

BETADET®
S-20

BETADET®
SHR

**VERY MILD SURFACTANT
GREAT FORMULATION STABILITY
ENHANCED FOAM VOLUME
IMPROVED THICKENING EFFECT**

SULTAINES: MILD AMPHOTERIC
SURFACTANTS FOR
PERSONAL CARE

KAO SURFACTANTS TECHNOLOGY AT YOUR SERVICE



BETADET[®] S-20 & BETADET[®] SHR Foam, Viscosity & Mildness enhancers

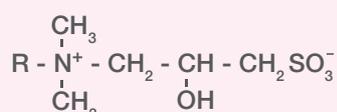
BETADET[®] S-20 and BETADET[®] SHR are very mild co-surfactants for personal care formulations.

Hydroxysultaines are highly effective amphoteric Surfactants that improve the performance of final cosmetic products. They are extremely mild cosurfactants that increase the performance of personal care formulations compared to alkylbetaines and amidopropyl betaines.

TECHNICAL DATA

	BETADET [®] S-20	BETADET [®] SHR
Appearance (25°C)	Colorless to light yellow transparent liquid	
Dry Matter (%)	43 - 47	49 - 51
Viscosity (20°C, cP)	< 50	< 200
pH	6.0 - 8.0 (1% in water)	7.0 - 8.0 (as it is)

BETADET[®] S-20 Lauryl Hydroxysultaine

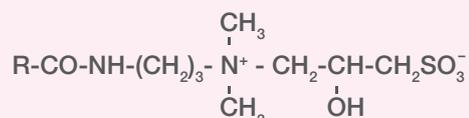


R = C₁₂

MAIN FEATURES

- Vegetable origin
- Preservative-free
- Biodegradable
- Compatible with anionic, non-ionic and cationic surfactants
- Provide excellent thickening
- Foam booster and foam stabilizer
- Extremely mild for the eyes and skin
- Stable at a wide range of pH and temperatures
- Good ecotoxicological profile
- Biocidal activity

BETADET[®] SHR Cocamidopropyl Hydroxysultaine



R-CO = H Coconut chain



CHARACTERISTICS

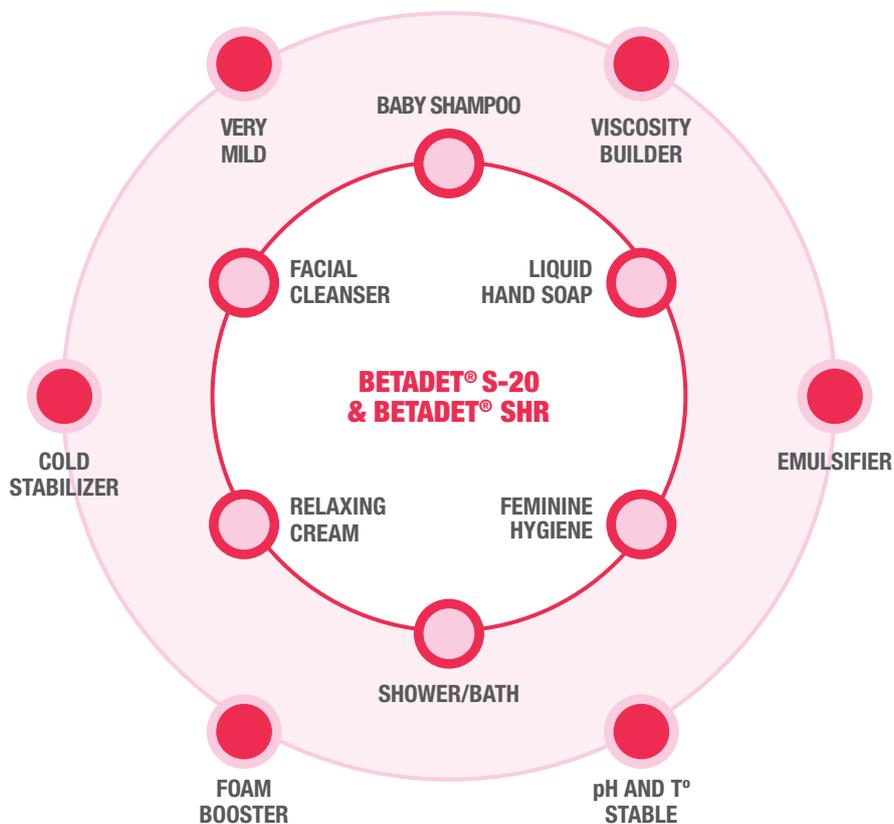
BETADET® S-20 and BETADET® SHR are recommended as secondary surfactants for very mild and high foaming products, achieving higher foam volumes than alkyl betaines or alkyl amidopropyl betaines. These products are easier to thicken when combined with SLES, thus reducing the amount of electrolytes needed to obtain a desired viscosity compared to other amphoteric surfactants. Hydroxysultaines show excellent stability at extreme

pH's thus allowing their use in cosmetics formulations where alkali (i.e. depilatories) or acid media are necessary. Both products are also very stable to hard water, improving the behavior of some sensitive anionic surfactants under extreme conditions. Additionally, BETADET® S-20 shows a highlighted ability to reduce the freezing point of final formulations making them more stable at low temperatures, which helps to obtain clear stable final products.

- PROPERTIES
- APPLICATION



BETADET® S-20 and BETADET® SHR are liquid, colorless and transparent concentrated amphoteric surfactants, very easy to handle, with low viscosity at room temperature.



MAIN PROPERTIES

In order to compare the properties of BETADET® S-20 and BETADET® SHR with other betaines, a Model Formula has been studied with standard levels of anionic surfactant (SLES), non-ionic thickener (CDEA) and the Amphoteric Surfactant as the variable. pH has been adjusted to 6.5 in all cases.

MODEL FORMULA

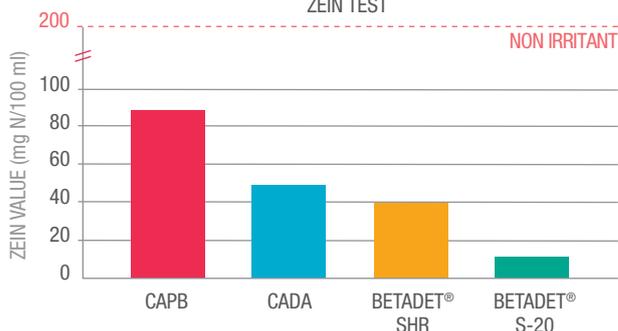
	% in active matter (a.m.)
Sodium Laureth Sulfate	10.0
Cocamide DEA	1.5
AMPHOTERIC SURFACTANT	3.0
Deionized Water	Up to 100

MILDNESS

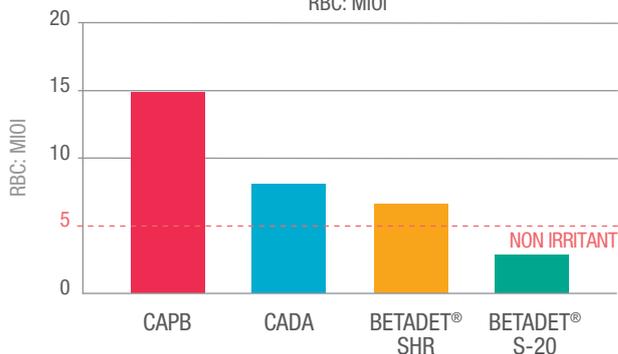
There's an ever-growing awareness over consumers of rinse-off products to buy the correct one for their skin. Babies, elders, people with sensitive epidermis... all of them need very mild formulations to avoid dryness, itchiness or even rashes on their skin. The mildness of amphoteric surfactants is well known but hydroxysultaines are especially mild to the eyes and skin, as it can be seen in the graphs.

BETADET® S-20 and BETADET® SHR are excellent options to formulate a wide variety of very mild end products such as intimate hygiene cleansers or no-tears baby shampoos. They both show detoxifying properties, reducing the irritation produced by anionic surfactants.

SKIN IRRITATION POTENTIAL TEST ZEIN TEST



EYE IRRITATION POTENTIAL TEST RBC: MIOI



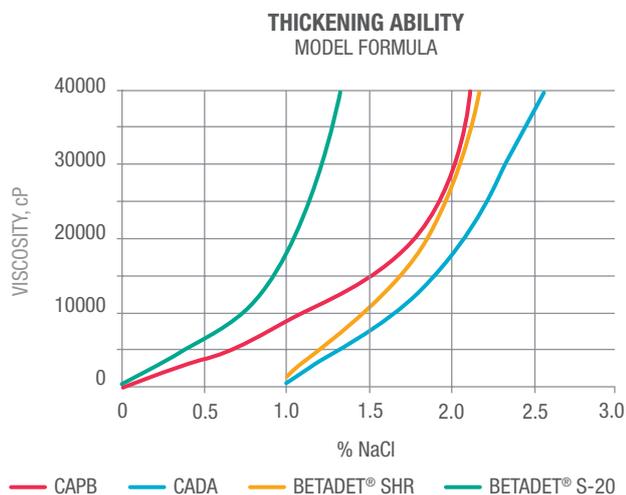
Ref. C-100

BABY SHAMPOO

	%
EMAL® 270D Sodium Laureth Sulfate	12.0
BETADET® S-20 Lauryl Hydroxysultaine	7.0
LEVENOL® H&B Glycereth-2 Cocoate	2.0
AKYPO® FOAM RL 40 Sodium Laureth-5 Carboxylate	1.5
AMIDET® N PEG-4 Rapeseedamide	1.5
EDTA.Na ₂	0.05
Additives*	q.s.
Deionized Water	Up to 100

THICKENING ABILITY

BETADET® S-20 has a great thickening ability in SLES-based rinse-off products and even in other anionic-based formulations. It achieves higher viscosity levels when compared with alkyl betaines, alkyl amidopropyl betaines and alkyl amphodiacetates so less amount of product (or electrolytes) can be used. BETADET® SHR shows a viscosity profile close to cocamidopropyl betaine and better than disodium cocoamphodiacetate, in SLES based formulations.



CAPB: Cocamidopropyl Betaine
 CADA: Disodium Cocoamphodiacetate
 CDEA: Cocamide DEA
 SLES: Sodium Laureth Sulfate

*Additives: Perfume, dyes, preservatives, etc.

Ref. C-294

HIGH FOAMING BODY WASH %

SUCCIDET® S-30 Disodium Laureth Sulfosuccinate	17.6
Sodium Cocoyl Glutamate	25.6
BETADET® SHR Cocamidopropyl Hydroxysultaine	6.8
AMIDET® N PEG-4 Rapeseedamide	1
LEVENOL® H&B Glycereth-2 Cocoate	0.5
KAOPAN® TW-IS399S PEG-160 Sorbitan Triisostearate	4
Additives*	q.s.
Deionized Water	Up to 100

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NON-IRRITANT SHOWER GEL %

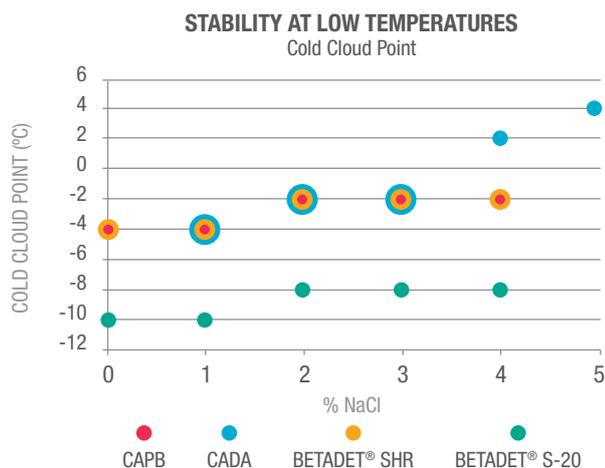
ALFANOX® 46 Sodium α -Olefin Sulfonate	27.0
BETADET® S-20 Lauryl Hydroxysultaine	10.5
AMIDET® N PEG-4 Rapeseedamide	2.1
EXCEPARL® LM-LC Lauryl Lactate	0.3
Additives*	q.s.
Deionized Water	Up to 100

Due to their mildness and foaming performance, BETADET® SHR and BETADET® S-20 are recommended co-surfactants to be combined with alternative anionic surfactants, such as Sodium α -Olefin Sulfonate or Disodium Laureth Sulfosuccinate. Sulfate-free, mild and high foaming formulations can be obtained. The addition of effective thickeners is usually needed. At Kao Chemicals Europe, we recommend for this purpose, EXCEPARL® LM-LC (Lauryl Lactate) or KAOPAN® TW-IS3099S (PEG-160 Sorbitan Triisostearate).

MAIN PROPERTIES

COLD STABILITY

Of among the most used amphoteric surfactants in personal care, BETADET® S-20 shows an outstanding and better stability at low temperature, thus helping formulators to get clear products in tough conditions. Cloud point test by cold, performed using the Model Formula shows the advantages of using BETADET® S-20, with better haziness points, compared to other types of betaines.



Ref. C-161

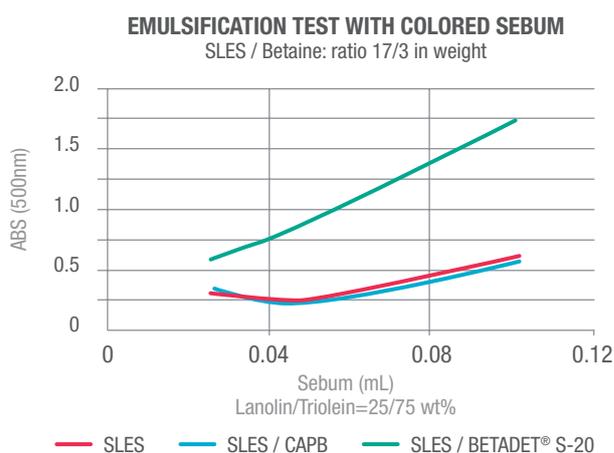
FORTIFYING SHAMPOO

	%
EMAL® 270D Sodium Laureth Sulfate	14.3
AKYPO® SOFT 100 BVC Sodium Laureth-11 Carboxylate	5.7
BETADET® S-20 Lauryl Hydroxysultaine	5.0
LEVENOL® H&B Glycereth-2 Cocoate	2.0
Hair Loss Prevention Complex	2.0
Promois® WJ Hydrolyzed Pea Protein	2.0
Additives*	q.s.
Deionized Water	Up to 100

CAPB: Cocamidopropyl Betaine
CADA: Disodium Cocoamphodiacetate
CDEA: Cocamide DEA
SLES: Sodium Laureth Sulfate

EMULSIFYING ABILITY

Lauryl hydroxysultaine is capable of emulsifying oils and sebum more thoroughly than other betaines so the washing process becomes more effective. BETADET® S-20 avoids the redeposition of hydrophobic substances to the skin so it is also advised for facial cleansing formulations. The results of the test emulsion showed below demonstrate the great emulsifying ability of BETADET® S-20 compared to CAPB.

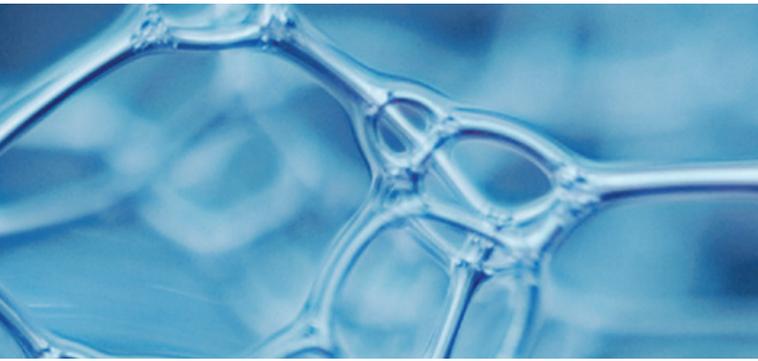


Ref. C-222

SENSITIVE SKIN FACE CLEANSER

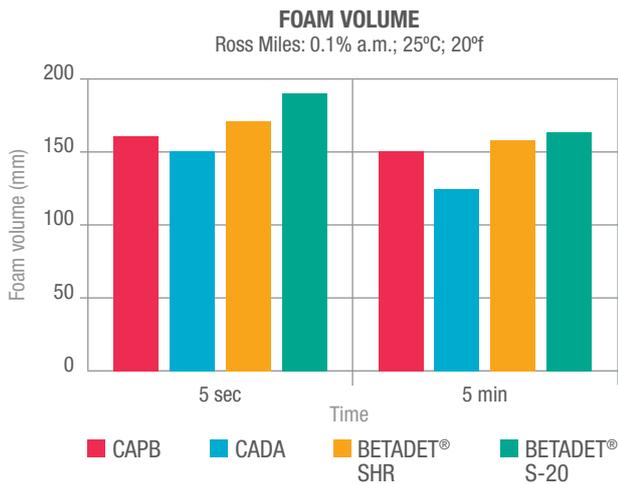
	%
EMAL® 270D Sodium Laureth Sulfate	9.7
AKYPO® FOAM RL 40 Sodium Laureth-5 Carboxylate	3.3
BETADET® S-20 Lauryl Hydroxysultaine	5.3
Glycerine	2.0
Propylene Glycol	1.5
Carbopol Ultrez Carbomer	1.3
Additives*	q.s.
Deionized Water	Up to 100

*Additives: Perfume, dyes, preservatives, etc.

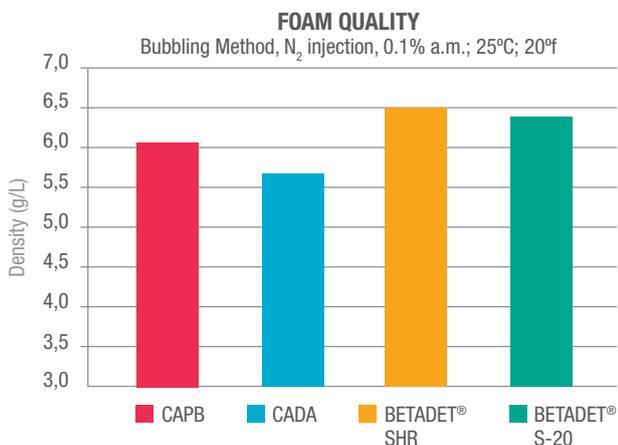


FOAMING ABILITY

Sultaines are excellent foaming surfactants at different pH's and even at high concentration of cationic ions (Ca^{2+} and Mg^{2+}). When they are combined with anionic surfactants, all foam characteristics are improved: foam volume, foam formation speed and foam quality or higher density.



In the graphs, the Model Formula is used to show the advantageous foaming properties of sultaines compared to other amphoteric surfactants.



Ref. C-160

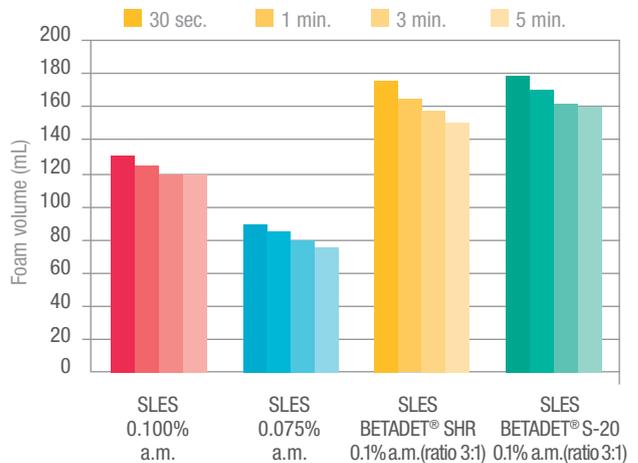
CONDITIONING SHAMPOO

%

EMAL® 270D Sodium Laureth Sulfate	8.6
AKYPO® FOAM RL 40 Sodium Laureth-5 Carboxylate	4.7
BETADET® SHR Cocamidopropyl Hydroxysultaine	6.8
AMIDET® APA-22 Behenamidopropyl Dimethylamine	0.5
DANOX® PL-10 Pearling Agent	4.0
Polyquaternium-10	0.2
PEG-12 Dimethicone	0.5
Ethyl Panthenol	0.2
D-Panthenol (50% solution)	0.2
Additives*	q.s.
Deionized Water	Up to 100

FOAM IN THE PRESENCE OF SEBUM

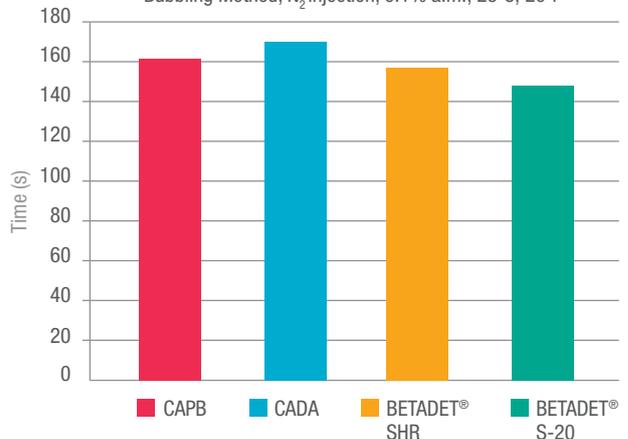
KAO Reverse Method, 0.1% a.m.; 40°C; 20°F
200 ppm Ca^{2+} / Mg^{2+} ; 2:1, 0.5% Sebum



Sultaines are also highly foaming in the presence of sebum or oils. The foaming ability of a formulation is substantially improved after the addition of BETADET® S-20 or BETADET® SHR due to their emulsifying properties.

FOAM SPEED

Time to produce 2L of foam
Bubbling Method, N_2 injection, 0.1% a.m.; 25°C; 20°F





KAO CHEMICALS EUROPE

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Enriching lives,
in harmony with nature.

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OUR CHEMICALS, YOUR BUSINESS

