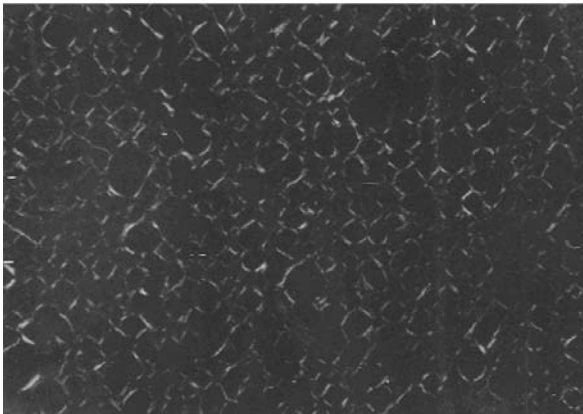


REINOLDERM OLV7

In the last few years many raw materials came up providing cosmetic formulators with a lot of good alternatives. Unfortunately these new products do not always combine safety and treating properties. In fact safe cosmetic needs safe raw materials free from any risk for human health. According to this strong market request, PROGRESSUS has been for many years involved in the research of vegetable extraction substances, each one selected and produced with its own know-how. By esterification of olive fatty acids, we got a new mild emulsifier that is a functional emulsifying system allowing an easy formulation of stable emulsions with a pleasant touch, moisturising properties nice spreadability.

REINOLDERM OLV7 works by forming liquid crystals in emulsions. In fact it places itself at the interfaces of a two phases system in a preferential direction, with the polar head into the aqueous phase and the apolar tail into the lipidic one. The post- micellar organisation of **REINOLDERM OLV7** in water is the typical structure of a liquid crystal reticule, where the bilayer micelles create a multilayer lamellar formation.



At 250 magnifications emulsion made by **REINOLDERM OLV7** appears structured in organised lamellar/hexagonal phases.

The theory of stabilisation of emulsions through the formation of liquid crystals is different from the HLB theory, or from the Schulman's couple for it does not need any contrasting emulsifier, which normally has the function to thicken and stabilise the formulation. The stabilisation is now offered by the reticular structure, and the nature

of the lipids involved is now less important because both the polarity and the hydrophilic part does not modify the reticular structure of liquid crystals.

The new trend for cosmetic products is now to create emulsions through a reticular structure which is formed directly into the aqueous phase: one possibility is to use hydrosolvatable polymers, and the other is to employ new peculiar emulsifiers forming a particular reticular structure in which liquid crystals are regularly oriented into the aqueous phase. This completely new conception substitutes the old idea of waxy bodies and consistency factors that were added to the lipidic phase of the emulsion in order to make it both stable and viscous. According to the new trend for cosmetics, in fact, creams now have to be light, not heavy nor sticky.

REINOLDERM OLV7 belongs to this new emulsifying concept of a reticular structure where any kind of lipids, polar or not polar, can be easily included with no differences. The final crystalline structure depends on both the speed of cooling down and on the nature of the compounds that have to be emulsified. Therefore a large amount of different lipids, such as oils, aliphatic hydrocarbons, waxes and glycerides, can be encapsulated without lowering the original melting point of the wax.

The enclosed lipids are strongly protected towards oxidation by the network of the reticular structure. Vitamins, antioxidants, phospholipids and other active principles that are usually incompatible with the other compounds, can be easily included into the liquid crystal phase since the contact at the interfaces is very low.

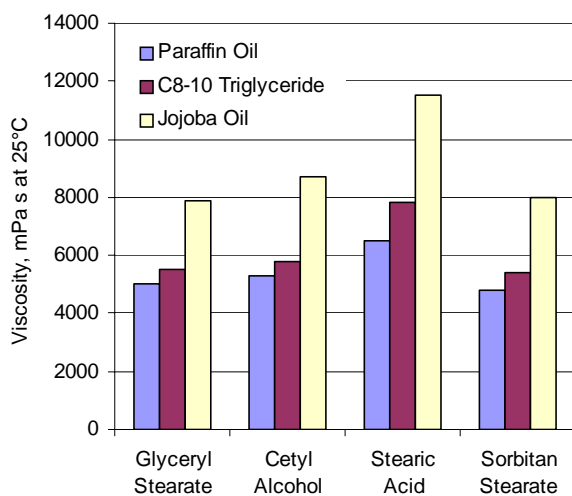
A typical peculiarity of **REINOLDERM OLV7** is the capacity to form jellied lamellar liquid crystal phases that contribute to increase the stability of the system. An additional amount of solid lipids gives consistency to the emulsion, but it is not fundamental in such a reticular structure.

The two major facts related to liquid crystal **REINOLDERM OLV7** emulsifying system are:

- viscosity' s stability changing lipidic phase
- high hydration power

1% of a consistency factor was included into three different formulations. The emulsions contain 10% of and 15% of different oils: mineral oil for **REINOLDERM OLV7**, the first one, C8-C10 triglyceride the second one, and Jojoba Oil for the third one. The tested consistency factors are: glycerylmonostearate, cetyl alcohol, stearic acid and sorbitan monostearate.

In the following graphic we represent the value of viscosity of the different emulsions.



The best results have been obtained using lipids with an intermediate polarity value. The emulsions formulated with such lipids, in fact, are the most agreeable and stable.

The viscosity of emulsions formulated using 10% of **REINOLDERM OLV7** and different percentages of lipids with intermediate polarity (10, 15 and 20%) is reported in the following graphic. If the emulsifier is used at a percentage of 7%, different consistency factors do not sensibly change the viscosity of emulsions; this happens because the liquid crystal network is regularly formed using **REINOLDERM OLV7** at a percentage of 7%. If the percentage is lower, the influence of consistency factors increases and the viscosity is affected by the nature and the presence of these factors. Lipids with an intermediate or a low polarity value (such as hydrocarbons, ethers and esters) work well at any **REINOLDERM OLV7** percentage.

If lipids with high polarity values are involved, on the contrary, the system results quite fluid when **REINOLDERM OLV7** is used at

percentages lower than 7%. In these formulation a favourable effect is the one promoted by hydrophilic additives in the aqueous phase: in fact they are able to stabilise the watery phase. If the amount of the emulsifier is enough in order to form the crystal reticule, the hydrophilic additives are no more important for the stabilisation is guaranteed by the reticular structure.

The liquid crystals that are placed at the oil/water interfaces perform as stabilising agents since they give stability and reduce the fluctuations of the compounds at the interfaces through the formation of a viscoelastic reticular gel.

The problem of stability is now a very important matter in case of macroemulsions, which are the most common cosmetic form. The formation of stratified lamellar structures has the peculiarity to keep the aqueous phase of the emulsion inside the layers, and this gives the emulsion a very high hydrating power. It is very important to profit by this peculiarity in order to obtain short and long time hydration in cosmetic formulations.

For such reasons, emulsions formulated with **REINOLDERM OLV7** appear very shiny and light and have an original, fresh and silky touch even if they contain high percentages of lipids.

REINOLDERM OLV7 has a very high affinity towards skin, in comparison to traditional synthetic emulsifiers. In particular, it helps to:

- moisture skin with light creams.
- Increase skin elasticity.
- Increase skin hydration both at short and long term.
- Improve absorption of active principles through the pores of the skin.
- Create 'oil free' formulations.

These characteristics make **REINOLDERM OLV7** recommendable for use in:

- day creams and daily use emulsions.
- Cleansing and hydrating lotions.
- Fluid body lotions.
- Sunscreen and after sun products.

- Emollient hand creams.
- Oil free cleansing lotions.

TOXICITY

REINOLDERM OLV7, such as all REINOL products, has not been tested on animals. It has been tested 'in vitro' and on human skin. Results show that it can be classified as **not irritant** and its use in cosmetic formulations is absolutely safe.

BIODEGRADABILITY

The determination of biodegradability has been made according to the CEE regulation N.82/242.

REINOLDERM OLV7 is biodegradable over 90% (OECD method).

The following formulations give same general directions for the employment of **REINOLDERM OLV7**.

Although they have been realised according to best information we owe, this does not exonerate the user from verifying their validity. REINOL is at the user's disposal in order to contribute to the development of new formulations, and to give the needful information for a correct use of our products.

Moisturizing cream

REINOLDERM OLV7	6.00
Wheat Germ Oil	5.00
Caprylic/capric Triglyceride	3.00
C12-15 Alkyl Benzoate	2,50
Shea Butter	2.00
Stearic Acid	2.00
Vitamin A Palmitate	1.50
Water	up to 100
NMF	3.50
D-Panthenol	1.00
Perfume and preservatives	q.s.

Cleansing milk

Paraffinum Liquidum	9.00
REINOLDERM OLV7	4.00
Hydrogenated Polydecene	2.00
Lanolin	1.50

Glyceryl Stearate	1.00
Water	up to 100
Glycerin	5.00
Perfume and preservatives	q.s.

Hand cream

REINOLDERM OLV7	7.00
Jojoba Oil	4.50
Hydrogenated Lanolin	2.50
Isopropyl Myristate	1.50

Water	up to 100
Glycerin	4.50
Allantoin	0.20
Perfume and preservatives	q.s.

Anti-aging lotion

Rice Bran Oil	6.00
REINOLDERM OLV7	5.00
Hydrogenated Polydecene	3.00
Tocopheryl Acetate	1.30
Glyceryl Stearate	1.00
Olive Oil Unsaponifiables	1.00

Water	up to 100
Glycerin	2.00
Resveratrol	0,70
Perfume and preservatives	q.s.

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