

ULTRA- MILD SOLUTIONS

ALTERNATIVES TO SULFATES

KAO'S SURFACTANT TECHNOLOGY APPLIED TO PERSONAL CARE



ALTERNATIVES TO SULFATES

The market demand for alternatives to sulfates is ever-increasing. The reason for this is the negative perception of consumers about the potential risk of using sulfates.

Kao Chemicals Europe offers a list of ingredients that allows for formulation without sulfates, offering improved mildness, good foaming properties and effective thickening.

	PRODUCT	INCI	MILDNESS	EXEMPT OF ED	NATURAL CONTENT*	%RCI**	VISCOSITY	FOAM BOOSTER	CARE	HAIR CONDITIONING
ANIONIC	ALFANOX® 46	Sodium C14-16 Olefin Sulfonate		✓	0	0		✓✓		
	AKYPO® FOAM LM 25	Potassium Laureth-4 Carboxylate	✓✓		0.70	70%	✓✓	✓✓✓	✓	✓
	AKYPO® RANGE	Ether Carboxylic derivatives	✓✓		-	-	✓	✓	✓	✓
	SUCCIDET® S 30 UK	Disodium Laureth Sulfosuccinate	✓		0.57	60%		✓		
AMPHOTERIC	BETADET® HR	Cocamidopropyl Betaine	✓	✓	0.66	66%	✓	✓✓		
	BETADET® S-20	Lauryl Hydroxysultaine	✓✓	✓	0.71	71%	✓✓	✓✓✓	✓	
	BETADET® SHR	Cocamidopropyl Hydroxysultaine	✓✓	✓	0.61	61%	✓✓	✓✓✓	✓	
	BETADET® THC-2	Disodium Cocoamphodiacetate	✓	✓	0.62	62%	✓	✓		
NON-IONIC	AMIDET® N	PEG-4 Rapeseedamide	✓		0.79	79%	✓✓	✓		
	AMIDET® APA-22	Behenamidopropyl Dimethylamine	✓	✓	0.82	82%				✓
	EMANON® EV-E	Glycereth-7 Caprylate/Caprata	✓✓		0	34%		✓	✓	
	EXCEPARL® LM-LC	Lauryl Lactate	✓✓	✓	1	100%	✓✓		✓✓	
	LEVENOL® H&B	Glycereth-2 Cocoate	✓✓✓		0.76	76%	✓	✓	✓✓	
	KAO SOFCARE® GP-1	PPG-3 Caprylyl Ether	✓✓✓	✓	0	50%	✓	✓	✓	✓
	KAOPAN® TW-IS399S	PEG-160 Sorbitan Triisostearate	✓✓✓		0	3%	✓✓✓			
CATIONIC	OXIDET® L-75C	Cocamidopropylamine Oxide	✓	✓	0.72	72%	✓	✓		
	DANOX® HC-30	Behenamidopropyl Dimethylamine, Dipalmitoylethyl Hydroxyethylmonium Methosulfate, Cetyl Alcohol, Stearyl Alcohol, Lactic Acid	✓✓✓	✓	0.88	88%	✓✓			✓
	QUARTAMIN® AB	Behentrimonium Chloride		✓	0.73	73%				✓
PEARLIZER	QUARTAMIN® BTC 131	Behenoyl PG-Trimonium Chloride	✓	✓	0.68	68%				✓
	DANOX® BF-22	Glycol Distearate, Laureth-4, Cocamidopropyl Betaine	✓		0.92	92%	✓	✓		

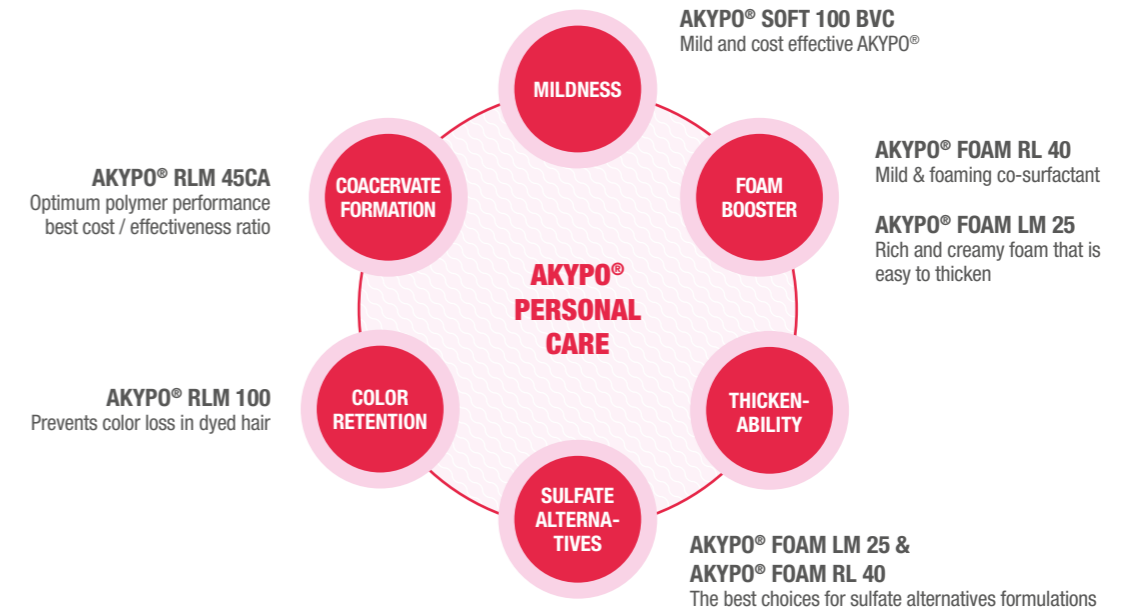
* Natural Origin Index for the active matter based on Renewable Carbon Content (ISO 16128)
** Renewable Carbon Index

✓ recommended
✓✓ highly recommended
✓✓✓ strongly recommended

MAIN SURFACTANTS

AKYPO® RANGE Ether Carboxylic derivatives

The AKYPO® products are anionic surfactants. Their gentleness on the skin and eyes, good ecotoxicity properties and excellent compatibility with all kinds of surfactants make them the perfect choice for Personal Care products.



TECHNICAL DATA

RANGE	INCI Name	EO	Alkyl Chain	Appearance (20°C)	Active matter (%)
AKYPO® FOAM LM 25	Potassium Laureth-4 Carboxylate	2.5	C ₁₂ /C ₁₄	Paste	≈ 60
AKYPO® FOAM RL 40	Sodium Laureth-5 Carboxylate	4	C ₁₂	Paste	≈ 60
AKYPO® RLM 45 CA	Laureth-6 Carboxylic Acid	4.5	C ₁₂ /C ₁₄	Liquid	≈ 92
AKYPO® RLM 45 N	Sodium Laureth-6 Carboxylate	4.5	C ₁₂ /C ₁₄	Paste	≈ 82
AKYPO® SOFT 45 HP	Sodium Laureth-6 Carboxylate	4.5	C ₁₂ /C ₁₄	Liquid	≈ 22
AKYPO® RLM 100	Laureth-11 Carboxylic Acid	10	C ₁₂ /C ₁₄	Liquid	≈ 90
AKYPO® SOFT 100 BVC	Sodium Laureth-11 Carboxylate	10	C ₁₂ /C ₁₄	Liquid	≈ 70

OTHER ALTERNATIVE ANIONIC SURFACTANTS

ALFANOX® 46 Sodium C₁₄₋₁₆ Olefin Sulfonate

TECHNICAL DATA	
Appearance (25°C)	Yellowish transparent liquid
Active matter (%)	36.0 - 39.0

SUCCIDET® S 30 UK Disodium Laureth Sulfosuccinate

TECHNICAL DATA	
Appearance (25°C)	Clear colourless liquid
Active matter (%)	32.5 - 34.5

UNIQUE FOAM TEXTURE

THICKENERS

AKYPO® FOAM LM 25

Potassium Laureth-4 Carboxylate

AKYPO® FOAM LM 25 achieves a luxurious foam with a very small bubble size and high foam consistency.

TECHNICAL DATA

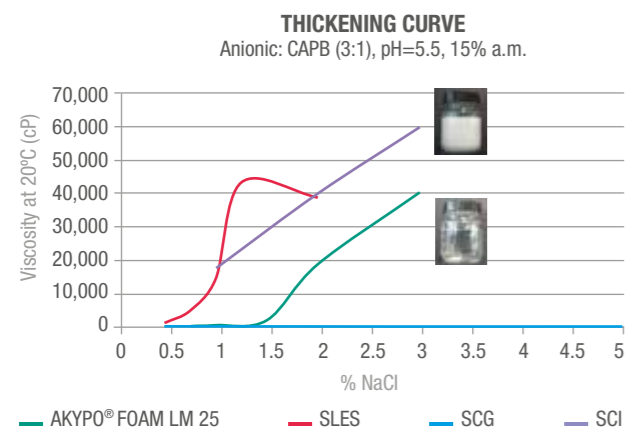
Appearance (20°C)	Clear flowable paste
Active matter (%)	59.0 - 64.0

MAIN FEATURES

- Ultra-mild surfactant
- Soft & creamy foam texture
- Clear formulations
- Easy to thicken

VISCOSITY

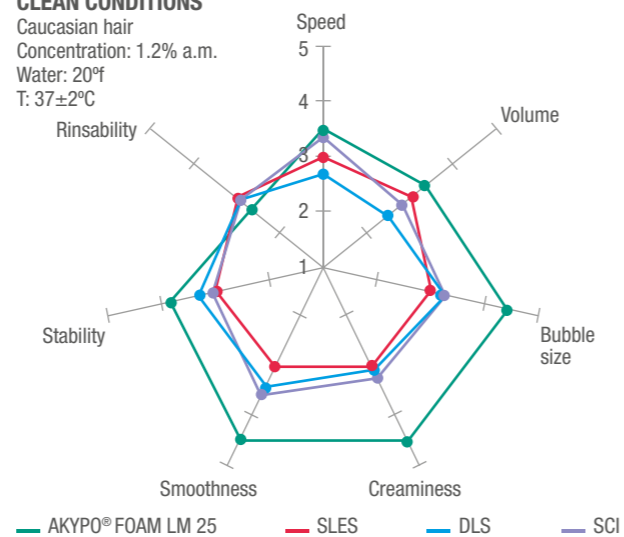
AKYPO® FOAM LM 25 can easily be thickened with salt. Additionally, a clear appearance can be obtained.



FOAM SENSORY TEST

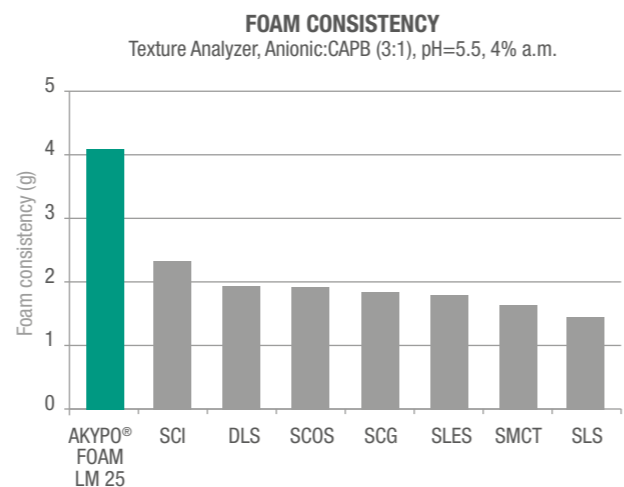
CLEAN CONDITIONS

Caucasian hair
Concentration: 1.2% a.m.
Water: 20°F
T: 37±2°C



FOAM CONSISTENCY

AKYPO® FOAM LM 25 provides a significantly higher foam consistency than other anionic surfactants with a special soft and creamy touch.



SCI: Sodium Cocoyl Isothionate
DLS: Disodium Laureth Sulphate Sulfosuccinate
SCOS: Sodium C₁₄₋₁₆ Olefin Sulfonate
CAPB: Cocamidopropyl Betaine
SCG: Sodium Cocoyl Glutamate
SLES: Sodium Laureth Sulphate
SMCT: Sodium Methyl Cocoyl Taurate
SLS: Sodium Lauroyl Sarcosinate

KAOPAN® TW-IS399S

PEG-160 Sorbitan Triisostearate

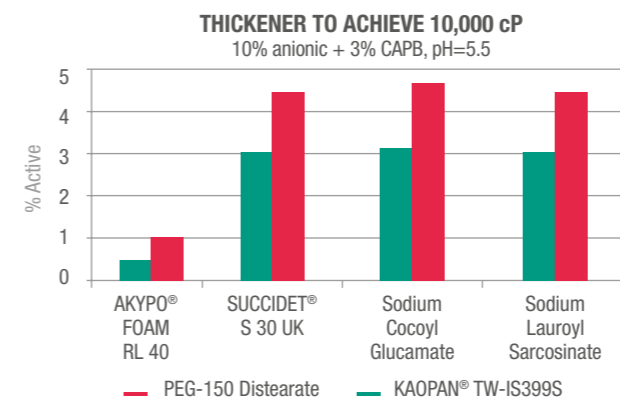
KAOPAN® TW-IS399S is a hydrophilic thickener specially designed for very mild cleansing systems that may lead to viscosity problems.

TECHNICAL DATA

Appearance* (20°C)	Yelowish, clear, viscous liquid
Active matter (%)	Approx. 75

*Haziness due to low temperatures can be recovered by heating at 40°C

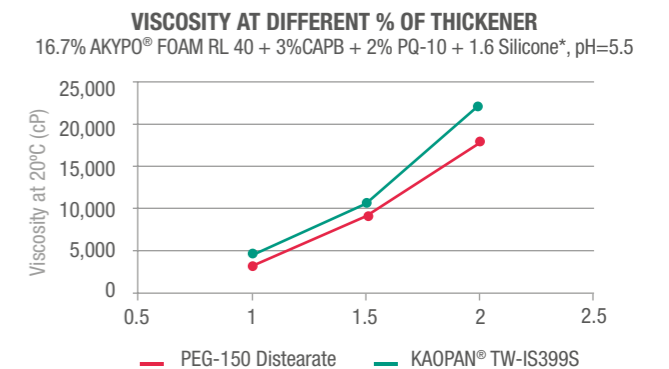
THICKENING CAPACITY



MAIN FEATURES

- Efficient viscosity enhancer
- Excellent for formulations without sulfates
- Cold-processable
- Viscous liquid
- Alternative to PEG-150 Distearate

VISCOSITY IN PRESENCE OF SILICONE



*Silicone: bis-Diisopropanolamino-PG-propyl Dimethicone/Bis-Isobutyl PEG-14 Copolymer (and) Polysorbate 20 (and) Butyloctanol (hard to thicken silicone).

EXCEPARL® LM-LC

Lauryl Lactate



TECHNICAL DATA

Appearance (25°C)	Transparent liquid
Active matter (%)	Approx. 100

This table shows examples of how to achieve different viscosities.

ANIONIC	BETAINE	ANIONIC:BETAINE a.m. ratio	EXCEPARL® LM-LC	pH	VISCOSITY AT 20°C (cP)
ALFANOX® 46	BETADET® S-20	10:4	1%	5.0	11,500
Sodium Cocoyl Isethionate	BETADET® HR	10:2.5	1.5%+ 1% NaCl	7.0	20,000
Sodium Cocoyl Glutamate	BETADET® HR	2:6:1.5'	1.5%	5.5	9,600
Sodium N-Cocoyl Glycine	BETADET® HR	5:8.3	0.7%	5.0	5,600
	BETADET® S-20 (1:1.8 ratio)				

*(with Coco-Glucoside)

MAIN FEATURES

- Vegetable origin
- 100% Natural
- Mild
- Colourless & odourless

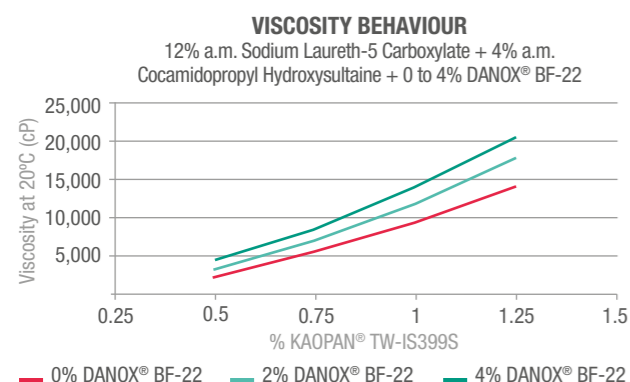
PEARLING AGENTS

DANOX® BF-22

Glycol Distearate, Laureth-4, Cocamidopropyl Betaine

TECHNICAL DATA

Appearance (25°C)	Clear flowable paste
Dry matter (%)	42.0 - 45.0



MAIN FEATURES

- Easy to handle, pump & disperse
- Improves thickening
- Environmentally friendly

TRADE MARK

DANOX® BF-22

Wax content (%)	≈ 22
-----------------	------

Optimum dose appearance



2%

Dispersion	Easy
------------	------

Appearance	Brilliant white pearly shine
------------	------------------------------

Pearling-Brilliance	
---------------------	--

Opacity	
---------	--



FORMULATIONS

Ref. C-246

SHOWER GEL	%
ALFANOX® 46 Sodium C ₁₄₋₁₆ Olefin Sulfonate	27.0
BETADET® S-20 Lauryl Hydroxysultaine	10.5
EXCEPARL® LM-LC Lauryl Lactate	0.95
Additives*	q.s.
Deionized Water	Up to 100
Appearance (20°C)	Clear
Viscosity Brookfield 20°C (cP)	Approx. 8,000
pH (as it is)	Approx. 5.0

Ref. C-215

HIGHLY VISCOUS SHOWER GEL	%
BETADET® HR Cocamidopropyl Betaine	37.1
SUCCIDET® S 30 UK Disodium Laureth Sulfosuccinate	19.3
AKYPO® FOAM RL 40 Sodium Laureth-5 Carboxylate	10.0
AMIDET® N PEG-4 Rapeseedamide	4.1
Glycerin	2.4
Opuntia Ficus Indica Flower Extract	1.5
Tocopherol	0.4
D-Panthenol	0.4
Additives*	q.s.
Deionized Water	Up to 100
Appearance (20°C)	Clear colourless
Viscosity Brookfield 20°C (cP)	Approx. 15,000
pH (as it is)	Approx. 5.5

Ref. C-229

INTIMATE HYGIENE	%
BETADET® HR Cocamidopropyl Betaine	18.3
AMIDET® N PEG-4 Rapeseedamide	5.3
AKYPO® SOFT 100 BVC Sodium Laureth-11 Carboxylate	4.3
EXCEPARL® LM-LC Lauryl Lactate	0.6
Chamomile Extract	0.25
Additives*	q.s.
Deionized Water	Up to 100
Appearance (20°C)	Clear
Viscosity Brookfield 20°C (cP)	Approx. 4,000
pH (as it is)	Approx. 5.0

Ref. C-293

CLEAR MILD SHAMPOO	%
AKYPO® FOAM RL 40 Sodium Laureth-5 Carboxylate	25.0
BETADET® HR Cocamidopropyl Betaine	14.7
KAOPAN® TW-IS399S PEG-160 Sorbitan Triisostearate	2.0
FINDET® ARH/52 PEG-40 Hydrogenated Castor Oil	1.5
KAO SOFCARE® GP-1 PPG-3 Caprylyl Ether	0.6
Polyquaternium-37	5.0
Silicone Quaternium-16	2.4
Additives*	q.s.
Deionized Water	Up to 100
Appearance (20°C)	Yellowish clear viscous liquid
Viscosity Brookfield 20°C (cP)	Approx. 7,000
pH (as it is)	Approx. 5.0

* Additives: pH adjustment, preservatives, fragrance, dyes, etc.

Ref. C-303

GENTLE FACIAL WASH	%
AKYPO® FOAM LM 25 Potassium Laureth-4 Carboxylate	14.3
BETADET® S-20 Lauryl Hydroxysultaine	21.1
KAOPAN® TW-IS399S PEG-160 Sorbitan Triisostearate	0.5
Glycerin	5.0
Glycine Betaine	1.0
Additives*	q.s.
Deionized Water	Up to 100
Appearance (20°C)	Clear viscous liquid
Viscosity Brookfield 20°C (cP)	Approx. 2,200
pH (as it is)	Approx. 5.5

Ref. C-305

PEARLED ULTRA MILD SHAMPOO	%
AKYPO® FOAM LM 25 Potassium Laureth-4 Carboxylate	24.4
BETADET® SHR Cocamidopropyl Hydroxysultaine	11.4
KAO SOFCARE® GP-1 PPG-3 Caprylyl Ether	1.5
DANOX® BF-22 Glycol Distearate, Laureth-4, Cocamidopropyl Betaine	3.0
Polyquaternium-7	1.0
PEG-7 Dimethicone	1.0
Polyquaternium-10	0.3
Additives*	q.s.
Deionized Water	Up to 100
Appearance (20°C)	Pearled viscous liquid
Viscosity Brookfield 20°C (cP)	Approx. 10,500
pH (as it is)	Approx. 6.0

KAO CHEMICALS EUROPE

www.kaochemicals-eu.com



Enriching lives,
in harmony with nature.

Kao Corporation, S.A.

Puig dels Tudons, 10
E-08210 Barberà del Vallès
(Barcelona) Spain
Tel.: +34 93 7399-300
Fax: +34 93 7399-377
e-mail: marketing@kao.es

Kao Chemicals GmbH

Kupferstrasse 1
D-46446 Emmerich, Germany
Tel.: +49 (0) 2822 711-0
Fax: +49 (0) 2822 711-201
e-mail: sales@kaochemicals.de

(Edited May 2019. EU version)

OUR CHEMICALS, YOUR BUSINESS

