

olisun

Presolubilized filters

Ready sunscreen system

SPF builder

Texturizer

OLISUN TECHNOLOGY

>> PRODUCTS BACKGROUND

Olisun is a raw material appearing as a multi-layer stratified oil, based on the association of UV-A and UV-B filters, together with water, esters and lipo-derivatives based on Olive oil and Coconut Oil fatty acids, and sugars.

- ✓ Pre-solubilized Sunscreen filters System
- ✓ SPF Builder
- ✓ Texturizer



This innovative specialty, thanks to its technological advanced concept, allows to overcome several formulation limiting points and to bring a significant benefit in terms of sensorial performances.

The lipoprotein system containing Olisun sun-filters, in fact, allows to have the filters **already solubilized** (for example compounds like Avobenzone have some technological and stability limits when used alone).

These filters combination has been calculated thoroughly through the association of approved sunscreen actives and their specific photo-stabilizers, to make sure that all the critical UV wavelengths are covered efficiently (achieving, depending on the concentration of use, different SPF and UV-A Protection Factor values) and the screening substances keep their stability in the formulation. This latest point is highly critical as the photo-degradation of sun-filter molecules gives birth to chemical sub-structures harmful for the skin, that could lead to events like allergies and irritating processes on the cutis.

By avoiding the filters photo-degradation through the use of specific stabilizers included in Olisun (Octocrylene for instance), it is possible to improve the screening efficacy (throughout the application and the time of use of the end-product), as well as increasing the protection against irritation and burning risks.

Last but not least, the lipoprotein technology behind Olisun brings a huge benefit from a sensorial stand point: lipoproteins, in fact, are molecules extremely compatible with human dermis, and their use in formula increases the bio-compatibility of the emulsion with human skin: such a biological effect goes along with the astounding benefit derived from their filters-solubilizing properties. Depending on the end-sunscreen country of destination and its existing regulatory system, Olisun is available with specific and suitable sun-filters (listed in the following pages)

SUNSCREENING

>> PRESOLUBILIZED SUNSCREEN FILTERS SYSTEM

Olisun is a raw material designed to overcome the formulating issues typical of sunscreens developments. The formulation of sunscreens indeed has many limiting points, consisting mainly in the solubilizing process of some organic filters and in their homogenous spread inside the end product. In the first case, the formulating process can become extremely difficult as some filters (like for example Avobenzone and Bemotrizinol) have a very complex physical-chemical behavior which makes them extremely hard to include in a cosmetic formulation and solubilize them homogeneously.

On the other hand, further formulators' concern is addressed to the uniform diffusion of filters into the sunscreen formulation. This point is highly critical as a not homogeneous spread of their molecules is one of the main causes of the lack of efficiency in SPF terms of many formulations found in the market. The lipoproteins included in Olisun allow to overcome both the mentioned issues, as they already have the filters solubilized in their complex structure: furthermore, this sort of chemical organization also promotes a uniform spreading of the organic filters.

Therefore, such an ingredient has to be intended as a sunscreen formulating base, already including filters and an intrinsic theoretic SPF value already achieved. In other words, Olisun is a semi-finished sunscreen base just requiring the addition of technical ingredients to become a cosmetic finished product with which *declaring SPF* and compliance with the *1/3 UV-A/UV-B ratio protection*.

Formula Composition	Concentration of use in SPF 06 Formula	Concentration of use in SPF 15 Formula	Concentration of use in SPF 30 Formula
OLISUN	8%	20%	36%
Aqua	to 100%	to 100%	to 100%

SPF BUILDER

BOOSTER OF SUN PROTECTION <<

Olisun as it is is able to give to sunscreen formulations a specific theoretic SPF value depending on the concentration of its use. This means that the inclusion in formula of this raw material avoids the use of other sunscreen filters in the formulation, increasing the formulator "comfort" . In general the balance between concentration of use and SPF achieved is summarized with the following table

TEXTURIZER

PROTEINS AND SUGARS FOR HEALTH AND TEXTURE <<

The raw material is composed of lipo-proteins and lipo-sugars. Such chemical compounds allow in the first place an easy solubilization of organic filters generally tough to put into the formulation and unstable. The use of lipo-derivates increases the stability and the solubilizing rate of filters allowing a better distribution of the molecules in the emulsion system. On the other hand the lipoderivates compounds included, such as:

- ✓ Sodium Cocoyl Aminoacids
- ✓ Potassium Olivoyl Hydrolyzed Wheat Protein
- ✓ Alkyl PolyGlucoside

Have a chemical structure that recalls the organization and the structure of the skin cells membranes. This chemical resemblance is the basis of the texturizing properties of the raw material. In fact, when applied on the skin, Olisun filters get uniformed along the skin epidermis without being absorbed (counteracting from the surface the potential harms linked to the UV-rays), whereas the lipoproteins get melted with skin cells surface providing a pleasant touch on the skin, linked indeed to their chemical affinity with the cutaneous structure.

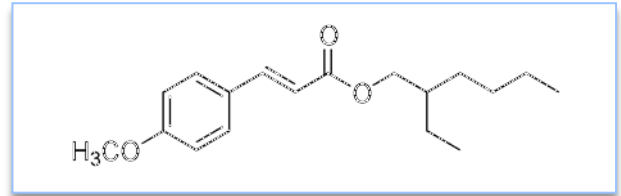


CHEMICAL BACKGROUND

>> UVB FILTERS CHOICE

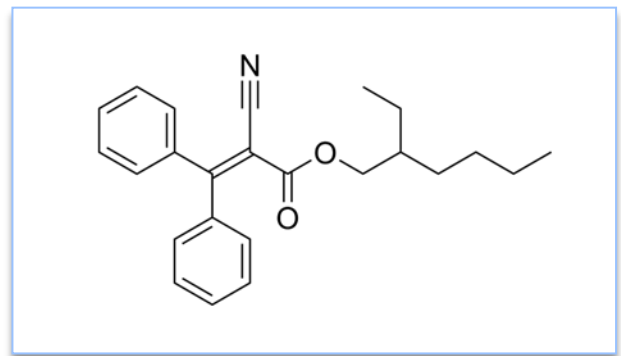
EthylHexyl Methoxycinnamate (@8%) max 10% (Worldwide approved)

It is probably the most used UV-B filter. It is a colorless liquid, fully miscible with polar and nonpolar organic solvents, insoluble in water. It is the result of the esterification between MethoxyCinnamate and 2-HexylHexanol. Good photo-stability. It is just a UV-B filter, not covering the UV-A region.
(INCI: EthylHexyl MethoxyCinnamate)



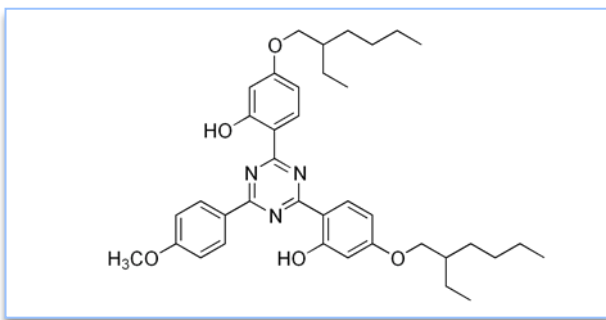
Octocrylene (@5%) max 10% (Worldwide approved)

Colourless viscous liquid, insoluble in water, but fully miscible with nonpolar organic solvents. It is synthesized from diphenylcianoacrylate with 2-ethylhexanol (which gives to the molecule oil-like properties and thus effects such as emolliency and water resistance). The lipophilic character of the molecule makes it a good solvent for UV solid filters. It absorbs in the UV-B region and short wave UV-A rays. It is an excellent stabilizing agent for Avobenzene and other UV-filters and the molecule itself is photo-stable. Not allergic, not mutagenic, not irritating. It can be used up to a 10% concentration. (INCI: Octocrylene)

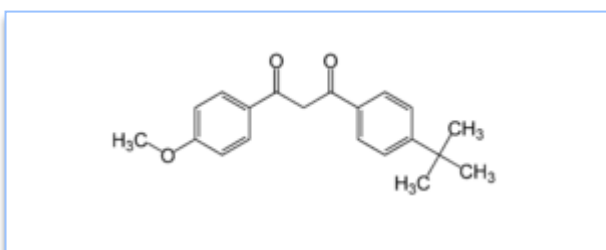


UVA FILTERS CHOICE <<

Bemotrizinol (@2%) max 10% (Not approved in the US)



powder, partially soluble in organic solvents and polar fats. It has two absorption peaks (310 nm in the UV-B region and 340 nm in the UV-A region). One of its main uses, is stabilizing Avobenzene. When used pure, it should be added to the oily phase of the emulsion and heated up to 70°C. It has a good toxicological profile, but its long terms effects are not known yet, as it is a last generation sunscreen. Not absorbed by the skin. (INCI: Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine)



Avobenzene (@5%) max 5% (Worldwide approved)

Avobenzene absorbs UV light over a very wide range of wavelength (more than other filters). It is the best UV-A filter available, but when used as it is, it has got two main defects:

its Photo-stability is very low. The UV-A light, in fact, in a day of sunlight can break most of the compound (there is a 36% of absorbance change following 1 hour of sun exposure). Low solubility. Pure Avobenzone is a light powder insoluble in water with a melting point around 81-86°C. In general it has to be added to the oily phase and heated up to 90° C. In some conditions, it may even precipitate after the emulsion is formed. All these technological limits of Avobenzone are overcome when it is included in a structure like the one occurring in Olisun. In such a specialty Avobenzone does not require heating, and together with the other filters used, it can be added to the formulation without requiring specific technological treatments.



BENEFITS & APPLICATIONS

WHY SHOULD IT BE USED ? <<

Olisun doesn't require heating. It also works as an emulsifier, as it helps to formulate products like creams, sprays, milks. With some sort of formulation (milks and sprays mainly), it works as an auto-emulsifying basis, able to form emulsions spontaneously when it gets into contact just with the water. Consequently, another important point to focus is the economic impact linked to Olisun technology. As this system allows the formulation of cold emulsions, through the simple addition of water, there is a huge saving in terms of costs during the production stages.

This factor, together with the possibility to avoid all the standard problematic working procedures linked to sun-filters way of use, makes this ingredient as a precious tool destined to the formulator, aimed to simplify the formulation and to cut considerably the global cost of the sunscreen development.

WHERE SHOULD IT BE USED ? <<

Furthermore, another Olisun benefit relies in its property to work as a system increasing homogeneously the dispersion of the filters in the formulation. This action is extremely important, as it allows a better distribution of the filters, which increases the superficial area of the filters throughout the skin after the application. Such an action maximizes the activity of the end product.

The product allows the formulation of the following finished products:

- OLISUN itself
- SPF GEL-CREAMS through the addition of acrylic polymers like Carbopol
- SPF CREAMS through the addition of consistency factors
- SPF SPRAYS



EXAMPLE OF FORMULATION >> BODY MILK SPF 50+

TRADE NAME	INCI NAME	%
OLISUN	ETHYLEXYL METHOXYCINNAMATE, AQUA, BUTYL METHOXYDIBENZOYLMETHANE, OCTOCRYLENE, C12-15 ALKYL BENZOATE, GLYCERIN, BIS-ETHYLHEXYLOXYPHENOL METHOXYPHENYL TRIAZINE, SODIUM COCOYL AMINOACIDS, POTASSIUM OLIVOYL HYDROLYZED WHEAT PROTEIN, ALKYL POLYGLUCOSIDE	36.3
EUSOLEX OCR	DIHYDROXY PHENYL BENZIMIDAZOLE CARBOXYLIC ACID	5
PARSOL MCX	ETHYLHEXYL METHOXYCINNAMATE	2
TOCOPHERYL ACETATE	TOCOPHERYL ACETATE	0.5
DEMIN./DEPUR. WATER	AQUA	38.7
APALIGHT	HYDROXYAPATITE, AQUA	15
KALINAT	SODIUM DNA	0.25
GLYCERIN	GLYCERIN	2

EXAMPLE OF FORMULATION >> SPRAYABLE SUNSCREEN SPF30

TRADE NAME	INCI NAME	%
DEMIN./DEPUR. WATER	AQUA	32
OXISOL	DIHYDROXY PHENYL BENZIMIDAZOLE CARBOXYLIC ACID	1
LYSINE	LYSINE	1
AVICEL PC 611	MICROCRYSTALLINE CELLULOSE	3.75
ACQUA DEMIN./DEPUR.	AQUA	37.25
OLISUN	ETHYLEXYL METHOXYCINNAMATE, AQUA, BUTYL METHOXYDIBENZOYLMETHANE, OCTOCRYLENE, C12-15 ALKYL BENZOATE, GLYCERIN, BIS-ETHYLHEXYLOXYPHENOL METHOXYPHENYL TRIAZINE, SODIUM COCOYL AMINOACIDS, POTASSIUM OLIVOYL HYDROLYZED WHEAT PROTEIN, ALKYL POLYGLUCOSIDE	25
KALINAT	SODIUM DNA	0.25

WAY OF USE

	RANGE
pH of use	6,0 ÷ 7,0
Concentration of use	from 8%

TECHNICAL INFORMATION

INCI NAME and COMPOSITION	CAS#	EINECS #	RANGE %
ETHYLEXYL METHOXYCINNAMATE	5466-77-3	226-775-7	20% ≤ [%] < 25%
AQUA	7732-18-5	2317912	10% ≤ [%] < 20%
OCTOCRYLENE	6197-30-4	228-250-8	10% ≤ [%] < 15%
BUTYL METHOXYDIBENZOYLMETHANE	70356-09-1	274-581-6	10% ≤ [%] < 15%
C12-15 ALKYL BENZOATE	68411-27-8	220--837-7	5% ≤ [%] < 15%
GLYCERIN,	56-81-5	2002895	5% ≤ [%] < 10%
BIS-ETHYLHEXYLOXYPHENOL METHOXYPHENYL TRIAZINE	187393-00-6	425-950-7	4% ≤ [%] < 7%
SODIUM COCOYL AMINOACIDS	68188-38-5	-	2% ≤ [%] < 4%
POTASSIUM OLIVOYL HYDROLYZED WHEAT PROTEIN	-	-	2% ≤ [%] < 4%
ALKYL POLYGLUCOSIDE	68515-73-1	-	1% ≤ [%] < 2%

PHYSICO-CHEMICAL INFORMATION

	METHOD	LIMITS
APPEARANCE	Visual	SEMI FLUID GEL
COLOUR	Visual	IVORY
ODOUR	Olfactory	LIGHT
pH DIRECT	Potentiometric	5,0 ÷ 6,5
DENSITY	Density measure (g/ml)	0,9 ÷ 1,0
TOTAL MICROBE COUNT	by inclusion Ph. Eur. 7.0	0 ÷ 100

SHELF LIFE : 12 months

STORAGE CONDITIONS: Keep in original containers well closed in a cool (minimum suggested temperature 14°C max 27°C), dry, well ventilated, dark and clean site.

BIODEGRADABILITY: readily biodegradable



olisun



*Kalichem
Italia s.r.l.*

Head Office and Production:

Via G.Pastore, 1 - 25082 Botticino Sera (BS) ITALY
Tel: +39.030.26.93.532 - Fax: +39.030.21.93.581
kalichem@kalichem.it

www.kalichem.it