



Olivatis® 12C

Applicative guidelines

INTRODUCTION

Olivatis® 12C is a W/O emulsifier for hot and cold-process applications. **Olivatis® 12C** is suitable for emulsions containing up to 75% water. As viscosity of emulsions is inversely proportional to the concentration of oils, increasing the concentration of oils, the viscosity decreases; if more than 25% of oils is required, the addition of a wax (e.g. cetyl palmitate, beeswax, hydrogenated oils) can increase viscosity. Water dispersible gums have little or no effect on the viscosity of W/O emulsions.

ADVANTAGES OF Olivatis® 12C IN W/O EMULSIONS

- Better preservation (water phase is isolated from the environment).
- No need of a co-emulsifier.
- Greater moisturization of skin.
- High water resistance (remarkable for sunscreens and waterproof foundations).
- Possibility of incorporating high amounts of electrolytes, glycols or glycerin.
- No tackiness.
- Good dispersion of powders.

EMULSIFICATION PROCEDURE

Olivatis® 12C is suitable for hot and cold-process.

These hints should be followed when using **Olivatis® 12C**:

- Water phase must contain all water-soluble ingredients, it is not possible to add water-soluble ingredients at the end.
- Water phase must be added slowly.
- pH cannot be adjusted at the end of the process, it is necessary to adjust it before the formation of the emulsion.
- Emulsification process must be carried out at a temperature such that all the fats present are liquid. We always recommend operating above melting temperature of the fats and in any case at least 20 °C, in order to prevent instability due to poor homogenization.



1. COLD PROCESS

- Disperse oils with **Olivatis® 12C (phase I)**
- Dissolve water soluble ingredients in water (**phase II**) (check and adjust pH before mixing).
- Under high-shear stirring, add very slowly the phase II to the phase I until the phase II is finished; the viscosity of the emulsion will increase during the addition of phase II.

2. HOT PROCESS

- Disperse oils with **Olivatis® 12C (phase I)**. Heat and melt.
- Dissolve water soluble ingredients in water (**phase II**). (Check and adjust pH at room temperature before mixing). Heat at the same temperature of phase I.
- Under high-shear stirring add phase II to phase I very slowly. Viscosity of the emulsion will increase during the addition of phase II.

REQUIRED CONCENTRATION

Usually, better results are achieved at 2,5 - 3,5 % of **Olivatis® 12C**. Percentage can be varied depending on the nature and amount of oils

STABILIZATION OF EMULSIONS

Emulsions can be stabilized with:

1. **Electrolytes:** Magnesium Sulfate 0,5 -1,5 % is usually the best choice.
2. **Glycerin and glycols, 2% or more:** as both glycerin and glycols stabilize W/O emulsions, they can be used even in large concentrations.
3. **Addition of 0,75 - 1,25 % of Magnesium Stearate** to the oil phase increases stability in every condition. In this case make sure that water phase pH is below 7,0.
4. **Addition of waxes** (e.g. Hydrogenated Castor Oil at 0,3-1,0%) increases stability, especially at high temperatures

Usually, increasing the amount of glycols, emulsions become thicker and, therefore, the use of waxes is not strictly necessary.

USE WITH POWDERS

Hydrophobic powders (e.g. coated TiO₂) should be added to the oil phase while it is recommended to incorporate hydrophilic powders after dispersion in the water phase.



USE WITH SILICONES

Concerning emulsions containing silicones, if these are mixed with esters or oils it is suggested a ratio silicones/esters-oils up to 50%. It is possible to follow the procedures as described above. The addition of siliconic oils usually increases the viscosity of emulsions, therefore the homogenization may take a longer time.

INCOMPATIBILITIES

Olivatis® 12C has no incompatibility except with substances with O/W emulsifying properties, such as Cetrimonium Chloride. The use of these substances must be checked as it can destroy the emulsion structure.

PRESERVATION

It is recommended to add preservatives to the water phase before emulsification. If added after emulsification, preservatives can be less effective. As the water phase is isolated from the environment, there is a lower risk of contamination from molds and other aerobic organisms.

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