Cosmacol® ELI – A Multifunctional Additive for Rinse-off Products

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Abstract

This article illustrates the multi functionality of the lactic acid carrier named Cosmacol® ELI (INCI-name: C12-13 Alkyl Lactate) in rinse-off products. This material is mild to the skin, exhibits superior skin re-fatting action and thickens Sodium Alkylethersulphate based formulations. Furthermore, it affects neither foaming ability nor foam stability and enables the creation of transparent rinse-off products with very low clear melting points.

Introduction

The most widely used base surfactants in rinse-off products such as shower gels, liquid soaps, shampoos and bath foams are Sodium Alkylethersulphates (SLES) because of their high foaming power, high cleansing action, insensitivity to water hardness and high cost/performance ratio. Due to their moderate skin irritation potential and to obtain a finer bubbled and dense foam, SLES are often used in combination with Cocamidopropyl Betaine (CB).

Nowadays, consumer expectations exceed by far the proper cleansing action of rinse-off products which is given by the presence of surfactants. Additional features such as skin mildness and re-fatting action are expected. These features can be combined by using Cosmacol® ELI which is a lactic acid carrier. In addition Cosmacol® ELI thickens SLES and combinations of SLES with CB, resulting in lowering the amounts of NaCl required to obtain the appropriate viscosities relevant for rinse-off products. The presence of Cosmacol® ELI does not affect the foaming power and allows the production of rinse-off products which are transparent even at low temperatures.

This article shows the findings of various tests done to demonstrate the given features of Cosmacol® ELI.

Cosmacol® ELI

Cosmacol® ELI is a clear liquid ester of the α-hydroxy acid lactic acid. The alcohol component is a mono branched primary $C_{12/13}$-alcohol. Its INCI-name is C12-13 Alkyl Lactate. The chemical formula is given in Figure 1.

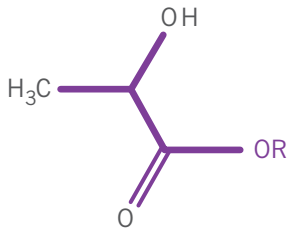

Figure 1. Chemical Formula of Cosmacol® ELI

Tests and Results

Skin Mildness

To evaluate the effect of Cosmacol® ELI on the acute skin irritation of SLES, a patch test was carried out. Sodium Laureth (2 EO) sulphate was used as SLES in a concentration of 3.5% active matter (reference). Benchmarks were blends of SLES (3.5% active matter) with CB (0.77% active matter), Alkylpolyglucoside (AP; 0.77% active matter) respectively and 0.27% Cosmacol® ELI.

Each sample was tested on 20 Caucasian males and females, aged between 18 and 53 years. Finn chambers with 50 mm^2 were used. The quantity of the samples was 20 ml each. Two areas (forearm or back) were used for each sample. The test period was 48 hours. The skin irritation was assessed by experts using the following scoring system:

- No effect: 0-10
- Slight effect: 10-30
- Medium effect: 30-50
- Strong effect: 50-80
- Severe effect: > 80

Figure 2 shows the results, demonstrating that the presence of 0.27% Cosmacol® ELI has the same effect on reducing the skin irritation of SLES as either 0.77% CB or the same quantity of AP. Therefore, Cosmacol® ELI is a more efficient material for reducing the acute skin irritation of SLES than CB or AP.