OLIVATIS 13

Inci name: Polyglyceryl-3 Cetearyl Ether Olivate

Olivatis 13 is a superior non-ionic, natural, "Peg free", liquid crystals, O/W emulsifier, derived entirely from "renewable" raw materials:

- Polyglyceryl from vegetal glycerin
- Olive fatty acids
- Cetearyl alcohol of vegetal origin

Specifications

Appearance:	waxy flakes
Color:	ivory
Acid value:	5,0 max.
Saponification value:	90 - 120
Water:	1,0 % max.
HLB:	10 -12

Liquid Crystals

Olivatis 13 creates systems organized in liquid crystal lamellar phases, without the addition of other ethoxylated co-emulsifiers and regardless of the chemical structure and polarity of the substances present in the internal phase of the emulsion. Small quantities of Olivatis 13 are sufficient to emulsify oils and other lipophilic ingredients. It is possible to obtain stable emulsions that offer moisturizing and emollient properties and a pleasant light and silky feel even when they contain large quantities of oily substances. A wide range of mineral, vegetal and silicone oils, can be used without affecting the stability of the emulsion.

OLIVATIS 13

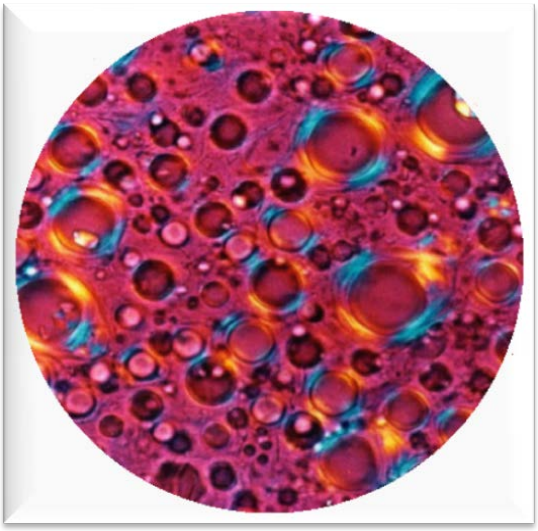
When present at the oil/water interface, the liquid crystals give rigidity to the system and, limiting the fluctuation of the components at the interface, make the emulsion very stable. Furthermore, the liquid crystals system enhances the moisturizing ability of the emulsion. In the liquid crystals *'network'*, the quantity of inter-lamellar water, that can be extremely high, is immediately available when the cream is applied on the skin. For this reason, emulsions have a shiny surface, a fresh and light feel and leave a light sensation on skin.

Olivatis 13 creates stable and particularly temperature-resistant liquid crystals lamellar structures.

With Olivatis 13 formulating is very easy and it is possible to achieve high sensorial characteristics and a fresh and light texture.

The side picture of an emulsion made with Olivatis 13 shows that the disposition of the micelles is structured in a compact and tidy reticular system where the possibility of fluctuation is scarce.

A simple emulsion made with 5% Olivatis 13, observed by an optical microscope at 250 magnifications in polarized light, shows the particular reticular structure and the evident effect of the birefringence, typical of the crystalline form.



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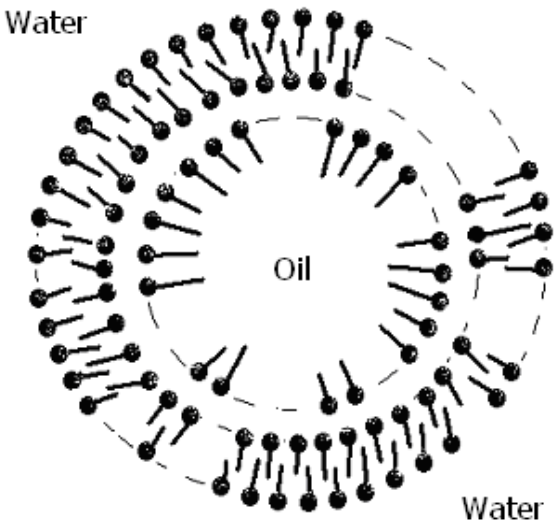
The theory of emulsions stabilization by the formation of liquid crystals or, in any case, by a reticular network, is different from the HLB and Schulman's theory as it attributes primarily to the reticular system the stabilizing function in comparison to the presence of the contrasting emulsifier. It is a structure that allows wide formulating possibilities as it is little vulnerable by the relative hydrophilic degree of the lipids used in the emulsion.

Olivatis 13 generates liquid crystalline lamellar phases around the oil droplet that, protected by a bi-refracting double stratum of anfifilic molecules concentrated in the O/W interface, guarantees the stability of the system.

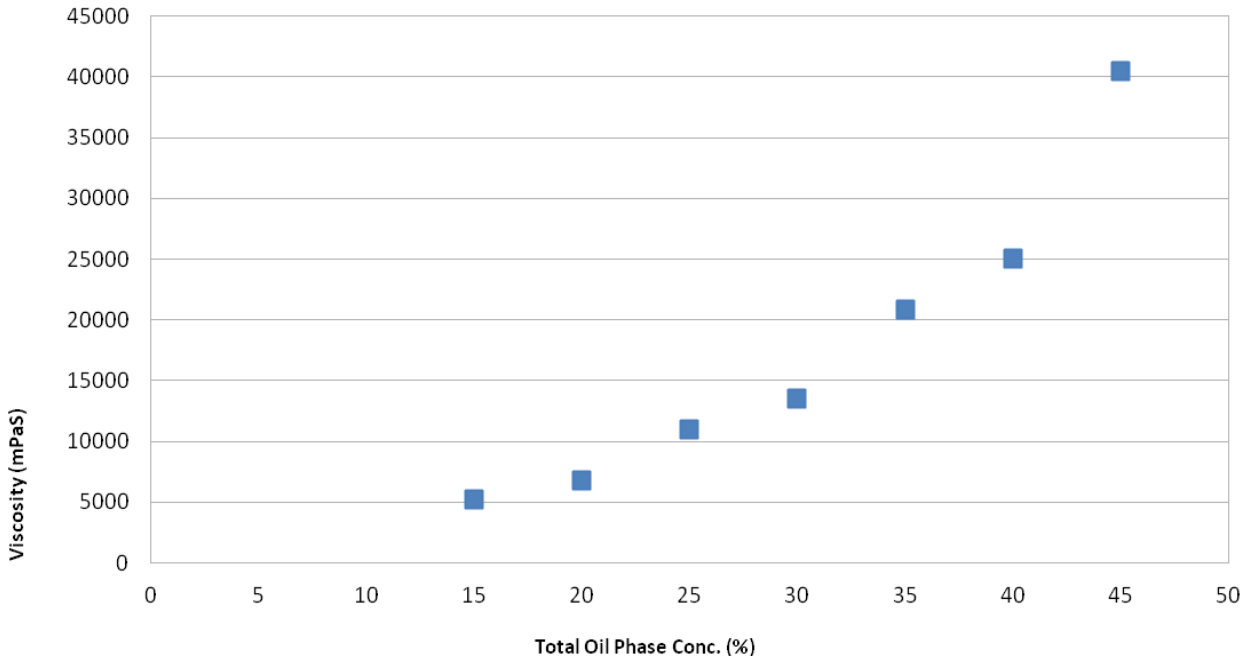
In a liquid crystals system, at least 3 layers of amphiphilic substances are necessary to surround an oil droplet. It is a structure similar to the superificial hydrolipidic film, able to spread easily on skin and to guarantee a fair hydration.

Olivatis 13 shows a remarkable versatility of use, being able to form stable systems in any case, irrespective of the polarity of the components of fatty phase.

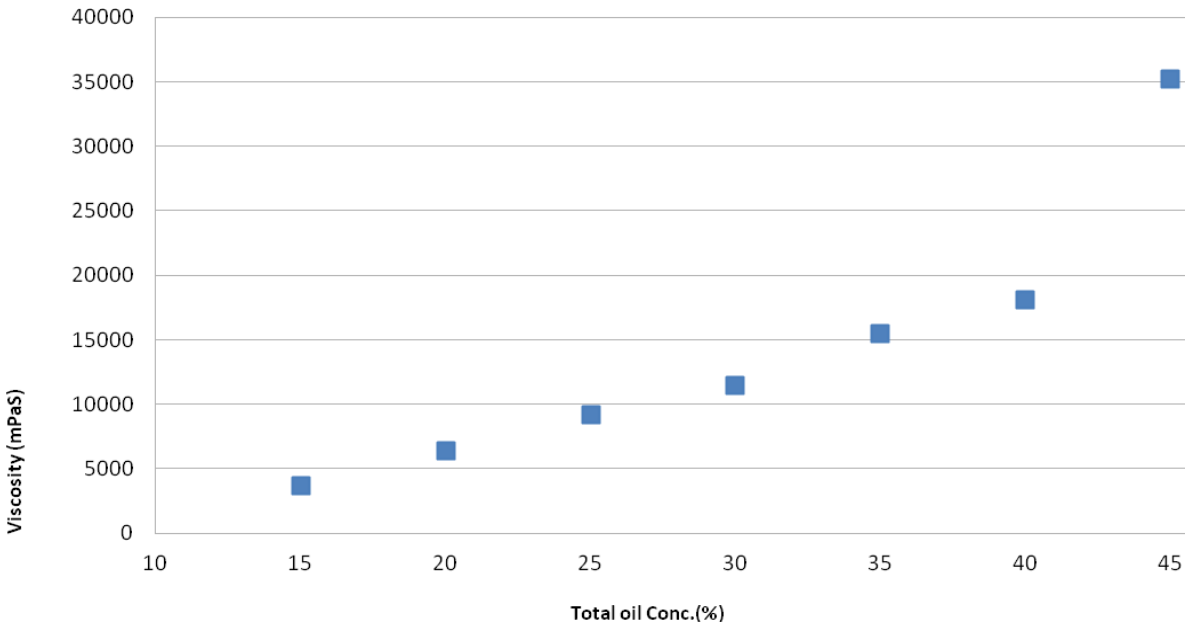


Emulsifying power

Olivatis 13 can emulsify natural oils in a broad concentration range. The following diagram presents the viscosity of an emulsion for a fixed oil:emulsifier ratio with increasing concentrations of the oil phase in the emulsion. Considering the linear part of the diagram, the recommended concentration of Olivatis 13 in emulsions is 20-40 % of the oil phase concentration.



It is not necessary to apply a viscosity modifier (specially for oil concentrations between 20-40%). The viscosity could however be easily adjusted applying conventional viscosity modifiers such as HEC or Xanthan gum. The following diagram shows the viscosity of a lotion with a constant concentration of HEC and increasing concentrations of the oil phase.



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Properties and performances of Olivatis 13 at a glance.

- Natural O/W emulsifier derived entirely from "renewable" raw materials.
- PEG free.
- Low inherent odor.
- Low inherent color.
- Formation of liquid crystals.
- Easiness of use.
- Versatility and high emulsifying power.

Properties of emulsions made with Olivatis 13.

- Notable stability at high and low temperature.
- Light and silky feel.
- Long lasting emollient / moisturizing effect.
- Excellent spreadability.

Manufacturing procedure

- Mix Olivatis 13 in the oily phase and melt at 75° - 80°C. Heat the aqueous phase at 75° - 80°C with moderate stirring.
- Add the oily phase to the aqueous phase under intensive stirring.
- Homogenise the mixture.
- Cool to 40°C while stirring moderately.
- Add heat-sensitive ingredients while stirring moderately and homogenise the mixture.

Emulsions with pH values below 4,5 tend to become unstable and this can be overcome by using a suitable buffer systems.

Formulation advice

- Olivatis 13 shows remarkable emulsifying properties with a wide range of fatty substances. Oils difficult to be emulsified, such as vegetal and silicon oils are not an issue; quite the contrary, it is possible to formulate stable creams and lotions with 100% vegetal oils.
- The percentage of use is 3 - 4% in milks or lotions and 4 - 6% in creams depending on the volume and the characteristic of internal phase components.