



OLIVOIL

SPECIALTIES

Innovative and mild surfactants

Highly hydrophilic

Considerable moisturizing foam

Nourishing action

Emollience and silky features

Hair and skin conditioning



Kalichem
Italia s.r.l.

OLIVOIL PRODUCTS

“PEG-FREE” SURFACTANTS OF VEGETAL ORIGIN INTERNATIONALLY PATENTED

>> MARKET BACKGROUND

In the modern concepts of wellness, now consisting in the responsible respect of both body and skin equilibrium and environment, the wide success of ingredients of natural origin is due to two key aspects. **Firstly, the need for developing formulas compatible as much as possible with the physiology of skin and its annexes, without any adverse effect or allergic potential. Secondly, the growing confidence of the consumers in the beneficial properties provided by complex mixtures of natural ingredients.**

The quest for PEG-free surfactants and emulsifiers led Kalichem to the creation of new classes of base ingredients for skin-friendly and environmental-friendly cleansing cosmetic products, the OLIVOIL Series. These ingredients of vegetal origin are ethylene oxide free and highly performing in cosmetic formulations. Moreover, they provide the skin with the pleasant accompanying effects of vegetal structures.



>> THE ORIGINS

Extra-virgin Olive oil is obtained by cold pressing the pulp of the fruits of *Olea europaea* (Olive), a species of small trees of the family Oleaceae, native to the coastal areas of the eastern Mediterranean region from Lebanon, Syria, the maritime parts of Asia Minor to the south end of the Caspian Sea and successively cultivated in all the Mediterranean area. Its stone fruit, the olive, is of major agricultural importance in the Mediterranean region as the source of olive oil.

Myristic acid $\text{CH}_3(\text{CH}_2)_{12}\text{COOH}$		COOH	1%
Palmitic acid $\text{CH}_3(\text{CH}_2)_{14}\text{COOH}$		COOH	15%
Palmitoleic acid $\text{CH}_3(\text{CH}_2)_5\text{CH}=\text{CH}(\text{CH}_2)_7\text{COOH}$		COOH	1%
Heptadecanoic acid $\text{CH}_3(\text{CH}_2)_{15}\text{COOH}$		COOH	0,5%
Stearic acid $\text{CH}_3(\text{CH}_2)_{16}\text{COOH}$		COOH	4%

Oleic acid $\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{COOH}$		COOH	68%
Linoleic acid $\text{CH}_3(\text{CH}_2)_4\text{CH}=\text{CH}-\text{CH}_2\text{CH}=\text{CH}(\text{CH}_2)_7\text{COOH}$		COOH	9%
Linolenic acid $\text{CH}_3\text{CH}_2\text{CH}=\text{CH}-\text{CH}_2\text{CH}=\text{CH}-\text{CH}_2\text{CH}=\text{CH}(\text{CH}_2)_7\text{COOH}$		COOH	0,5%
Others			1%

Olive oil shows the following complete composition:

Widely preferred to other vegetal oils for its high amount of mono-unsaturated fatty acids, it exhibits well-known properties of integration with the body physiology. Olive oil has the undoubted advantage of its lipidic fraction, provided by a millenary history of contact with vital human cells, which thus allows to boast high safety standards. When the complex of its lipidic chains is chemically combined with hydrophilic molecules of known performances, functional ingredients suitable for innumerable cosmetic formulations can be created. Another interesting aspect of olive oil properties concerns its unsaponifiable fraction (0.6-1.5%). This fraction is kept unchanged in the finished material. Its antioxidant power, as well as the emollient effects of the lipidic moiety, contributes to skin normalization and protection.



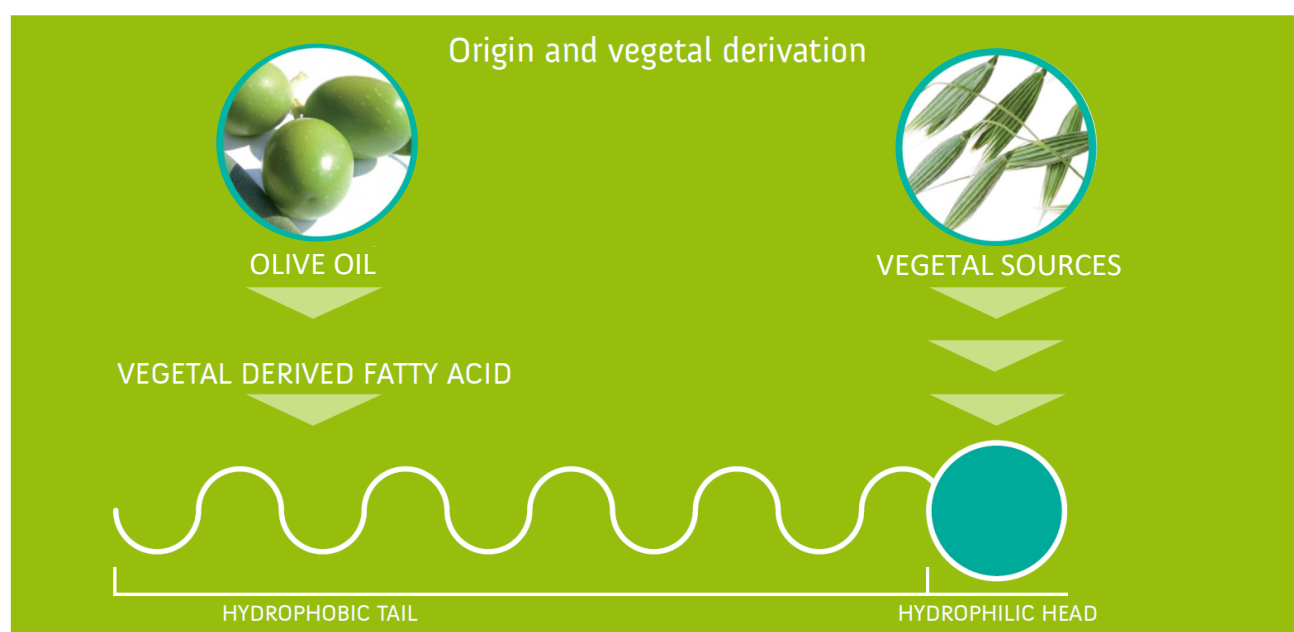
COSMOS
ORGANIC

OLIVOIL TECHNOLOGY

ITALIAN INNOVATION FROM THE OLIVE FRUIT

THE TECHNOLOGY <<

Combining the best of both vegetal oils and protein sources allowed Kalichem to achieve new molecules having relevant interfacial properties. These new surfactants can be used to formulate “totally natural” finished products that are very suitable for sensitive skin, baby-care, hair-care and personal-hygiene. Furthermore, besides being extremely performing as vehicle ingredients (as surfactants and emulsifiers), thanks to their special composition they may act as functional substances with protecting, soothing and restoring ability. As for their environmental impact, they are characterized by high biodegradability (according to the CEE regulation N.82/242 OECD Method).



OLIVE OIL AND SOFTNESS << OF OLIVE OIL PRODUCTS IN COSMETICS

One significant characteristic of the Olivoil Products is given by the presence of long chain fatty acids, including oleic acid (68%), linoleic (9%) and linolenic (0,5%) and others like myristic acid, ...

Their presence explains the results of the tests carried out on the surfactants concerning their highly smoothing performance. A number of scientific tests show, in fact, that the molecules with short chain fatty acids, like for instance the lauric acid (12 carbon atoms), have a greater irritant power than the long chain fatty acids whereby the irritant power of a surfactant is influenced by the number of carbon atoms in the fatty acids. These fatty acids of olive oil bound to proteins have more similarities to both cutaneous secretion (sebum) and cutaneous structures themselves (cheratine) making the Olivoil products very tolerable at the cutaneous level and thus giving the finished products containing them a very nice psychoreologic effect. The Olivoil products have an effective functional action, very soft and moisturizing, according to a correct cutaneous physiology. They leave a good feel of hydration, moisturization, smoothness, softness and cleansing on the skin: after using a detergent containing an Olivoil product, one has a feel of cleanliness, satisfaction and well-being.

Olivoil products are used in association with aggressive traditional surfactants (like SLES, reducing its irritant effect) in percentages ranging from 2% to 15% depending on the desired effect. To merely reduce the irritant effect of traditional surfactants, low percentages of Olivoil products (2 - 5%) may be employed. Higher percentages of Olivoil products are suggested (5 - 15%) where an immediate feel of moisturization, smoothness and softness wants to be additionally achieved. Moreover, the higher the percentage of Olivoil used, the higher the sensory eudermic effect obtained.

PRODUCT BACKGROUND

FROM THE ENVIRONMENT THE BASE OF NEW COSMETIC RAW MATERIALS

>> THE COMPONENTS

Once there were animal proteins... Used as active ingredients of primary choice for most cosmetic formulators, they offered economical, functional molecules of acceptable color and odor in a variety of forms. For known reasons, today's cosmetic chemist is faced with the challenge to replace the traditional animal-derived proteins with ingredients offering the same functionality. Plants have traditionally been viewed as renewable sources of supply, as they are "harvested" on an annual basis. In addition, consumers often associate plant and vegetal derived products with improved health and cleanliness. Plant proteins are devoid of stigmas associated with the developments in BSE (Bovine Spongiform Encephalitis) and other diseases related to animals.



HYDROLYZED WHEAT PROTEINS

Naturally derived, hydrolyzed wheat proteins contain also wheat oligosaccharides (carbohydrates) and constitute a unique hydrating complex offering a combination of moisture-balancing and film forming properties. They work synergistically to give better bounce to the hair, and smoother, softer feel to the skin. An exceptional ingredient to add moisturization to lotions, creams and serums, it is also an excellent additive for shampoos, conditioners and body washes.

HYDROLYZED OAT PROTEINS

Oat is the only cereal containing a globulin or legume-like protein, avenalin, as the major (80%) storage protein. Globulins are characterized by their water solubility. Because of this property, oat flour may be turned into milk but not into bread. The minor protein of oat is a prolamine (typical cereal proteins such as zein) called avenin. Oat protein properties are comparable to soy proteins, which the World Health Organization considers to be equal to meat, milk, and egg protein. The proteins of the hulls of oat kernel ranges from 12 to 24%, the highest among cereals. Moreover, the hydrolyzed protein fraction generally contains an average amount of beta-glucan of 3%. It has skin healing power, stimulates collagen synthesis, promotes cellular turnover, protects and moisturizes the skin.

Kalichem Italia srl has selected hydrolyzed proteins from wheat and oat which do not incorporate any genetically modified organism (GMO).



GLUTAMMIC ACID from SUGARCANE

Sugarcane is one of several species of tall perennial true grasses of the genus *Saccharum*, tribe Andropogoneae, native to the warm temperate to tropical regions of South Asia and used for sugar production. They have stout jointed fibrous stalks that are rich in sugar, and are two to six metres (6 to 19 feet) tall. All sugar cane species interbreed and the major commercial cultivation are complex hybrids.

Sugarcane belongs to the grass family (Poaceae), an economically important seed plant family that includes maize, wheat, rice, and sorghum and many forage crops. The main product of sugarcane is sucrose, which accumulates in the stalk internodes. Sucrose, extracted and purified in specialized mill factories, is used as raw material in human food industries or is fermented to produce ethanol. Ethanol is produced on a large scale by the Brazilian sugarcane industry.

Sugarcane is the world's largest crop by production quantity.

FRUCTOSE

Its presence in these kind of structures, reduces the typical aggressiveness of surfactants, softens their action, rendering it more biocompatible and gentle. For the first time, with the specialty Olivoil Fruttoside, one can find this natural and powerful raw material included in complex technical ingredients like surfactants. In the Olivoil Fruttoside, the chemical properties of fructose are translated into a conditioning action both on skin and hair. In particular this conditioning effect, typical mainly to cationic chemical structures, gives formulators the possibility to obtain a brightening and softening effect on hair without resorting to the use of quaternium molecules, that are mainly of synthetic origin and often give incompatibilities with other surfactants present in detergents, and particularly shampoos.

DERMIC LIKE AMINOACIDS from Oat

The hydrophilic moiety of these natural surfactants are also composed by several aminoacids with a high biological compatibility: alanine, glycine, valine and threonine. Each of these molecules can be found in specific dermic structures (collagen and elastin fibers above all), and show a moisturizing power able to strengthen the mild action of this surfactant specialty. Being aminoacids expressed as well in the dermis, this strict selection allows to obtain the best compatibility possible with the skin.

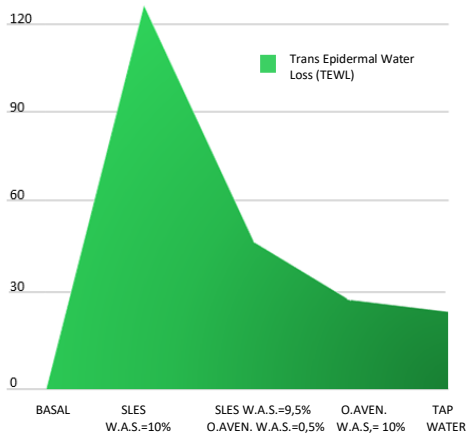
These innovative specialties are able to guarantee a very wide spectrum of functionality, combined with an outstanding mildness, due to its balanced composition. The richness of eudermic effects provided by their composition and physiological activities, the suitability of olive oil, lead to a **revolutionary family of surfactants**.

These raw materials show a high profile detergent power, combined with a very strong foaming power and the capability to boost the quality of the foam. This feature renders the products fitted also for hair care products, where there is an important need to combine delicate detergent properties with physiological eudermic effects and technological benefits, linked to the foam produced and the ease of the thickening process .



OLIVOIL PER

>> SURFACTANTS : VERY MILD & GREEN SOLUTIONS

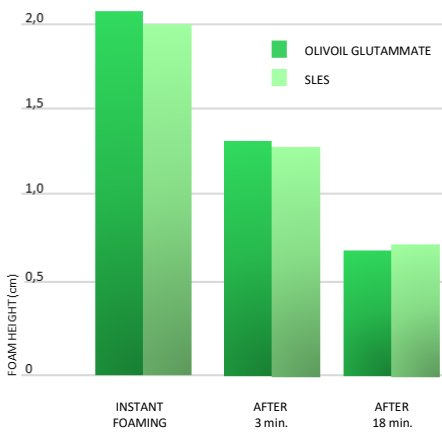


OLIVOIL SURFACTANTS are a non ethoxylated and non sulphated vegetal-derived surfactant family. They are obtained through condensation between the carboxyl group of fatty acids derived from olive oil and many other natural sources. The result is an amphiphilic structure with a fatty amide bond, having the lipophilic side represented by olive oil fatty chains and an hydrophilic side.

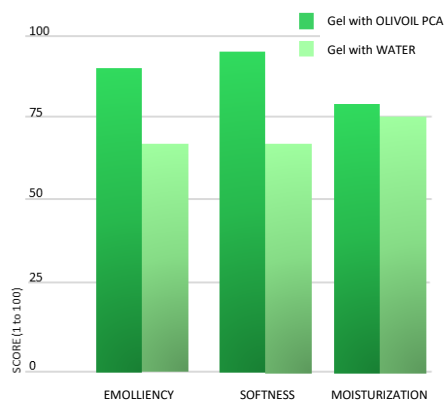
Lipoproteins are molecules that have both a hydrophilic (protein) and a lipophilic (fat- or oil-derived) segment. A vegetable-derived lipoprotein surfactant has a lipophilic component consisting of vegetable-derived fatty acids and a hydrophilic section consisting of peptides. The two types of components are joined with an amide bond. Among the different available sources of fatty acids, olive oil is interesting because of its exceptional fatty acid profile (nearly 85% unsaturated) and its benefits for the skin and human health. Hydrolyzed proteins perform the same biological function when applied to the skin, aiding the regeneration of skin cells. They are also well known for their affinity with the hair, for their conditioning properties and their ability to ease hair combing. They also dramatically reduce skin irritation due to chemical surfactants.

Of course one of the main aspects of a surfactant is the mildness.

The TEWL test values are summed up in the following diagram which shows the average TEWL increase after repeated skin washing for 5 consecutive days by 12 volunteers for each cleansing product. *Another important aspect is the foam:* in this test (Ross Miles test) we show two solutions: one with OLIVOIL SURFACTANTS and one with SLES with the same active matter. As one can see the OLIVOIL SURFACTANTS results are comparable or even better in terms of stability in time and in terms of volume (height of foam).



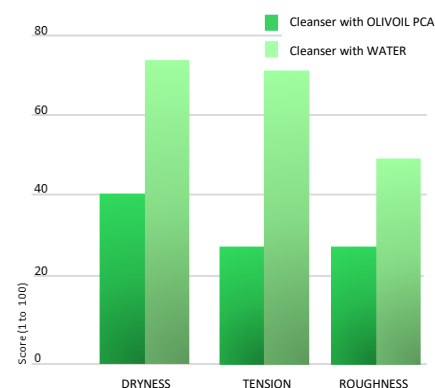
>> ACTIVES : EMOLIENT AND MOISTURIZER FROM NATURE



The Olivoil actives family is a new and innovative family of ingredients of vegetal derivation for cosmetic use.

The OLIVOIL PCA is a functional active principle of vegetal derivation for cosmetic use. The product is a condensate of olive oil fatty acids and potassium salt "pyroglutamic" acid. It presents the benefits of olive oil's unsaturated fatty acids, including emollient capacity, reduction of trans-epidermal water loss, restoration of the normal functional barrier of the epidermis, as well as of the normal processes of keratinisation, anti-exfoliation and anti-dry skin. Using Olivoil PCA in washing application will bring to an important increase of the sensorial features. In order to evaluate these performances tests have been performed: this test enables a real comparison between two cosmetic products (one containing Olivoil PCA, the other only water), recreating the normal use conditions.

The products under examination are applied by the same subject in the same time period and on the same critical body zone (the face).



Olivoil PCA was tested in terms of evaluation of emolliency, softness, and moisturizing effects. A gel containing 5% of Olivoil PCA was tested obtaining better results than a gel containing water instead of the PCA.

Another test in terms of Dryness, Tension and Roughness was carried out obtaining better results than the same product (a cleanser this time) containing water.

FORMANCES

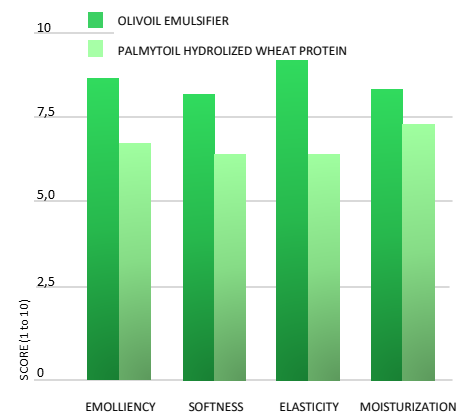
EMULSIFIERS : MILD TOUCH AND SMALL PARTICLES <<

OLIVOIL EMULSIFIERS are non-ethoxylated, vegetal derived surfactants that combine the unique fatty acid profile of olive oil with the special affinity of hydrolyzed proteins or glutamic acid toward the skin surface. The result is a new emulsifiers structure with high skin compatibility and maximum biodegradability.

With the OLIVOIL EMULSIFIERS the concepts of skin respect and skin friendly emulsifier become a reality. The hydro-lipidic balance of the skin, that is significantly lowered by traditional emulsifiers, is only barely altered. Furthermore, the lipidic moiety of the OLIVOIL EMULSIFIERS, thanks to the saturated and unsaturated fatty acids from olive oil, can significantly contribute to the functionality of the whole cosmetic formula.

The restricted size of the particles (between 3 and 7 micrometers) allows the formulator to create a complete range of cosmetic products: from the standard cream, through the milk, to spray formulations that are even able to sustain sun filters or pigments. Choosing this family of Emulsifiers we opt for a multifunctional ingredient that can be the perfect solution for every kind of application keeping a gentle touch and a smooth after feel on the skin.

An evaluation of sensory skin parameters was carried out following a randomized half-face test protocol by a panel of 20 subjects. They were using an emulsion containing OLIVOIL EMULSIFIERS at 10%. This molecule is the key player in the emulsifying system OLIVOIL EMULSIFIERS. As one can see from the graph Olivoil Emulsifier was much more effective in terms of Emolliency, Softness, Elasticity and Moisturization than an ingredient called Palmytoil Hydrolized Wheat Protein.



APPLICATION : HOW TO CHOOSE <<

AVENATE SUB-FAMILY : The Oat derivate is known in cosmetics industry for its soothing properties. The emulsifiers based on Olive Oil and Hydrolyzed Oat protein have a very fast absorption rate on the skin, a silicone-like touch and are suitable for the formulation of skin care cosmetics for delicate areas of the body (peri-ocular area, for instance), as well as for sensitive skins. The surfactants based on Oat derivate are ideal where an extremely mild cleaning action is required: intimate washes, shampoos, body washes for sensitive skin and hair.

GLUTAMATE SUB-FAMILY : The Glutamic Acid is one of the physiological compounds found in our skin structure. The after feel is emollient, dry, and clearly felt. Surfactants based on Glutamic Acid show a very powerful foaming action, that recommends this specialty as the best possible one for mass market formulation in which a high foaming power is required (Olivoil Glutamate , keeping at the same time the softness characteristics typical of Olivoil family. The Glutamic subfamily is ideal for rich and soft formulations.

WHEAT DERIVATE SUB-FAMILY : The Hydrolyzed Wheat subfamily provides plenty of benefits because of its skin and hair conditioning action. Wheat Protein has been known for ages for being valuable in terms of hair protection (its polypeptides form a film around the hair shaft structure that preserves it from external agents aggression, whereas its peptides provide a nourishing action), and skin moisture properties. The emulsifiers based on Hydrolyzed Wheat protein are perfectly suitable for all skin care and hair care applications as well as the surfactants. The Wheat sub-family is, in fact, the most versatile of the whole Olivoil family, with intermediate properties between the Avenate and Glutamate sub-family.

FRUCTOSE SUB-FAMILY : Fructose is a molecule specific for hair care applications: numerous tests show that it is able to increase physiological values such as hair shining and softness. The specialty Olivoil Fruttoside, thanks to its balanced oily and hydrophilic composition, nourishes and volumizes hair with its aminoacids, while Fructose act as conditioning agent. Surfactant targeted for high-end finished product in hair care applications (taking advantage of Fructose specificity for such area of the body), as well as Oral care and washes formulations.

POTASSIUM OLIVATE



GENERAL INFORMATION
APPEARENCE
Shelf life
Chemical Type
Patented
CHEMICAL DATA
Colour
Odour
% of use as primary
% of use as secondary
Suggested pH of use as primary
Suggested pH of use as secondary
pH Surfactant
to be thickened with
NATURAL CARACTERISTICS & CERTIFICATES
PEG FREE / ECOCERT / COSMOS
GLUTEN / PROTEIN FREE
BSE/CMR/GMO FREE
VEGETAL DERIVATION
BIODEGRADABILITY
SENSORIAL
Initial perception
Final Perception
Type of foam
FOAM
Mildness (on a 5 ☆ scale)
Reduction of Trans Epidermal Water Loss

(Traditional Marseille Soap)	
Runny gel	Clear liquid
24 months	24 months
Potassium Soap	Lipo-protein
NO	YES, world wide
Yellow	From yellow to yellowish
Slight Typical	Light, caratheristic
≥ 10%	≥ 10%
≥ 1%	≥ 1%
6 ÷ 9	5,5 ÷ 7,5
6 ÷ 9	3,5 ÷ 7
8,5 ÷ 9,5 (foks nab version: 8,5 ÷ 10)	6,8 ÷ 8,0 (foks nab version: 7,0 ÷ 8,5)
(*) SEE LIST	(*) SEE LIST
YES / YES / YES	YES / YES / YES
YES / YES	YES / NO
YES / YES / YES	YES / YES / YES
YES	YES
HIGH	HIGH
Light	Very light
Emollient	Emollient feel
Creamy with small bubbles	Very creamy with small bubbles
☆☆☆☆☆	☆☆☆☆☆
☆☆☆☆☆	☆☆☆☆☆
☆☆☆☆☆	☆☆☆☆☆

OLIVOIL
AVENATE

OLIVOIL
GLUTAMATE

OLIVOIL
FRUTTOSIDE

Clear liquid	Clear liquid	From transparent liquid to runny gel
24 months	24 months	12 months
Lipo-protein	Lipo-Aminoacid	Esther and Lipo-Aminoacid
YES, world wide	YES, world wide	YES, world wide
Yellow	Colourless / Straw yellow	From pale yellow to amber yellow
Slight typical	Slight neutral	Slight typical
≥ 10%	≥ 10%	≥ 10%
≥ 1%	≥ 1%	≥ 1%
5,5 ÷ 7,5	5,5 ÷ 7,5	4 ÷ 7
3,5 ÷ 7	3,5 ÷ 7	3,5 ÷ 7
6,8 ÷ 7,8 (7,0 ÷ 8,5 for foksnab version)	6,0 ÷ 8,0 (also for foksnab version)	5,5 ÷ 6,5
(*) SEE LIST	(*) SEE LIST	ALL VISCOSITY BUILDERS
YES / YES / YES	YES / YES / YES	YES / YES / YES
YES / NO	YES / YES	YES / NO
YES / YES / YES	YES / YES / YES	YES / YES / YES
YES	YES	YES
HIGH	HIGH	HIGH
Very light	Very light	Very light
Emollient feel	Emollient feel	Emollient, Moisturized, Conditioning Effect on hair
Very creamy with small bubbles	Very creamy with small bubbles	Very creamy with small bubbles
☆☆☆☆☆	☆☆☆☆☆ (= SLES volume, persistancy)	☆☆☆☆☆☆ + ☆ (MORE than SLES)
☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆

SURFACTANTS



(*)VISCOSITY BUILDER LIST:

ALGINIC ACID, AGAR- AGAR, TRAGACANTH, SEED CAROB FLOUR, ARABIC GUM, XANTHAN GUM, KARAYA GUM, TARA GUM, GELLAN GUM, PECTYNE, SCLEROTIUM GUM, CARBOXYMETHYL CELLULOSE (CMC), HYDROXYPROPYLMETHYL CELLULOSE (HPMC), HYDROXYETHYL CELLULOSE (HEC), CARRAGEENAN

GENERAL INFORMATION		
APPEARANCE	Solid (wax)	Solid (wax)
Shelf life	24 months	24 months
Chemical Type	Lipo-protein	Lipo-Aminoacid
Patented	YES, world wide	YES, world wide
Emulsifying properties	3% > 10% oil ÷ 6% > 50% oil	4% > 10% oil ÷ 7,5% > 40% oil
CHEMICAL DATA		
Colour	From ivory to pale yellow	Ivory white
Odour	Light caratheristic	Slight neutral
Type of emulsion	O/W crystal liquid	O/W crystal liquid
Melting point	60°C ÷ 68°C	60°C ÷ 68°C
Stable with	L/M/H polar oils, silicons	L/M/H polar oils, salts
Suggested pH of use	5 ÷ 7	5 ÷ 7
pH Emulsifier	6 ÷ 7 (5% sol.Ethanol/H ₂ O 50/50)	6 ÷ 7,5 (aqueous solution 10%)
NATURAL CARACTERISTICS & CERTIFICATES		
PEG FREE / ECOCERT / COSMOS	YES / YES / YES	YES / YES / YES
GLUTEN / PROTEIN FREE	YES / NO	YES / YES
BSE/CMR/GMO FREE	YES / YES / YES	YES / YES / YES
VEGETAL DERIVATION	YES	YES
BIODEGRADABILITY	HIGH	HIGH
SENSORIAL		
Initial perception	Very light, Silky	Very light
Final Perception	Emollient, mositurized feel	Emollient, mositurized feel
Spreadability	Oils related	Oils related
General perception	Soothing, soft, protective	Perceptible
Adsorption	☆☆☆☆☆	☆☆☆☆☆

EMULSIFIERS

Solid (wax)
18 months
Lipo-protein
YES, world wide
3,5% > 10% oil ÷ 7% > 40% oil
From ivory to pale yellow
Light, characteristic
O/W crystal liquid
60°C ÷ 68°C
L/M/H polar oils, silicon
5 ÷ 7
6 ÷ 7 (5% sol.Ethanol/H ₂ O 70/30)
YES / YES / YES
YES / NO
YES / YES / YES
YES
HIGH
Very light
Emollient, moisturized feel
Oils related
Soft, protective
☆☆☆☆☆

ACTIVES

GENERAL INFORMATION
APPEARANCE
Shelf life
Chemical Type
Patented
CHEMICAL DATA
Colour
Odour
% of use as primary
% of use as secondary
Suggested pH of use as primary
Suggested pH of use as secondary
pH Surfactant
to be thickened with
PEG FREE / ECOCERT / COSMOS
GLUTEN / PROTEIN FREE
BSE/CMR/GMO FREE
VEGETAL DERIVATION
BIODEGRADABILITY
SENSORIAL
Initial perception
Final Perception
Type of foam
FOAM (on 5 scale)
Mildness
Reduction of Trans Epidermal Water Loss

Clear Liquid
21 months
Lipo-Aminoacid
YES, world wide
From colourless to pale Yellow
Slight neutral (to be used as sec or active)
≥ 1%
-
5,5 ÷ 7,5
7,5 ÷ 9,0 (also for foks nab version)
(*) SEE LIST
YES / YES / YES
YES / YES
YES / YES / YES
YES
HIGH
Very light
Emollient, Moisturized
Very creamy with small bubbles
☆☆☆☆☆
☆☆☆☆☆
☆☆☆☆☆

OLIVOIL AVENATE EMULSIFIER
OLIVOIL AVENATE SURFACTANT
OLIVOIL EMULSIFIER
OLIVOIL FRUTTOSIDE SURFACTANT
OLIVOIL GLUTAMATE EMULSIFIER
OLIVOIL GLUTAMATE SURFACTANT
OLIVOIL PCA
OLIVOIL SURFACTANT
POTASSIUM OLIVATE



OLIVOIL
SPECIALTIES



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