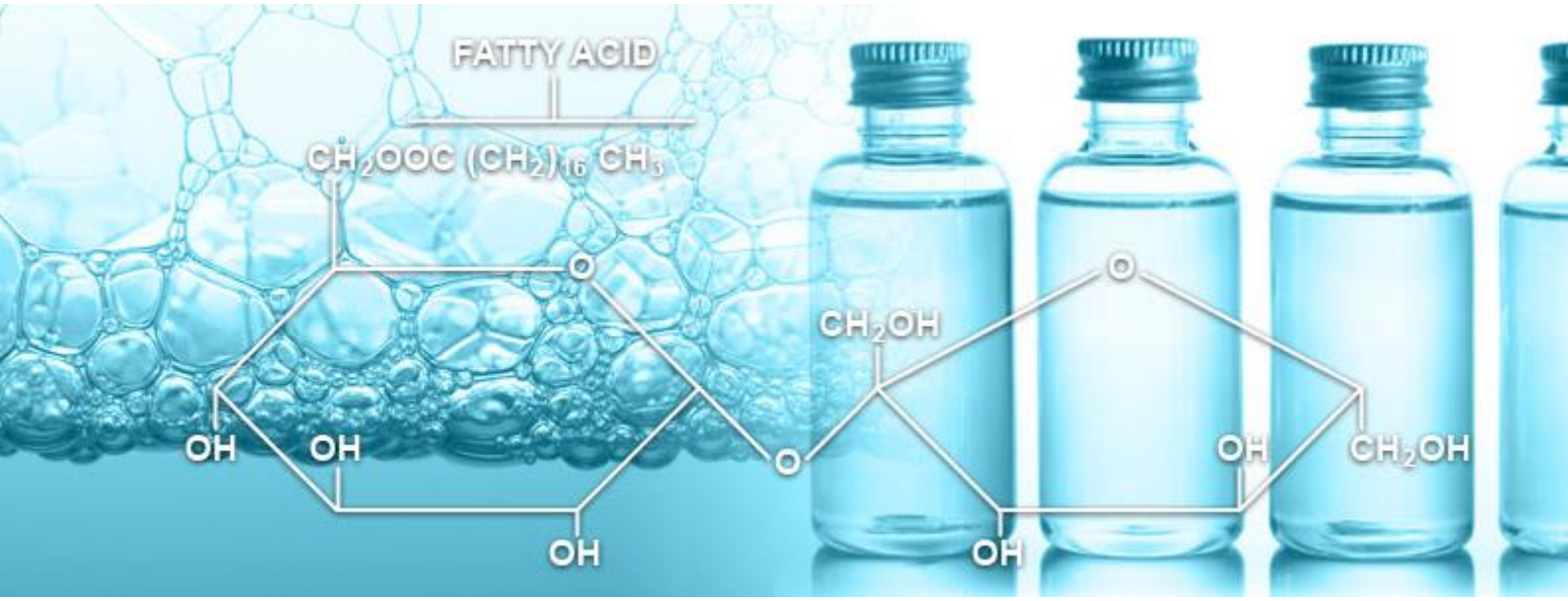
SISTERNA®

For know-how in sucrose ester techniques

Sucrose esters in mild cleansing concepts



EXPERIENCE OUR EXPERTISE!

Introduction

Sisterna B.V.is a young and flexible organisation that is solely active in the promotion and sales of Sisterna® sucrose esters. Furthermore Sisterna has developed countless proven and innovative applications of these natural and multifunctional emulsifiers for the cosmetic industry.

Sisterna® sucrose esters are based on sucrose and vegetable fatty acids and are a unique range of high quality, non-ionic emulsifiers and surfactants with an exceptional performance and mildness to the skin.

Sisterna has developed various interesting concepts, such as a mild cleansing concept, the subject of this paper.

Sisterna's exclusive distributor network ensures the availability and technological knowhow of sucrose esters in personal care applications in the Western Hemisphere.

Summary
Most body and hair cleansing formulations consist of blends of traditional foaming anionic and amphoteric surfactants, to which non-ionic surfactants are added to improve skin mildness. More complex formulation types, such as 2 in 1 cleansing formulations, exist as well. An oil phase is emulsified into the cleansing formulations to make them more mild and caring to the skin. The interesting surfactant and emulsifying properties of Sisterna® sucrose esters make them excellent candidates for these types of products.

Benefits in mild cleansing systems

- Reduce the irritation properties of anionic surfactants.
- Considerably improve the sensorial properties of the formulations, in terms of skin feel and skin mildness.
- Emulsify lipids into the cleansing formulation
- Contribute to the conditioning effect in shampoo and specialised conditioners.
- Increase viscosity at lower electrolyte concentrations.

Sisterna sucrose esters for mild cleansing

Sisterna sucrose esters are non-ionic and EO-free surfactants and their interesting and innovative properties in mild cleansing formulations makes them excellent candidates for this type of products. Especially Sisterna L70-C is recommended for its good foaming properties and suitability for use in transparent formulations.

Advised products

- Sisterna L70-C
  - INCI: Aqua (and) Sucrose Laurate (and) Alcohol
  - 40% hydro-alcoholic solution
  - Liquid, easy to use
  - Only grade suitable for **transparent** systems
  - Best foaming properties
- Alternatively Sisterna PS750-C or Sisterna SP70-C for non-transparent systems
  - INCI Sisterna PS750-C: Sucrose Palmitate
  - INCI Sisterna SP70-C: Sucrose Stearate
  - Powder grades

Recommended use level

The addition level ranges from 2 to 5% or higher, depending upon the type of formulation.

Properties of Sisterna sucrose esters in mild cleansing systems

1. Irritation reduction

The capability to reduce the irritant properties of anionic surfactants is a major property of Sisterna® sucrose esters and it can be of great help when formulating mild cleansers or shampoos. This physiological property of sucrose esters is explained in our General Information brochure.

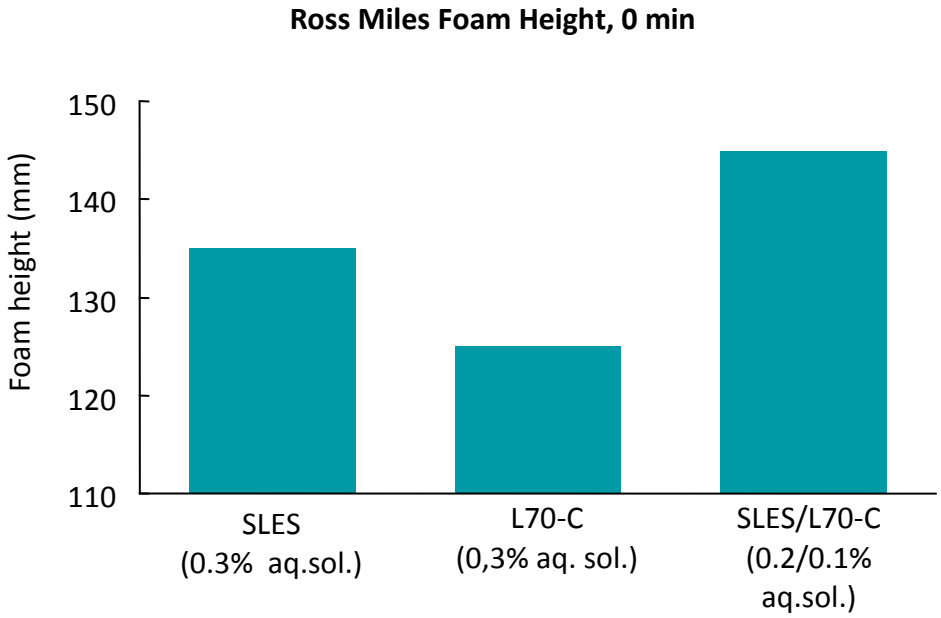
2. Improved skin-feel

When compared with formulations based on conventional surfactants, those containing Sisterna® sucrose esters show a considerable improvement in terms of skin tolerance and sensorial properties, such as a pleasant after-feel and skin smoothness.

3. Foaming properties

Although non-ionic surfactants improve mildness, it is known that many non-ionic surfactants have a negative influence on the foaming behaviour of cleansing formulations. The foaming capacity of Sisterna® sucrose esters increases with increasing mono-ester and decreasing alkyl-chain length of the fatty acid. Therefore the best foaming sucrose ester in our product range is Sisterna L70-C. The Ross-Miles foam test in fig.02 shows that Sisterna L70-C gives a slightly lower foam height compared to the well known anionic sodium laureth sulfate (SLES). When SLES is combined with Sisterna L70-C a higher foam height can be observed, moreover the foam structure will be more dense.

Fig. 1 Foaming effect of Sisterna L70-C in combination with SLES

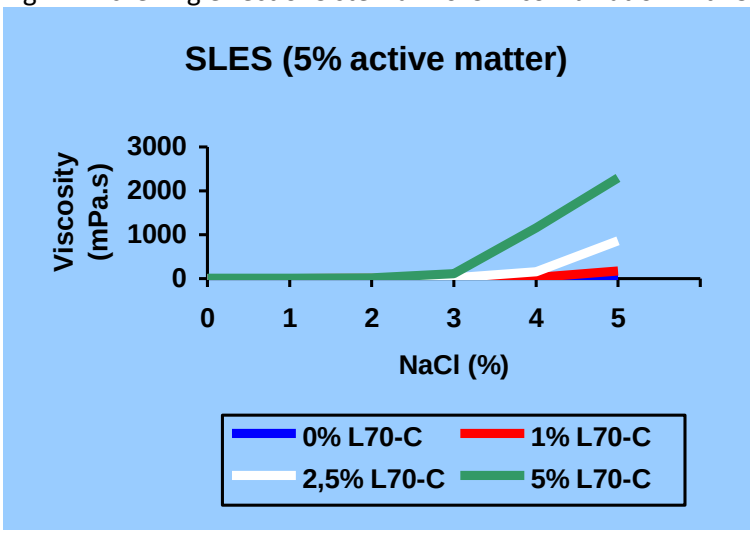


4. Thickening effect in presence of NaCl

The viscosity of detergent systems is often regulated by the addition of sodium chloride. The addition of Sisterna® sucrose esters has a considerable impact on the thickening properties of such systems. Laboratory work suggests the following conclusions:

- Sisterna® sucrose esters with a high mono-ester content, such as Sisterna L70-C, increase the viscosity of sodium chloride containing solutions of sodium laureth sulfate.
- The effect increases with increasing sucrose ester concentration, the greatest influence being measured at 3-4% NaCl concentration.

Fig. 2 Thickening effect of Sisterna L70-C in combination with SLES

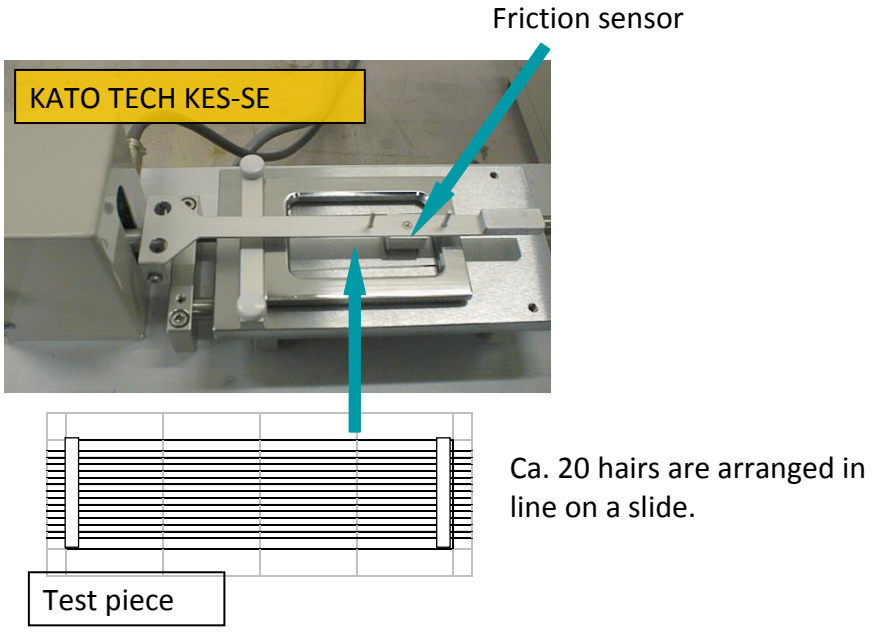


5. Additional conditioning effect

Conditioned hair feels smoother. By using a frictional analyzer (Kato Tech KES-SE), one can measure smoothness of hair in an objective way. With the apparatus an average friction coefficient (MIU) is determined by moving a friction sensor in cuticle direction over several treated or untreated hairs. The lower the MIU, the smoother the hair is.

A significant improvement in smoothness was found after washing the hair with a test shampoo containing 4% Sisterna L70-C, while this was not the case for the same shampoo without Sisterna L70-C. Also a separate sensorial test, performed with the test shampoo's, showed that the Sisterna L70-C containing shampoo was evaluated as smooth in comparison to the untreated hair and not smooth for the shampoo without Sisterna L70-C.
It can be concluded that Sisterna L70-C has an additional conditioning effect on the hair.

Fig. 3 Friction analyser Kato Tech KES-SE

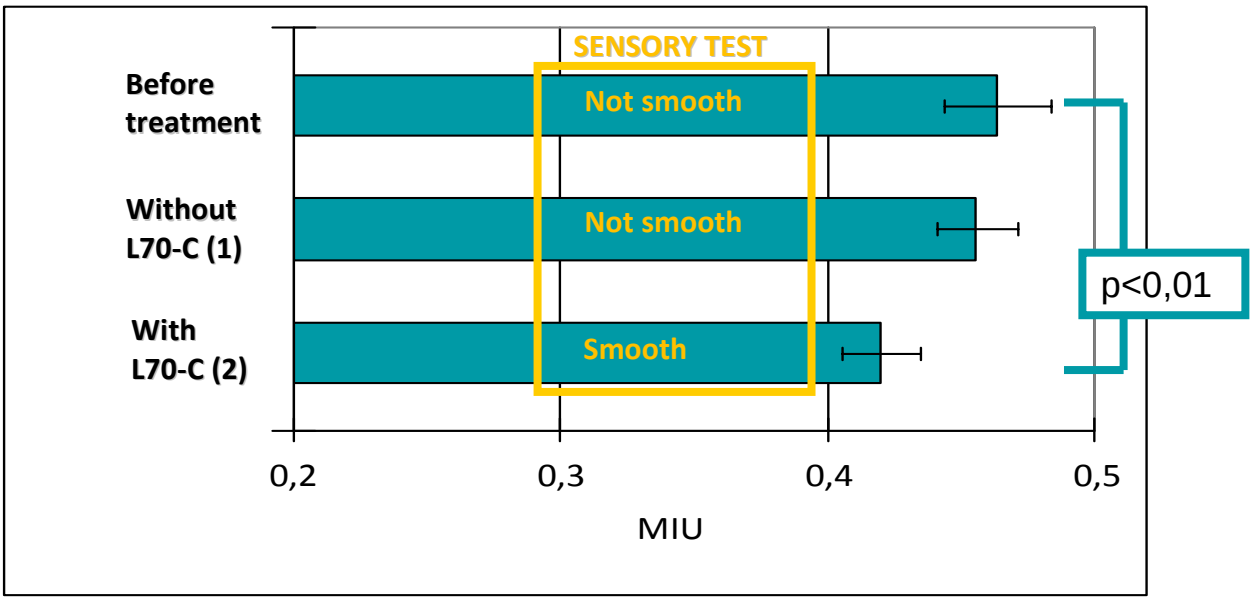


Shampoo test formulations

Ingredient	1	2
Sodium Laureth Sulfate (3EO) 28% sol.	32,0	32,0
Cocamidopropyl Betaine 30% sol.	15,0	15,0
Sisterna L70-C	**0,0**	**4,0**
Polyquaternium-10	0,3	0,3
Water	To 100	To 100
Viscosity @25degC (mPa.s)	200	750
pH	5,8	5,7
Appearance @ 0 to 40degC	transparent	transparent

Fig. 4 Results friction and sensory analysis

N=5, Mean +/- SD



Conclusion

Sucrose esters in cleansing formulations

- Sisterna L70-C is the recommended co-surfactant for transparent products and has the best foaming properties
- For opacified or pearlescing cleansers, also Sisterna PS750-C or Sisterna SP70-C are applicable, however the foaming performance may be lower

Use level
The addition level ranges from 2 to 5% or higher, depending upon the type of formulation.

While Sisterna L70-C, being a 40% hydro-alcoholic solution, is very easy to use because of its liquid form, interesting results and effects can be obtained also with other Sisterna® sucrose ester grades.

Contact
Send an e-mail to: info@sisterna.com or visit our website www.sisterna.com.

Sisterna B.V.
Belder 30A
4704 RK Roosendaal, The Netherlands
T+31 165524730