredients. Provide excellent solvency for chemical sunscreens. Wetting agent for physiological sunscreens	X			C12-15 Alkyl Benzoate	41.1	Medium	20.8	High	4	Dry, light non-greasy feeling
WAGLINOL 2559	Traditional medium/high spreading emollient		X	X	Cetearyl Isononanoate	36.7	Med-High	26.2	Low	5	Good spreadability. Non greasy light skin feel
LASEMUL 244	Emollient with excellent wetting properties		X	X	Isocetyl Stearate	31.5	Medium	41.5	Medium	-2	Rich feel, non-occlusive
SOLDOC EB 29	Acts as an emollient. Possesses dispersing properties. Very good slip and sheen		XX	X	Isostearyl Isostearate	41.6	Low-Med	52.4	Medium	-5	Non greasy, softness
SOLDOC EB 38	Emollient with greater cushion and longer play time		XX	X	Octyldodecyl Isostearate	41.8	Medium	63.3	Medium	0	Smoothness, Softness, cushioning effect, glossy

## polyhydric alcohol esters

TRADE NAME	MAIN PROPERTIES	Linear	Branched	Saturated	INCI NAME	SURFACE TENSION (mN/m)	SPREADABILITY	VISCOSITY (mPa.s)	Relative Polarity	Cloud Point (°C)	End user benefits
<b>LIGHT WEIGHT ESTERS</b>											
WAGLINOL 2/7680	Lubricant for skin care. Ideal solvent and coupling agent for flavors, vitamins and fragrances		X	X	Propylene Glycol Dicaprylate/ Dicaprate	36.7	Medium	7.7	Medium	< -10	Excellent lubricity
SOLDOC VF 8	May be used as a refreshing, non-volatile alternative to cyclomethicone		XX	X	Neopentyl glycol diethylhexanoate	35.4	Medium	11.7	High	< -12	Moisturizing and good slip properties. Non greasy light skin feel

## MEDIUM WEIGHT ESTERS

WAGLINOL 3/9208	Possesses high polarity and very good solubilizing capacity for crystalline UV filters	X		X	Tricaprylin	37.4	Medium	19.5	Med-High	-5	Smoothness, Softness
WAGLINOL 3/9280	May act as Mineral Oil replacer. Provide excellent solvency for chemical sunscreens (octyl methoxycinnamate, benzophenone-3). Wetting agent for physical sunscreens	X		X	Caprylic/Capric Triglyceride	37.7	Medium	28.8	Med-High	-5	Pleasant after feel on the skin. No visible greasiness of skin surface
WAGLINOL THEX	Used to counteract the defatting effect of the alcohol. Dispersing agent for inorganic sunscreen products		XX	X	Triethylhexanoin	38.1	Medium	52.5	Medium	-10	Tackiness reducing. Non-greasy. Light cushioning effect

## HEAVY ESTERS

SOLDOC VF 4/8	Film former		XX	X	Pentaerythrityl Tetraethylhexanoate	39.7	Medium	124	Low	-6	Cushioning effect
SOLDOC 3/134	Excellent cushion and play time		XX	X	Trimethylolpropane Trisostearate	45.6	Low-Med	281.1	Medium	< -10	Lubricious feeling, cushioning effect, glossy, non tacky
SOLDOC VF 4/18 HG	Excellent binder in colour cosmetics. Long lasting emollience		XX	X	Pentaerythrityl Tetraisostearate	45.8	Low	464.4	Medium	< -10	Great occlusivity and skin protection. Lubricant. Water resistant. Ultra-glossy

## monohydric alcohol diesters

TRADE NAME	MAIN PROPERTIES	Linear	Branched	Saturated	INCI NAME	SURFACE TENSION (mN/m)	SPREADABILITY	VISCOSITY (mPa.s)	Relative Polarity	Cloud Point (°C)	End user benefits
<b>LIGHT ESTERS</b>											
DOCOIL DIPA	Acts as an emollient and good solvent		X	X	Diisopropyl Adipate	36.5	Med-High	5.6	High	-6	Spreading, non-greasy, tackiness
DOCOIL DIPS	Acts as a dry feeling emollient with high penetration		X	X	Diisopropyl Sebacate	37.7	High	6.2	High	0	Spreading, quick penetration, non-greasy (greasiness reducing properties), white residue reducing

## HEAVY ESTERS

DOCOIL IPDL	Acts as an emollient and dispersant. Film former and pigment dispersant. Possesses water repellency properties		X		Diisopropyl Dimer Dilinoleate	49.4	Medium	190.1	Low-Med	-9	Water resistant, rich feel, cushioning effect, non-tacky
-------------	--	--	---	--	-------------------------------	------	--------	-------	---------	----	--







# THICKENERS

## consistency agents thickeners



Substances that provide body, increase stability and improve suspension of added ingredients.

Thickeners enhance the consistency and viscosity of cosmetic products and also improve stability and modify the skin feel, therefore selection of the correct thickener provides better performance.

Ester based thickeners may present emulsifying or gelling properties, but because of their biocompatibility they also present a moisturizing effect.

TRADE NAME	INCI NAME	Melting Point (°C)	HLB	MAIN PROPERTIES
 WAGLINOL 21414	Myristyl Myristate	41		Used in emulsions to increase viscosity and impart a dry non-greasy feel
 WAGLINOL 23016	Cetyl Palmitate	48		Increase viscosity, impart a dry feel and results in dense white emulsions. Used to build structure in cosmetic sticks. Used in hair conditioning creams
 ALCOHOL 260	Cetearyl Alcohol	50	1.9	Fatty alcohol. Acts as consistency giving agent. O/W co-emulsifier. Used for viscosity regulation
 WAGLINOL 24216	Cetyl Palmitate	54		Increase viscosity, impart a dry feel and results in dense white emulsions. Used to build structure in cosmetic sticks
 LASEMUL 260	Cetearyl Stearate	57		Saturated, wax ester. Acts as texturing agent and consistency giving agent
 LASEMDUR PD	Hydrogenated Palm Oil	60		Conditioning and Texturing agent. Hydrogenated vegetable oil
LASEMUL 2/62	Glycol Distearate	62	1.5	Acts as a pearling agent and as a opacifying agent (shampoos and Foam Bath products)

## polar esters

TRADE NAME	INCI NAME	Melting Point (°C)	HLB	MAIN PROPERTIES
 LASEMUL 92 N 40	Glyceryl Stearates	59	3.4	Used in cosmetic O/W emulsions for the viscosity adjustment. Acts as a consistency giving agent. Food grade
 LASEMUL 9290 PK	Glyceryl Stearate	57	3.8	Used in cosmetic O/W emulsions as emulsifier and as a bodying agent. Food grade product
LASEMUL 2/6000	PEG-150 Distearate	56	18.4	Acts as a thichener and auxiliary emulsifier. Suitable in amphoteric type shampoos, hair conditioners and cleansing products

 vegetable based products



# EMULSIFIERS

## emulsifiers

Emulsions are the most common type of delivery systems used in cosmetics. They enable a wide variety of ingredients to be quickly and conveniently delivered to the skin and the hair.

Water plays two main roles in cosmetic formulations:

- Solvent, and vehicle for hydrosoluble active ingredients
- Fresh feeling due to evaporation.

The best known cosmetic products are based on emulsions in either creams or lotions. In these emulsions small droplets of oil are dispersed in water (O/W) or small droplets of water are dispersed in oil (W/O). Since oil and water are incompatible, emulsifiers are added to produce the small droplets and to prevent the oil and water phases from separating.

Esters can be designed to act as Surface-Active materials, and they are classified as Nonionic Emulsifiers. Depending on the nature of the alcohol used in the esterification process, they may be predominantly hydrophobic or hydrophilic, and thus suitable as W/O or O/W respectively. Non-ionic emulsifiers are not affected by water hardness or pH levels.


## emulsifiers - HLB

Emulsifiers present in the same molecule both hydrophile and lipophile regions. To better describe this "character" a successful method has been developed, the *HLB method*. The letters *HLB* stand for *hydrophile-lipophile balance*.

In this method, an HLB number has been assigned to each surface active agent, and an HLB range has been created for various systems

HLB Value	SURFACTANT FUNCTION	MISCIBILITY IN WATER
1 - 4	Antifoaming properties	Immiscible or poorly dispersible
3 - 6	w/o- Emulsifier	Poor dispersion
6 - 8	Wetting Properties (7 - 9)	Milky dispersion after vigorous agitation
8 - 10	o/w- Emulsification (8 - 18)	Stable milky dispersion (upper end almost translucent)
10 - 13		From translucent to clear dispersion
13 - 15	Detergent	Clear Solution
15 - 18	Solubilizer	



TRADE NAME	INCI NAME	Physical form	HLB	Melting Point (°C)	Cloud Point (°C)	MAIN PROPERTIES
 <b>LASEMUL TES</b>	Sorbitan Tristearate	Flakes	2.1	53		Acts as non-ionic hydrophobic emulsifier. Provides increased viscosity. Used in W/O emulsions
 <b>WEICHOL 92 N</b>	Glyceryl Oleate	Liquid-paste	3			Used in the formulation of cosmetic W/O emulsions
 <b>SOLDOC 2/276 HG</b>	Polyglyceryl-3 Disostearate	Liquid	5.5		-5	Used as W/O emulsifier in cosmetic emulsions as well as ointments and lipophilic sticks. PEG-Free
<b>WAGLINOL 9280</b>	Caprylic/Capric Glycerides	Liquid-paste	5.5			Shows bacteriostatic properties. Used in shaving creams, deodorants and antiperspirants formulations. Acts as co-emulsifier and solubiliser
<b>LASEMUL 4092</b>	Glyceryl Stearate (and) PEG-100 Stearate	Flakes	11	52		Emulsifier for O/W creams and lotions. Compatible with mildly acidic emulsions and electrolytes
<b>WAGLINOL 9288 HE</b>	PEG-7 Glyceryl Cocoate	Liquid	11		0	Acts as a non-ionic surfactant. Used as superfatting agent in shampoos, shower and bath preparations and solubilizer in skin cleansing preparations, bath oils, facial cleansers and hair rinses
<b>LASEMUL 400</b>	PEG-8 Stearate	Paste	11.7	32		Acts as a non-ionic surfactant. Used in cosmetic products
 <b>LASEMUL 92 AE</b>	Glyceryl Stearate SE	Flakes	12	56		Anionic - Nonionic emulsifier. Used as emulsifier in the formulation of O/W creams
 <b>LASEMUL 92 CA</b>	Glyceryl Stearate Citrate	Flakes	12	58		PEG free emulsifier. Used for O/W creams, lotions and wipes for facial and body care, sunscreens and After sun care
 <b>SOLDOC PG 410</b>	Polyglyceryl-4 Caprate	Liquid	14.5		-5	PEG free surfactant. Used as solubilizer. Suitable in liquid soaps and bath oils
<b>LASEMUL 4000</b>	PEG-100 Stearate	Waxy solid	17.9	52		Acts as a high HLB emulsifier and emulsifier O/W. Possesses dispersant properties. Offers stability to moderately strong acids and alkalis



vegetable based products



**IQL**

Industrial Química Lasem, sa

Av. de la Indústria, 7  
Pol. Ind. Pla del Camí, s/n  
08297 Castellgalí (Barcelona)  
Tel. + 34 93 875 88 40  
Fax + 34 93 875 88 41  
info\_iql@lasem.com  
[www.lasem.com](http://www.lasem.com)