



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.



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. DIRECT METHOD (the most commonly used)

- A. Mix oils and long chain alcohols with **Olivatis® 18** and heat to 70°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. INDIRECT METHOD (suitable for heat unstable ingredients)

- A. Mix oils and heat to 50 °C (**phase I**).
- B. Heat water at 70 °C and disperse **Olivatis® 18** into water (**phase II**). Cool at 50 °C.
- C. Pour phase I into phase II – mix with high shear mixer (such as Turrax or Silverson) until the temperature drops under 45 °C.
- D. Continue mixing with blade paddle mixer, anchor mixer or fence like blades in the range 45-30 °C.
- E. Finish emulsification with high shear mixer when temperature is under 30 °C; 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.





EFFECT OF ADDITIVES

- Long chain fatty alcohols (cetearyl alcohol, cetyl alcohol, behenyl alcohol): increase viscosity and stability - % of use 1-1,5%. Fatty alcohols can be added into the oil phase. The use of fatty alcohol is recommended for high viscosity products.
- Glyceryl monostearate: increase of viscosity, good increase of stability (% of use 1-1,5%)
- Synthetic waxes (e.g. cetyl palmitate) – slight effect on stability at RT, slight effect on viscosity, good stability increasing effect at high temperature stability (% of use 1-2%)
- Rheological modifiers: xanthan gum, hydroxypropyl guar, **Carbomed 940 EZ**. Concentrations of use 0,1-0,2. Slight increase of viscosity, high increase of stability especially in freeze thawing cycles. These products can be added prior to emulsification or during emulsification. If they are added during emulsification, they should be pre-dispersed in a suitable solvent, (for example, xanthan gum can be dispersed in phenoxyethanol or Euxyl PE9010) before the addition, avoiding the formation of lumps.
- 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 direct method of emulsification.

INCOMPATIBILITIES

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

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