

RITAMULSE

*A complete, balanced, all-natural emulsifier
blend for o/w emulsions.*

~ Acyl Lactylates ~

The acyl lactylates have been shown to be dermatologically innocuous and non-irritating to the eyes. Both fatty acids and lactic acid are natural constituents found in the skin. They are the constituents of natural moisturizing factor (NMF). The substantivity of the acyl lactylates makes these compounds excellent conditioners in hair products and provides a silky, soft, talc-like feel in skin care products.

A study by V.M. Deshpande¹ compared the acyl lactylates to numerous other well-known humectants and independently proved their efficacy at 90%, 79%, 59% and 20% R.H. environments. The acyl lactylates performed very well and were superior to most other humectants in low relative humidity environments.

The acyl lactylates do not pick up water as rapidly as other humectants like glycerin and propylene glycol. However, in conditions of low humidity, they tend to hold on to moisture more tenaciously, and they will not be as likely to pull moisture from lower layers of the skin. They hold the moisture level well and slow the rate of evaporation from the skin's surface. Other well known humectants like glycerin, propylene glycol and sodium PCA exhibit no bonding potential to the skin and are easily washed off. The acyl lactylates are substantive to both the skin and hair and will act as excellent humectants. As previously noted, sodium salt, sodium lactate, fatty acids and lactic acid are all naturally found in the NMF, effectively contributing to moisturization of the skin. The acyl lactylates are unique in that their decomposition products (fatty acids, lactic acid and sodium lactate) are all naturally found in the NMF.

Acyl lactylates have good skin moisturization potential. This premise has been further proven in a recent study² conducted by RITA Corporation at an independent laboratory.

At full strength (100% active), calcium stearyl lactylate (CSL) and sodium stearyl lactylate (SSL) showed no primary skin or eye irritation when tested. RITA Corporation sponsored several studies on the mildness³ and eye sting / irritation⁴ of acyl lactylates. Formulations were submitted in the field of shampoos, facial cleansers and hand scrubs. These formulations have performed well because of the low sting, low irritation characteristics and excellent after-feel.

~ Ritamulse Applications Summary ~

The acyl lactylates are surface active emulsifying agents which are used in many cosmetic creams and lotions. They can be viscosity enhancers and emulsion stabilizers. Their substantive properties and water holding capabilities make them excellent moisturizers. Their lactic acid and fatty acid components are both found in the skin's natural moisturizing factor (NMF). Their mildness and low eye sting properties make them excellent ingredients for facial care products. These multi-functional raw materials can be applied to the following skin care applications:

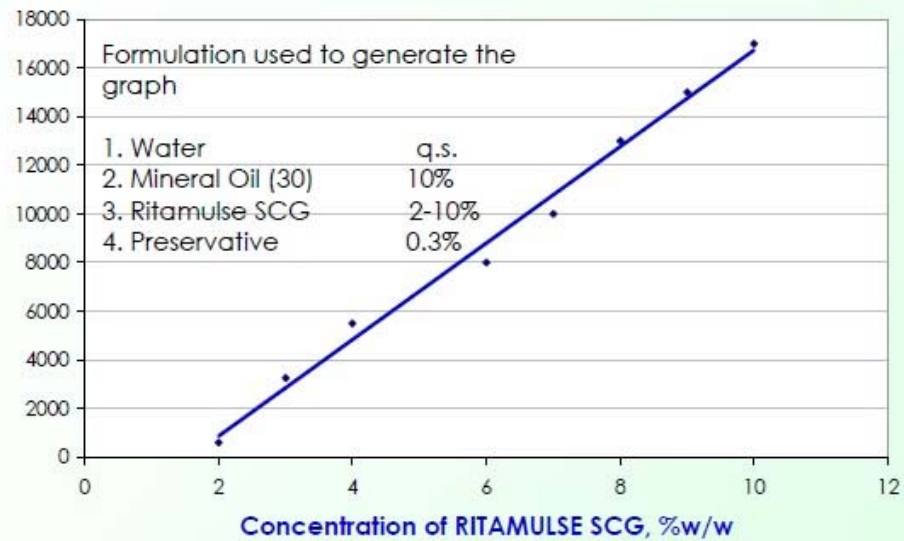
- Hand and body creams and lotions
- Cleansers and liquid soaps
- Night creams
- Anti-wrinkle creams
- Tanning oils
- Bath oils
- Lipsticks
- Moisturizers
- Bar soaps and syndets
- Baby lotions
- Barrier creams
- Suntan lotions
- Lip balms

Ritamulse is an emulsifier blend developed using the RITA Corporation's patented Lindex™ System. The Lindex™ System is used to assist formulators in incorporating the acyl lactylates into stable emulsions⁵⁻⁹.

The Lindex™ System features the following benefits:

- Minimizes the formulation bench time
- Optimization of emulsifier level, determined by a proven method for predicting stability
- A unique, enhanced skin feel typical of the naturally derived acyl lactylates
- Predictable control of final product viscosity
- Elimination of potentially irritating and otherwise undesirable surfactants

Viscosity vs Concentration



- ❖ Recommended use level: 2 - 10%, depending on desired viscosity
- ❖ Capable of emulsifying up to 25% of oils
- ❖ pH 5 - 7.5
- ❖ Contains only plant derived ingredients

~ References ~

1. Deshpande, V.A., Ward, J.B., Kennon, L., Cutie, A.J., "Potential New Skin Care Humectants: an Evaluation", *Cosmetic Technology*, p. 20-30, September 1980.
2. Stephens & Associates Report, C95-0119, "Biophysical Testing of Hand and Body Lotions for RITA Corporation", October 26, 1995.
3. Hilltop Research, Inc., Report 91-6009-76, "The Comparison of Skin Cleansing Products Using the Soap Induced Dryness Test for RITA Corporation", April 19, 1991.
4. AMA Laboratories Report WPCL 891/ESP 3952. RITA Corporation, "Evaluation of Eye Stinging Properties of a Shampoo", December 12, 1989.
5. Lactylate Lindex™, RITA Corporation, 1997.
6. "Acyl Lactylate Index; Predicting the Performance of Acyl Lactylates in Oil-in-Water System," Cook, James. Reprint from October 1997, *Cosmetics & Toiletries* magazine, Vol. 112, No. 10, p. 69.
7. "Influence of Acyl Lactylates on the Foam Character Produced by Cocoamidopropyl Betaines and Alkylpolyglucosides", Cook, James. Reprint from April 2000, *Cosmetics & Toiletries* magazine.
8. "Use of the Lactylate Index (Lindex™) for Oil/Water Emulsions, Cook, James.
9. "Acyl Lactylates - Applications for a Multi-Functional Group of Alpha Hydroxy Acid Derivatives", Cook, James, Reprint from 1996, *Cosmetics & Toiletries* magazine.