

## Resplanta®: Cosmetic Water Soluble Oils

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### Abstract

Given the ongoing trend towards more ecological products and solutions, cosmetic manufacturers are today turning increasingly to materials of natural vegetal origin. Having previously shown a preference for synthetic oils, these companies are now focusing their attentions on natural oils and oil derivatives. Using vegetal oils in oily based products and emulsion formulations is relatively easy but formulating water based products can be more difficult. For this reason, we have developed an exclusive trans-esterification production process that successfully produces water soluble derivatives that maintain the odour, colour and functionality of the original oils: the Resplanta® line.

### Vegetal oils in cosmetics

Despite the fact that modern chemistry offers to the cosmetologist sophisticated vegetal triglycerides, lipids always play an important role in the formulation of many cosmetic products. Their use is historical: man began to use them in ancient times just as nature made them available. They were used to beautify, protect and look after oneself long before cosmetics transformed them into oleolytes, creams, milks, lotions and detergents.

In modern times, vegetal oils are used due to their functional properties and total skin tolerance. They are added into cosmetics because of their different characteristics: nutritional, emollient, moisturising, conditioning, restoring, filtering and protective.

The use of vegetal oils in oily based products is not difficult. The miscibility of these oils between themselves and with other lipophilic substances normally used in cosmetics is almost always complete and they can be added without any problems to the fatty phase of an emulsion. Stable emulsions of high cosmetic grade can be formulated by choosing the suitable emulsifier.

However, cosmetologists face difficulty when they have to formulate cosmetic cleansers containing vegetal oils. Their presence gives rise to problems of solubilisation, which in many

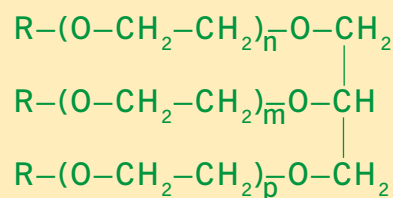
cases discourages the use of adequate quantities of oil to perform the expected functional activity. The solubilisers used to solve this problem, added in the quantity required to obtain a clear and transparent product, negatively affect the viscosity, the foaming and the clouding point of formulations. The inclusion of vegetal oils in an aqueous environment also gives rise to problems of their oxidation.

### The Resplanta® water soluble oils

We have developed a new series of products called Resplanta®, made of vegetal oils, transformed into water soluble/dispersible oils through an exclusive trans-esterification process, which replaces a portion of the glycerin in the triglycerides fraction of the starting oil with an ethoxylated vegetal glycerin.

This process, run under vacuum in a nitrogen atmosphere, produces stable products that are clear and transparent in appearance, with very low acidity and with the physical characteristics, such as form, greasiness, colour, smell and viscosity typical of the starting oil.

The general structure formula of the Resplanta® series is the following:



where: R = H-, R'COO- (R' stands for the fatty acids of the starting vegetal oils) and (n+m+p) has an average value of 8.

So our manufacturing process is different from the direct condensation of ethylene oxide, (which is normally used to produce emulsifiers based on vegetal oils) and gives the following advantages: