

Luxurious Lather



CrodasinicTM LS

Generating outstandingly rich, creamy lather, synonymous with quality and efficacy, the **Crodasinic LS** family of mild surfactants adds a touch of luxury to any cleansing system.



Crodasinic LS is a range of readily biodegradable, sulphate free surfactants and is now available without preservative or EDTA.

- Outstanding lathering, resistant to hard water and oily residues
- Mild, effective detergency
- Sulphate free and readily biodegradable
- Naturally substantive, giving a light conditioning effect
- Compatible with many cationic conditioning agents and germicides
- Preservative free and EDTA free grades available

Innovation you can build onTM

CRODA

Today's formulators enjoy a plethora of choice when it comes to mild surfactants. Many different chemistries can deliver cleansing formulations with very good skin compatibility, whether used alone or in combination with commodity anionic surfactants. With such an array of choices, it's easy to lose sight of the performance differences between different mild surfactant chemistries. However, new lathering assessment work now serves to remind the personal care market of the unparalleled lathering abilities of the Crodasinc LS range of surfactants.

Luxurious lather

Lathering and foaming are not the same thing. Many simple surfactants can deliver lots of foam, quantifiable by Ross-Miles foam height measurements. However, big foams can be easily broken and feel thin, fragile and transient in use. Lather, on the other hand, refers to rich, creamy foam made up of small, tight bubbles that delivers the luxurious cleansing experience that is so desirable to the consumer.

Lather quality is quantifiable by assessing drainage time according to a method pioneered by Hart and DeGeorge¹. Figure 1 demonstrates the superior lathering performance of the Crodasinc LS technology when compared to other commonly used mild surfactants.

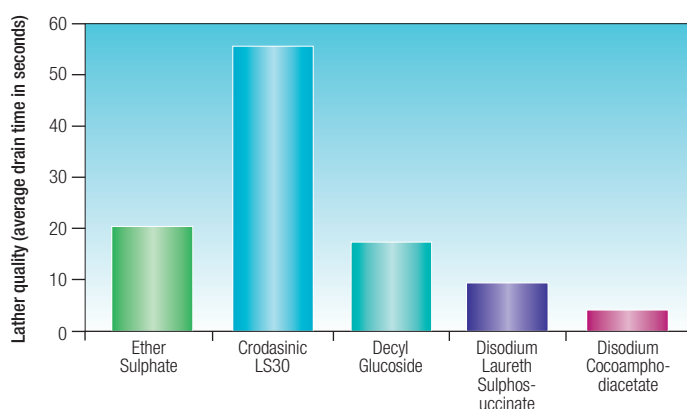


Figure 1: The results of lather quality assessments emphasise the outstanding capabilities of Crodasinc LS technology.

As shown in figure 2, maximum lather quality is achieved by using Crodasinc LS technology as a primary surfactant but Crodasinc LS surfactants can also be used as cosurfactants to dramatically enhance the lathering performance of commodity anionics.

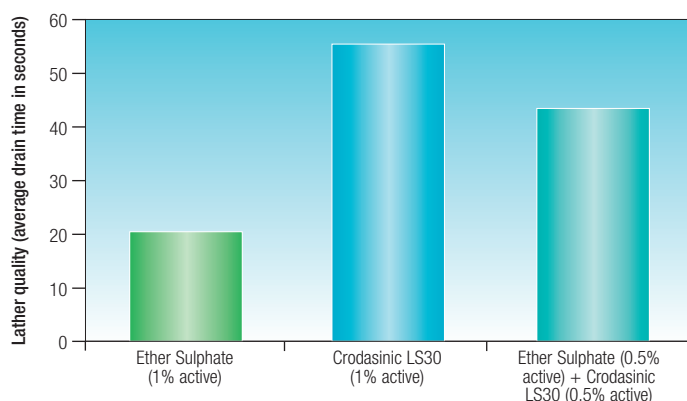


Figure 2: Superior lathering of Crodasinc LS30 as sole surfactant or co-surfactant

The lathering performance of Crodasinc LS chemistry has been shown to significantly outperform a number of commonly used mild surfactants. When these surfactants were blended with a commodity surfactant, Crodasinc LS once again showed superior lather quality, as demonstrated in figure 3.

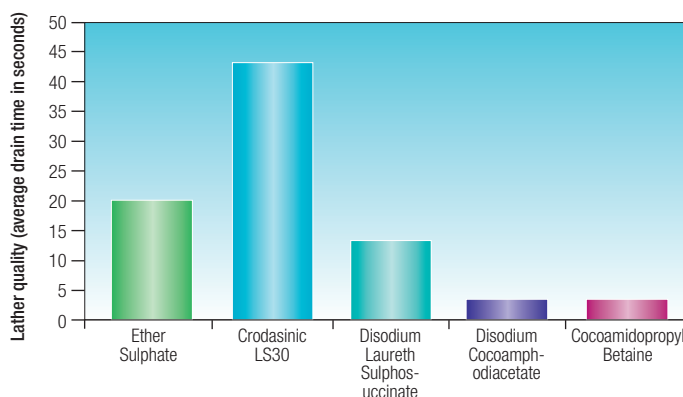


Figure 3: Superior lathering of Crodasinc LS30 as co-surfactant with ALES (50:50 blends)

It is easy to visually assess lather quality during execution of the Hart and DeGeorge method. Figure 4 shows a 'foam pillow' generated by Crodasinc LS30 whereas, in comparison, figure 5 clearly illustrates the inferior lathering properties of an Alkyl Polyglucoside.

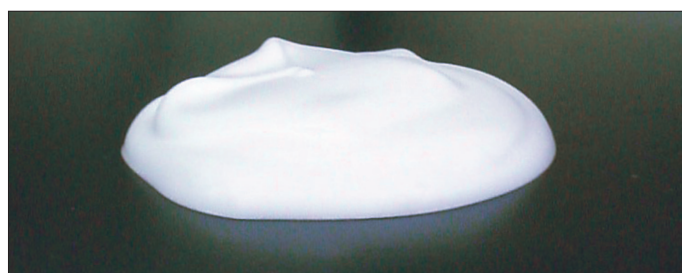


Figure 4 : Photograph of Crodasinc L lather



Figure 5 : Photograph of APG lather

The robustness of lather is of critical importance. It is one thing for a surfactant to achieve good lathering in pure, distilled water in the laboratory but quite another for a surfactant to continue to deliver its rich, creamy lather in hard water and/or in the presence of oils. During cleansing, oily conditions are encountered in the form of soils such as sebum and make-up residues (the presence of such soils being the likely driver for the cleansing activity!). Oils may also be introduced with the surfactant in the form of lipophilic emollients in the formulation (e.g. cocoa butter).

In studies in distilled water one other chemistry type, Sodium Lauroyl Glutamate, gives comparable lathering performance to the Crodasinc LS chemistry. However, as shown in figure 6, the glutamate lathering collapses in the more challenging conditions of the consumer environment: the presence of soil and of both soil and hard water. Crodasinc LS retains good lathering performance in the consumer environment.

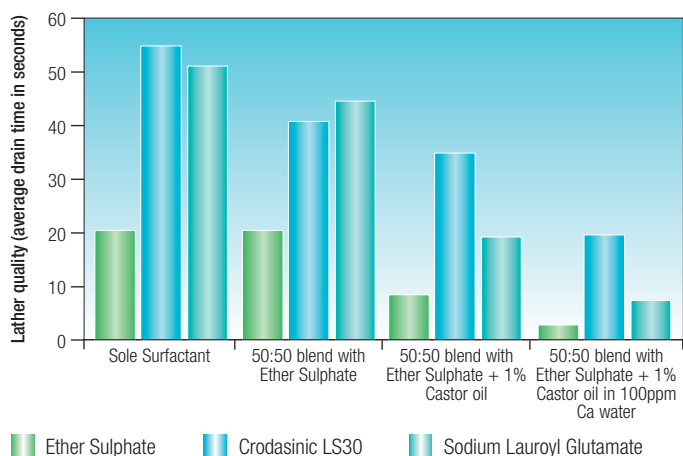


Figure 6: Robust lathering of Crodasinic LS30

Figures 7 and 8 illustrate the clear difference in lather quality between Crodasinic LS and Sodium Lauroyl Glutamate in co-surfactant blends with ALES in oily soil conditions.

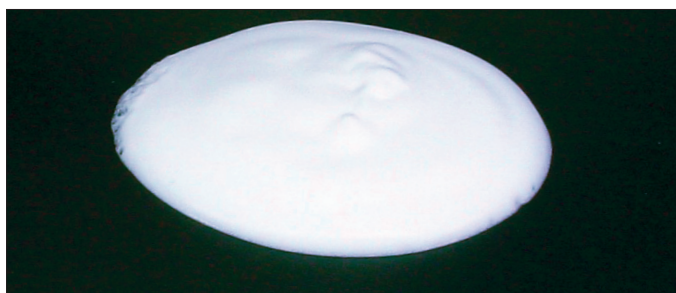


Figure 7: Photograph of lather of Crodasinic LS30/ALES blend with 1% soil

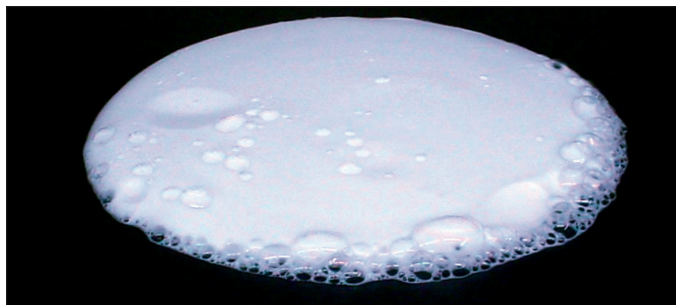


Figure 8: Photograph of lather of Sodium Lauroyl Glutamate/ALES blend with 1% soil

Few surfactants deliver really good lather. Croda have found no other surfactant that can deliver lather as rich and robust as the Crodasinic LS family.

Mild Detergency

The Crodasinic LS products have been known as safe and mild surfactants in the personal care market for many years and have found widespread use in applications including oral care, baby care and sensitive skin formulations.

In vitro studies using different endpoints (Neutral Red Uptake Bioassay (NRU), MTT assay) have proven that Crodasinic LS30 (Sodium Lauroyl Sarcosinate) is substantially milder than either Sodium Lauryl Sulphate or Sodium Lauryl Ether Sulphate. The comparative results of NRU tests are shown in figure 9.

Further investigations confirm the mildness and low toxicity of Sodium Lauroyl Sarcosinate and prove that it is able to decrease skin permeability and irritation caused by harsher surfactants².

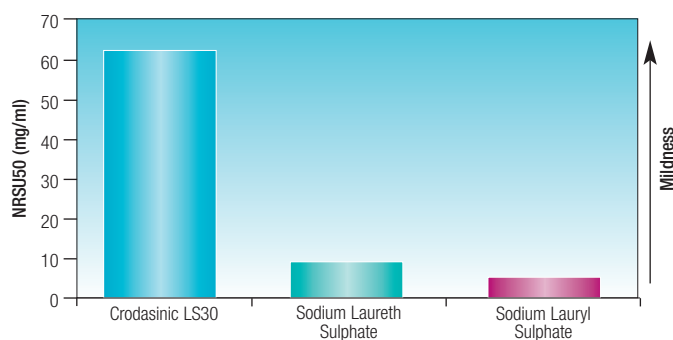


Figure 9: Greater mildness of Crodasinic LS30 compared with SLES and SLS

Substantivity

The intrinsic substantivity of Crodasinic LS salts means they can impart light conditioning benefits in detergent cleansing systems. Studies have demonstrated that Acyl Sarcosinates can adsorb onto human hair and other proteinaceous materials³. Such adsorption is enhanced at lower pH levels, at higher concentrations and on damaged hair³.

At mildly acidic to neutral pH Crodasinic LS salts contain small amounts of free Lauroyl Sarcosine that is solubilised in the detergent system. The free Sarcosine is substantive to the hair and is adsorbed to form a thin film on the hair shaft, enhancing wet and dry combability by providing lubrication. The amide group in the Sarcosine structure also gives static reduction properties.⁴

Similarly, Lauroyl Sarcosinates have been shown to adsorb onto human skin, exhibiting optimum substantivity at slightly acidic pH5. The adsorbed layer of Sarcosinate may be responsible for the perceptible skin conditioning effect imparted when included in rinse-off detergent formulations.

Applications

Crodasinic LS surfactants are ideal for use in all types of personal care cleansing systems, especially in the emerging category of 'sulphate free' cleansers, where formulators are increasingly turning to sarcosinates to form the basis of their shampoos and body washes.

In hair care, the Crodasinic LS products bring a luxurious sensory experience to shampoos and are of particular value in certain specialist systems. Resistance to sebum delathering makes a Crodasinic LS product an ideal primary or co-surfactant for a greasy hair shampoo, whilst the mildness of the range means a perfect fit in formulations designed for consumers with sensitive scalps. There is also increasing utilisation of this technology in colour protection shampoos.

Crodasinic LS technology also offers mild detergency, something demanded by the growing market sector of feminine/intimate hygiene products.

Body washes are increasingly loaded with lipophilic emollients that impart great skin feel but can preclude good lathering. Inclusion of a Crodasinic LS surfactant can mean that it is not necessary to trade off luxurious lathering in this way.

In facial wash systems, the Crodasinic LS range's 'foam pillow' capability is of particular value for formulators aiming for premium positioning. Mildness makes the range ideal for sensitive skin cleansers.

The anti-corrosive property of Crodasinic LS products also makes them useful surfactants in aerosol shaving preparations where they help prevent corrosion of the interior surface of the container as well as the razor blade⁶.

Crodasinic LS...mild surfactants for ultimate lathering performance

Function	The Crodasinic LS range of surfactants are mild detergents that offer outstanding lather building with excellent resistance to sebum and hard water delathering
Applications	Shampoos, facial washes, body washes and shower gels, baby baths, baby shampoos and feminine hygiene washes
Composition	Crodasinic LS is available as a 30% or 35% active liquid or 95% active powder. The un-neutralised acid form, Crodasinic L, is also available. See table below
Physical Form	See table below
Formulation	Suitable for use in all types of detergent system as primary or co-surfactant. Unlike many mild surfactants Crodasinic LS products are compatible with a wide range of cationics
Typical Usage Levels	2 - 30%

Product	INCI Name	% Activity	Form	Preservative free	EDTA free
Crodasinic LS30	Aqua (and) Sodium Lauroyl Sarcosinate	30%	Liquid	—	—
Crodasinic LS30 NP	Aqua (and) Sodium Lauroyl Sarcosinate	30%	Liquid	✓	—
Crodasinic LS30 NT	Aqua (and) Sodium Lauroyl Sarcosinate	30%	Liquid	✓	✓
Crodasinic LS35	Aqua (and) Sodium Lauroyl Sarcosinate	35%	Liquid	—	—
Crodasinic LS95 NP	Sodium Lauroyl Sarcosinate	95%	Powder	✓	—
Crodasinic LS95 NT	Sodium Lauroyl Sarcosinate	95%	Powder	✓	✓
Crodasinic LS95	Sodium Lauroyl Sarcosinate	95%	Powder	—	—
Crodasinic L	Lauroyl Sarcosine	100%	Waxy solid	✓	✓

Mild Pearlished Body Wash

C2323

Product/INCI Name	Functionality	% w/w
Deionised Water (Aqua)	-	To 100.00
Crodasinic™ LS30 (Aqua (and) Sodium Lauroyl Sarcosinate) ¹	Luxurious lather surfactant	20.00
Incromide™ Oxide C (Aqua (and) Cocamidopropylamine Oxide) ¹	Flash foam booster	6.00
Incronam™ 30 (Aqua (and) Cocamidopropyl Betaine) ¹	Mild co-surfactant	6.00
Crovol Maracuja™ (PEG-60 Maracuja Glycerides) ¹	Moisturising surfactant	6.00
Glycerox™ HE (PEG-7 Glyceryl Cocoate) ¹	Superfating agent	3.00
Crothix™ (PEG 150 Pentaerythrityl Tetrastearate) ¹	Thickener	2.00
Cithrol™ EGMS (Glycol Stearate) ¹	Pearling agent	2.00
Prolevium™ (Aqua (and) Hydrolyzed Cottonseed Protein) ¹	Counter-irritant cotton protein	1.00
Phenova™ (Aqua (and) Phenoxyethanol (and) Ethylparaben (and) Butylparaben (and) Propylparaben (and) Isobutylparaben) ²	Preservative	To pH 5.0-5.5
Lactic Acid	pH adjuster	qs

Suppliers:- 1: **Croda** 2: **Crodarom**

Method

Method Mix all ingredients except Prolevium. Heat them to 70-75°C. At 30°C add Prolevium and Phenova, adjust pH to 5 - 5.5 with lactic acid.

Appearance: White pearlished liquid

pH: 5-5.5 Viscosity: 15000 cp ±10% (spindle SC4-27 @5rpm @25°C)

Stability: 1 Month @ 4°C; 25°C; 40°C & light

References

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3. MF Nelson and D Stewart, The adsorption of N-acyl sarcosines on various protein materials, J. Soc. Cosmet. Chem., 122-131 (1956)
4. RJ Hart, N-acyl sarcosine surfactants, Cosm. Toil., 94, 74-76 (May 1979)
5. DV Subramanian, A spectroscopic method for the evaluation of the substantivity of N-lauroyl sarcosinate to human skin, J. Soc. Cosmet. Chem., 46, 153-162 (May/June 1995)
6. US 4,602,958, Du Pont De Nemours, USA (1986)

Non-warranty

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