



# Olivatis® 18

## Applicative guidelines

### APPLICATIONS

**Olivatis® 18** is a primary emulsifier for all skin care applications such as Facial Care, Body Care, Sun Care and Baby Care.

**Olivatis® 18** is a strong, natural, COSMOS approved oil-in-water emulsifier. It has good compatibility with various actives, UV filters, up to 1% electrolytes and pigments. It performs well with ingredients such as vegetable oils, esters, waxes, and silicones.

**Olivatis® 18** can be used in the pH range of 4,5-9,0 and can be combined with polymers such **Carbomed 940 EZ** and **Carbomed 1030**.

### DOSAGE

**Olivatis® 18** can be used at 3-4% in fluid emulsions and 4-6,5% in creams. Normal ratio between **Olivatis 18** and fats is 1:3, that is one part of **Olivatis® 18** and 3 parts of oils. This ratio may vary depending on the composition and the volume of the preparation.

### VISCOSITY

Viscosity of emulsions made with **Olivatis® 18** may vary depending on the type of oil used. As a general rule, very low polarity oils give the highest viscosity while triglycerides give emulsions with lower viscosity.

**Olivatis® 18** has a lower thickening effect if compared with other emulsifiers mainly because contains low amount of cetearyl alcohol (less than 30% on the whole formulation).

It must be considered that emulsions are thixotropic; therefore, viscosity tends to increase after stirring is stopped.

The low specific viscosity of the product allows the preparation of pumpable and fluid emulsions. For applications that requires very thick products, the addition of common cost effective ingredients such as cetearyl or behenyl alcohol, **Carbomed 940 EZ** or glyceryl monostearate can solve any viscosity issue. Normally addition of 1% of Cetearyl alcohol can double viscosity of emulsion without giving any soapy effect.



## EMULSIFICATION PROCESS

There are two possible emulsification processes and the choice of either one depends mainly on the nature of the oils to be emulsified.

### 1. TWO PHASE METHOD

- A. Mix oils and long chain alcohols with **Olivatis® 18** and heat to 80°C (**phase I**).
- B. Heat water to 70°C (**phase II**).
- C. Pour phase I into phase II – mix with high shear mixer (such as Turrax or Silverson) until the temperature drops between 50-55 °C.
- D. Continue mixing with blade paddle mixer, anchor mixer or fence like blades in the range 50-30 °C.
- E. Finish emulsification with high shear mixer when temperature is under 30°; this step is very important and normal mixing time is 15-25 min. The time can be different depending on the type of high shear mixer and the volume of the emulsion.

### 2. ONE POT METHOD (suitable for heat unstable ingredients)

This method allows you to manage the emulsification process much more quickly and easily. It is a process with which it is possible to obtain glossy, brilliant and stable creams, it does not require a separate tank for the melting of fats and waxes.

- A. In the main vessel with water and other water soluble heat stable ingredients, heat the solution at 80-85 °C disperse **Olivatis® 18**, and other waxes, if required, (e.g Ceteryl alcohol , cetyl palmitate) into hot water, waxes will emulsify immediately (phase I)
- B. With the phase I at 80-85°C start high shear mixer and add other oils, mix with high shear mixer and cool down
- C. Once the temperature is suitable, add any thermolabile ingredients and make pH correction



## ADDITIVES AND STABILIZATION OF EMULSIONS

Although **Olivatis® 18** gives stable emulsions, it is difficult to predict the stability of the infinite possibility of formulas that can be developed. For this reason, a short guide is presented below to solve any problems that may arise especially in the most challenging stability tests (for example 45 °C for 3 months)

### LONG CHAIN FATTY ALCOHOLS (CETEARYL ALCOHOL, CETYL ALCOHOL, BEHENYL ALCOHOL)

- Increase viscosity and stability at high temperature.
- Concentration of use 0.8-1,5%.
- Fatty alcohols can be added into the oil phase. The use of fatty alcohols is recommended for high viscosity products.

### GLYCERYL MONOSTEARATE

- Increase of viscosity.
- Good stability increase at high temperature.
- % of use 1-1,5%.
- It should be added to the oil phase and melted with **Olivatis® 18** and other fats.

### SYNTHETIC WAXES (E.G. CETYL PALMITATE HYDROGENATED CASTOR OIL)

- Good stability increase at high temperature.
- Concentration of use 1-2%.
- These products should be added to the oil phase and melted with **Olivatis® 18** and other fats.

### RHEOLOGICAL MODIFIERS (XANTHAN GUM, HYDROXYPROPYL GUAR, **CARBOMED 940 EZ**)

- Concentrations of use 0,3-0,4.
- High increase of stability especially in freeze thawing cycles and at high temperature.
- These products should be added in water phase and swelled before emulsification.
- The use of **Carbomed 940 EZ** (0.4-0.5%) allows to reduce the amount of **Olivatis® 18** needed, as low as 2% of **Olivatis® 18** can give good results with 15% of oils, forming excellent creams. It is recommended to disperse **Carbomed 940 EZ** in water before heating and proceed with emulsification.

## INCOMPATIBILITIES

Although some quaternary ammonium compounds (such as Polyquaternium-7 and Betaine ) are compatible, due to the anionic nature of **Olivatis® 18** , quaternary ammonium compounds are not normally compatible.

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