

**TECHNICAL DATA SHEET**Effective date: 04.2019
Rev.1**EsseSol, Mineral Filter****INFORMATION ON SUBSTANCE / MIXTURE**

INCI	Titanium dioxide, Aqua, Polyglyceryl-2 caprate, Sucrose stearate, Simmondsia chinensis (Jojoba) seed oil, Stearic acid, Alumina, Glyceryl caprylate, Squalane
Manufacturing process	Hydrophobically coated titanium dioxide
Description	Combining an exceptional level of UVA protection with high UVB efficacy, it uniquely allows you to formulate high SPF, broad spectrum sun protection products using a single active ingredient. The product uses an aqueous base to deliver formulation flexibility and its natural composition makes it ideal for formulators of 'green' cosmetics. Offering the freedom to formulate light and spreadable o/w emulsions, the formulator can now make natural, globally approved, high SPF sun protection products that conform to EU guidelines for UVA protection and with excellent skin feel using this innovative water-based titanium dioxide dispersion.
Properties	Organic (or "chemical") sunscreens work by absorption of UV light. Physical sunscreens, by contrast, attenuate UV by two mechanisms: absorption and scattering. Because of these different mechanisms, physical sunscreens attenuate UV over a broad wavelength range, and this is one of the key advantages of these materials. Whereas some organic filters can break down in the presence of UV light, inorganic sunscreens are photostable and will not degrade or oxidize, maintaining SPF for as long as the particles remain on the skin. The SPF of a sunscreen product depends a great deal on the formulation, so it is not possible to give definitive rules to say that a certain percentage of an active ingredient will give a certain SPF.
Raw material category	Mineral filter -cosmetic ingredient

TECHNICAL DATA**Physical parameters**

Appearance	Liquid
Color	White
Odor	Characteristic
Relative density at 20°C	NA
Geometric mean particle size	179 nm
Solubility	Soluble in water

Chemical parameters

Solids content (% w/w)	50
Approx TiO ₂ content (% w/w)	42

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Storage conditions	Store in closed packaging, away from light, at a steady and moderate temperature. Protect from freezing. Stir well before use.
Shelf Life	5 years, in closed packaging and the recommended conditions.
Customs code	-

LEGISLATION

STATEMENT	<p>Annexes II and III of European Cosmetics Regulation (EC) No 1223/2009 In relation to Regulation (EC) No 1223/2009 and its subsequent amendments, no intentional components or known impurities are forbidden or restricted substances as listed in Annex II or Annex III of this Regulation. Where there is the possible presence of residual, low levels of Annex II substances and/or carcinogens, mutagens and reproductive toxicants, these fall under Article 17 'Traces of prohibited substances' of the Cosmetics Regulation (EC) No 1223/2009.</p>
Certification	-
EINECS	-
CAS	-
UVA Claims	<p>Measurement and labeling of UVA protection in sunscreen products is complex, because different countries and regions recognize different test methods and labeling criteria. The main ones are summarized below.</p> <p style="text-align: center;">USA</p> <p>In June 2011, the FDA released its Final Rule on sunscreen labelling and effectiveness testing. Among these, the ability to be able to claim "broad spectrum" on pack an in-vitro pass/fail test based on the critical wavelength value of 370nm will be used. In addition, only sunscreens that comply with an SPF ≥ 15, will be able to claim "helps prevent sunburn" and "if used as directed with other sun protection measures, decreases the risk of skin cancer and early skin aging caused by the sun." For sunscreens that do not comply with this, a health warning is required. Test protocol to measure critical wavelength involves applying a sample to a PMMA plate and subjecting it to a preirradiation step of 4 MEDs (Minimum Erythemal Dose) of 800 J/m²-eff. The transmittance through the plate is measured using the Labsphere UV-2000S analyzer and the critical wavelength is calculated using the equation below.</p> $\int_{290}^{\lambda_c} A(\lambda)d\lambda = 0.9 \int_{290}^{400} A(\lambda)d\lambda$ <p style="text-align: center;">Europe</p> <p>The 2006 EU Recommendation on sun products includes the following guidelines for UVA protection:</p> <ol style="list-style-type: none">1. The UVA Protection Factor should be at least 1/3 of the SPF, ie. the ratio

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SPF/UVAPF should be less than or equal to 3. Note that in this calculation, SPF means the labeled SPF of the product. UVAPF can be measured either in-vivo, using the Persistent Pigment Darkening (PPD) method, or by using the COLIPA invitro UVAPF method.

2. A critical wavelength of at least 370nm. COLIPA have recommended the following simple logo to indicate on the label that a product meets these requirements:



UK

The Boots Star Rating System is still widely used in the UK. Products are assigned a star rating based on the mean absorbance ratio, which is the ratio of the mean absorbance in the UVA to the mean absorbance in the UVB. Boots revised the system in 2008, and as part of this revision, the 1- and 2-star categories were declared obsolete, as products in these categories would not meet the EU requirements described above. Therefore, there are now just three categories (3-, 4-, and 5-star). A pre-irradiation step is included to take account of any photo-decay of actives, and the star rating is defined by the pre- and post-irradiation values of the UVA/UVB ratio, as shown in the following table:

		Initial UVA:UVB			
		0.0 - 0.59	0.6 - 0.79	0.8 - 0.89	> 0.9
Post exposure UVA:UVB	0.0 - 0.56	No Rating	No Rating	No Rating	No Rating
	0.57 - 0.75	No Rating			
	0.76 - 0.85	No Rating			
	> 0.86	No Rating			

Japan

The Japanese “PA+” labeling system is based on the in-vivo UVA protection factor, as measured by the PPD method. There are three labeling categories, as follows:

UVAPF (PPD)	PA rating
2 to < 4	PA+
4 to < 8	PA++
≥ 8	PA+++



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