




Stepan **S**[®]

Personal Care

Sulfate-Free

A large, artistic splash of pink liquid dominates the left half of the page. Several white hexagonal shapes of varying sizes are scattered across the pink background, some appearing to be part of the liquid's structure or as floating elements.

Stepan Company is a global leader in providing sulfate-free ingredients for the personal care market.

What is “Sulfate-Free?”

“Sulfate-free” is a term that usually refers to anionic detergents that are not sodium lauryl sulfate (SLS) or sodium laureth sulfate (SLES). Stepan defines sulfate-free as containing no alcohol sulfate or alcohol ether sulfate, per INCI nomenclature.

Why are sulfate-free surfactants better for consumers?

Sulfate-free surfactants are generally milder to the hair and skin than SLS or SLES, which means that fresh hair color can last longer and skin may feel softer.

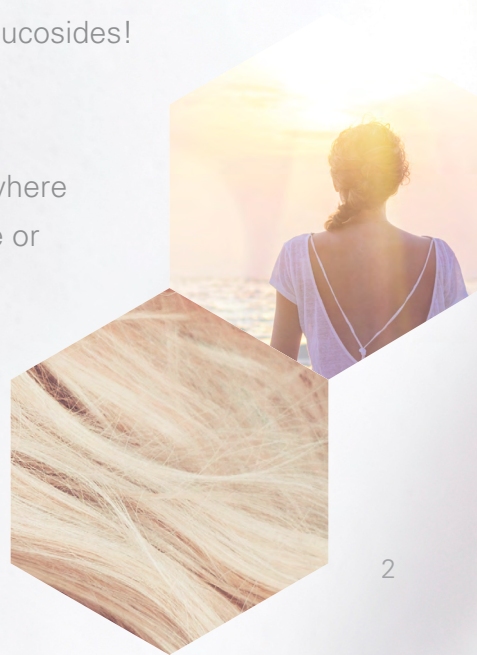
Are there any downsides?

Sulfate-free surfactants are known for being mild, but unfortunately they may not perform as well as their sulfate counterparts. Typically, sulfate-free surfactants do not foam as much as sulfate surfactants and may leave build-up in hair, and formulators may find that they have trouble thickening products containing sulfate-free surfactants.

Stepan offers several specialty surfactants that provide improved foaming and powerful thickening to build viscosity with sulfate-free ingredients, even glucosides!

How should a formulator choose a sulfate-free surfactant?

Each sulfate-free chemistry can offer unique benefits. Not sure where to start? Check out the flowchart on pages 19-20 of this brochure or contact a Stepan Technical Service representative in your region.





ALPHA-STEP® PC-48

Sulfate-free | Light and airy foam

INCI Name	Sodium Methyl 2-Sulfolaurate and Disodium 2-Sulfolaurate
Appearance	Clear Yellow Liquid
Actives	37-40%
Pour Point	-5°C
Preservative	None



Meets Whole Foods Market®
Premium Body Care Standards
Rinses cleanly and easily
Soft skin after-feel



94% Bio-based
Readily biodegradable
No preservative



CleanGredients® listed
Economical performance
Hydrotropic properties

Scrub Me Sweetie

Water-Based Sugar Scrub Formulation No.1270

Meets Whole Foods Market® Premium Body Care Standards

Ingredient	% by weight
------------	-------------

STEPAN-MILD® GCC <i>Glyceryl Caprylate/Caprates</i>	5.00
--	------

Shea Butter	0.40
-------------	------

Soybean Oil	4.50
-------------	------

Fragrance	0.40
-----------	------

ALPHA-STEP® PC-48	7.50
-------------------	------

Sugar	70.00
-------	-------

5.00

0.40

4.50

0.40

7.50

70.00



STEPAN-MILD® GCC is
used as a structuring agent
to suspend the sugar
particles.



Due to the high sugar
and low water content,
a preservative is not
required for this formula!



BIO-TERGE® AS-40 HP

Sulfate-free | Economical foamer

INCI Name	Sodium C14-16 Olefin Sulfonate
Appearance	Clear Amber Liquid
Actives	39%
Pour Point	-4°C
Preservative	None



Lots of cushiony lather
Mild cleanser
Won't strip natural oils



Never tested on animals
Readily biodegradable
No preservative



Flexible pH range
Economical performance
Hydrotropic properties

Premium Conditioning Sulfate-Free Shampoo

Formulation No.1258

Ingredient	% by weight
PenCare DP 1015 Cationic Polymer (Penford)	0.08
BIO-TERGE® AS-40 HP	36.00
AMPHOSOL® HCG <i>Cocamidopropyl Betaine</i>	12.00
STEPAN-MILD® L3 <i>Lauryl Lactyl Lactate</i>	0.50
Hallstar® EGMS (Hallstar)	0.40
NINOL® CAA <i>Dimethyl Lauramide/Myristamide</i>	1.80
Fragrance	0.50
Moringa Oil	0.05
Dow Corning® CE-1874 Silicone Polyether Microemulsion (Dow Corning)	2.00



"HP" products are preserved with excess sodium hydroxide, offering the formulator flexibility to choose the final preservative. These surfactants require just a small additional amount of citric acid to neutralize.



NINOL® CAA builds viscosity without the need for additional salt.



LATHANOL® LAL

Sulfate-free | Rich lather, pampered feel

INCI Name Sodium Lauryl Sulfoacetate
Appearance Free-Flowing White Powder/Flake
Actives 65% min.
Preservative None



Creamy, rich lather
Moisturized after-feel
Mild cleanser



86% Bio-based
Readily biodegradable
No preservative



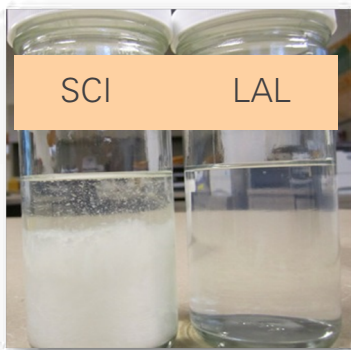
Easier to solubilize than isethionates
Create low-water products
Achieve water-white formulas

This Is My Natural Color

Naturally-Derived Color Care Shampoo

Formulation No. 1189

Ingredient	% by weight
LATHANOL® LAL Powder	6.90
AMPHOSOL® HCG-HP <i>Cocamidopropyl Betaine</i>	12.90
AMPHOSOL® 2CSF <i>Disodium Cocamphodipropionate</i>	7.00
ALPHA-STEP® PC-48 <i>Methyl Ester Sulfonate</i>	7.80
STEPAN-MILD® GCC <i>Glyceryl Caprylate/Caprate</i>	0.30



At this 6:2 LAL: CAPB* ratio, the resulting viscosity is 18,000 cps!



Better Solubility, Better Stability.

At a 6:2 Anionic:CAPB ratio, LATHANOL® LAL shows better phase stability than SCI* because LATHANOL® LAL is more soluble than SCI. Formulas containing LATHANOL® LAL and CAPB are homogeneous and likely to have less stability issues than those with SCI.

*CAPB = Cocamidopropyl Betaine
*SCI = Sodium Cocoyl Isethionate

STEPAN-MILD® SL3-BA

Sulfate-free | Mild co-surfactant



STEPAN-MILD® SL3-BA acts as a great co-surfactant in both traditional and sulfate-free formulations.

INCI Name Disodium Laureth Sulfosuccinate

Appearance Clear Liquid

Actives 32%

Pour Point -3°C

Preservative Benzoic Acid



Mild cleanser
Suitable for low-irritation products
Provides skin softness



55% Bio-based
Vegetable feedstock



Easy handling and formulating
Achieve water-white formulas
Hydrotropic properties
Globally-approved preservative

Deep Cleansing Moisturizing Hand Soap

with Oil Microcapsules Formulation No.1227

Ingredient	% by weight
Carbopol ETD 2020 Acrylates/ C10-30 Alkyl Acrylate Crosspolymer (Lubrizol)	0.65
Ethanol	0.75
Versene 100 Tetrasodium EDTA (Dow Chemical)	0.10
STEPANOL® WA-EXTRA PCK <i>Sodium Lauryl Sulfate</i>	30.00
AMPHOSOL® HCG-HP <i>Cocamidopropyl Betaine</i>	6.00
STEPAN-MILD® SL3-BA	2.00
STEPAN-MILD® L3 <i>Lauryl Lactyl Lactate</i>	0.70
Microencapsulated Oil Blend (Hallsrest LTD)	0.30
Lipo WSF 35/60 Walnut Shell Powder (Lipo Chemical)	0.80
Fragrance	1.00



STEPAN-MILD® L3 provides a soft, moisturized skin feel, even hours after application.



Walnut shell powder is a natural alternative to plastic beads.

Performance Surfactant Blends

Both of these liquid products blend LATHANOL® LAL with another sulfate-free surfactant to provide easy formulating with extra sensory benefits.

STEPAN-MILD® LSB
Sulfate-Free | Foamy mildness

INCI Name	Sodium Lauryl Sulfoacetate and Disodium Laureth Sulfosuccinate
Appearance	Clear Liquid
Actives	25%
Pour Point	3°C
Preservative	Benzoic Acid



Creamy, rich lather
Moisturized skin after-feel
Mild cleanser



64% Bio-based
Vegetable feedstock
Biodegradable



Easy handling and formulating
Achieve water-white formulas
Globally-approved preservative

Self-Foaming Face Mask
Similar to a Korean Beauty Trend Product

Formulation No.1261

Ingredient

Keltrol® CG-SFT (CP Kelco)	1.00
Pentylene Glycol	2.00
NEOBEE® M-5 Cosmetic Caprylic/Capric Triglyceride	2.00
dl-Menthol	0.20
Titanium Dioxide 3328 USP BC (Princeton Chemicals, Inc.)	5.00
STEPAN-MILD® LSB	20.00
AMPHOSOL® HCA-HP Cocamidopropyl Betaine	10.00
Polargel® NF BC 342 (Princeton Chemicals, Inc.)	11.00
Salicylic Acid, USP Grade	1.00
AE COSMOFLUOR® #61 (Princeton Chemicals, Inc.)	1.00

% by weight

1.00
2.00
2.00
0.20
5.00
20.00
10.00
11.00
1.00
1.00



STEPAN-MILD® LSB allows this clay-based mask to rinse cleanly while leaving skin feeling refreshed and clean.

STEPAN-MILD® PCL
Sulfate-Free | An easy, mild clean

INCI Name	Sodium Methyl 2-Sulfolaurate and Disodium 2-Sulfolauarte and Sodium Lauryl Sulfoacetate
Appearance	Clear, Light Yellow Liquid
Actives	23%
Pour Point	-5°C
Preservative	CIT/MIT (Methylchloroisothiazolinone/Methylisothiazolinone)



Creamy, rich lather
Moisturized skin after-feel
Rinses cleanly and easily



90% Bio-based
Vegetable feedstock
Never tested on animals



Easy handling and formulating
Incorporate high oil loads
Achieve water-white formulas



Non-irritating
to eyes at 5%
active

Non-irritating
to skin at 10%
active

AMPHOSOL® CS-50

Sulfate-free | The anionic-like amphoteric

INCI Name Cocamidopropyl Hydroxysultaine
Appearance Clear Viscous Liquid
Actives 50%
Preservative None



Meets Whole Foods Market®
Premium Body Care Standards
Non-irritating to eyes and skin
Compatible with alpha-hydroxy acids



60% Bio-based
Vegetable feedstock
No preservative



Good foaming at high oil loads
Compatible with anionics,
nonionics, and cationics
Achieve water-white formulas

Conditioning Anti-Dandruff Shampoo

Formulation No. 1210

Ingredient	% by weight
Carbopol ETD 2020 Polymer (Lubrizol)	0.80
Sodium Hydroxide (50% solution)	0.07
STEPAN-MILD® PCL <i>Performance Surfactant Blend</i>	55.50
AMPHOSOL® CS-50	5.50
STEPAN-MILD® L3 <i>Lauryl Lactyl Lactate</i>	0.50
N-Hance™ 3196 Cationic Guar (Ashland Inc)	0.15
Dow Corning® 2-1491 Emulsion (Dow Corning)	3.30
Zinc Pyrithione (50% active)	2.00



AMPHOSOL® CS-50 boosts
the foam in this shampoo
while enhancing mildness.



STEPAN-MILD® L3
provides soft
conditioning to the
hair and is a naturally-
derived alternative to
silicones!

AMPHOSOL® CDB-HP

Sulfate-free | Gentle feel, powerful thickening

INCI Name Cetyl Betaine
Appearance Clear Liquid
Actives 30%
Pour Point -6°C
Preservative None



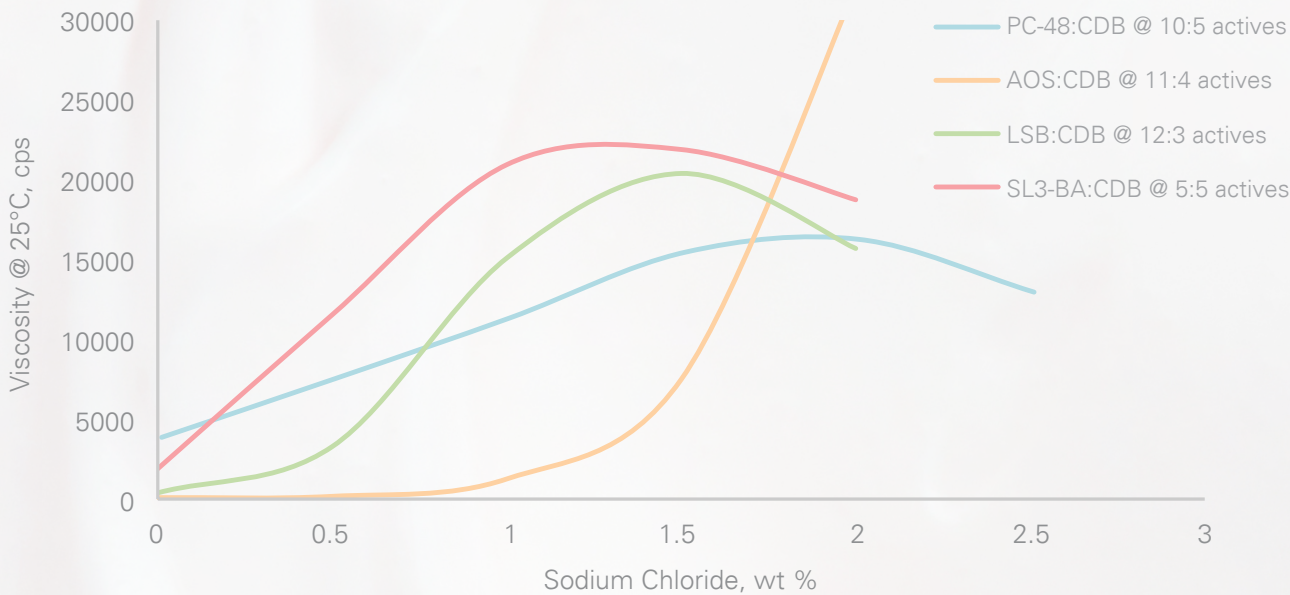
Meets Whole Foods Market® Premium Body Care Standards
 Enhances mildness
 Antistatic agent



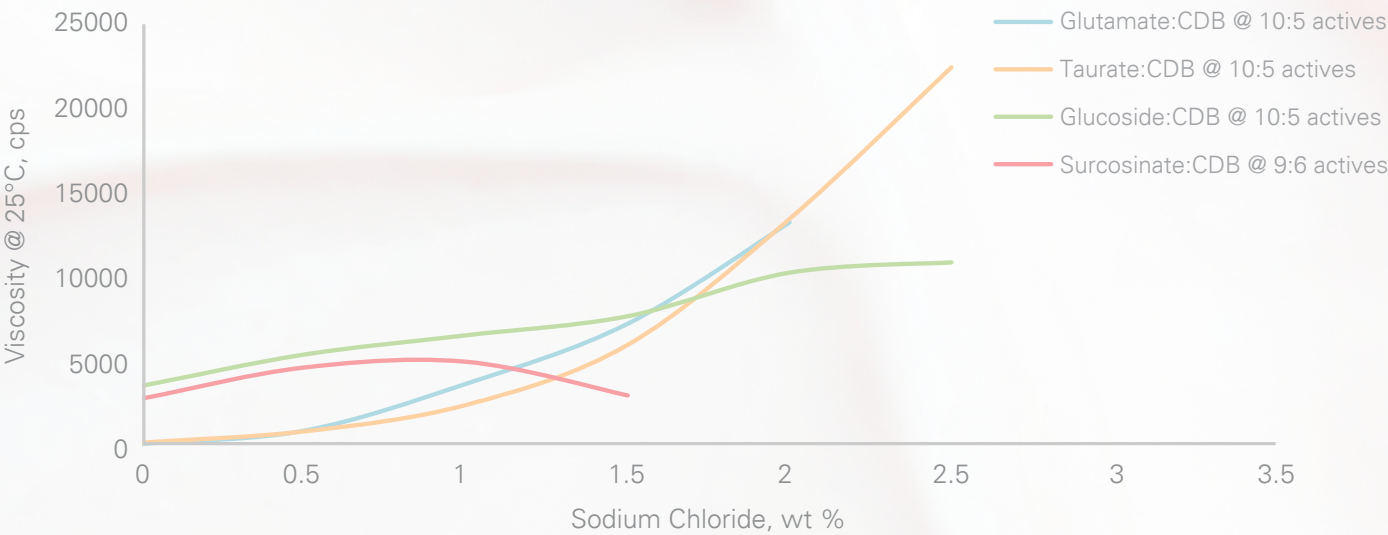
78% Bio-based
 Readily biodegradable
 No preservative



Easily thickens sulfate-free systems, even glucosides
 Easy handling and formulating
 Achieve water-white formulas



AMPHOSOL® CDB-HP can provide excellent thickening with almost every sulfate-free anionic surfactant in the Stepan portfolio, even methyl ester sulfonates such as ALPHA-STEP® PC- 48.



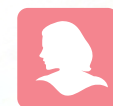
AMPHOSOL® CDB-HP thickens tougher anionic surfactant formulas such as glutamates, taurates, and glucosides.

Abbreviation	Stepan Trade Name	INCI Name
CDB	AMPHOSOL® CDB-HP	Cetyl betaine
PC-48	ALPHA-STEP® PC-48	Sodium methyl 2-sulfolaurate (and) disodium 2-sulfolaurate
AOS	BIO-TERGE® AS-40	Sodium C14-16 olefin sulfonate
LSB	STEPAN-MILD® LSB	Sodium lauryl sulfoacetate (and) disodium laureth sulfosuccinate
SL3-BA	STEPAN-MILD® SL3-BA	Disodium laureth sulfosuccinate
Glutamate	PERLASTAN® SC (Schill + Seilacher)	Sodium cocoyl glutamate
Taurate	HOSTAPON® CT (Clariant)	Sodium cocoyl methyl taurate
Glucoside	GLUCOPON® 625 UP (BASF)	Lauryl glucoside
Sarcosinate	MAPROSYL® 30-B	Sodium lauroyl sarcosinate

NINOL[®] CAA

Sulfate-free | A superior, multifunctional amide

INCI Name	Dimethyl Lauramide/Myristamide
Appearance	Clear Liquid
Actives	100%
Pour Point	11°C
Preservative	None



Meets Whole Foods Market[®]
Premium Body Care Standards
Mild aesthetics enhancer
Soft skin after-feel



86% Bio-based
Readily biodegradable
No preservative



Thickens with little to no
salt added
Superior-performing amide
Solubilizes fragrances



Starting Formulation



With NINOL[®] CAA

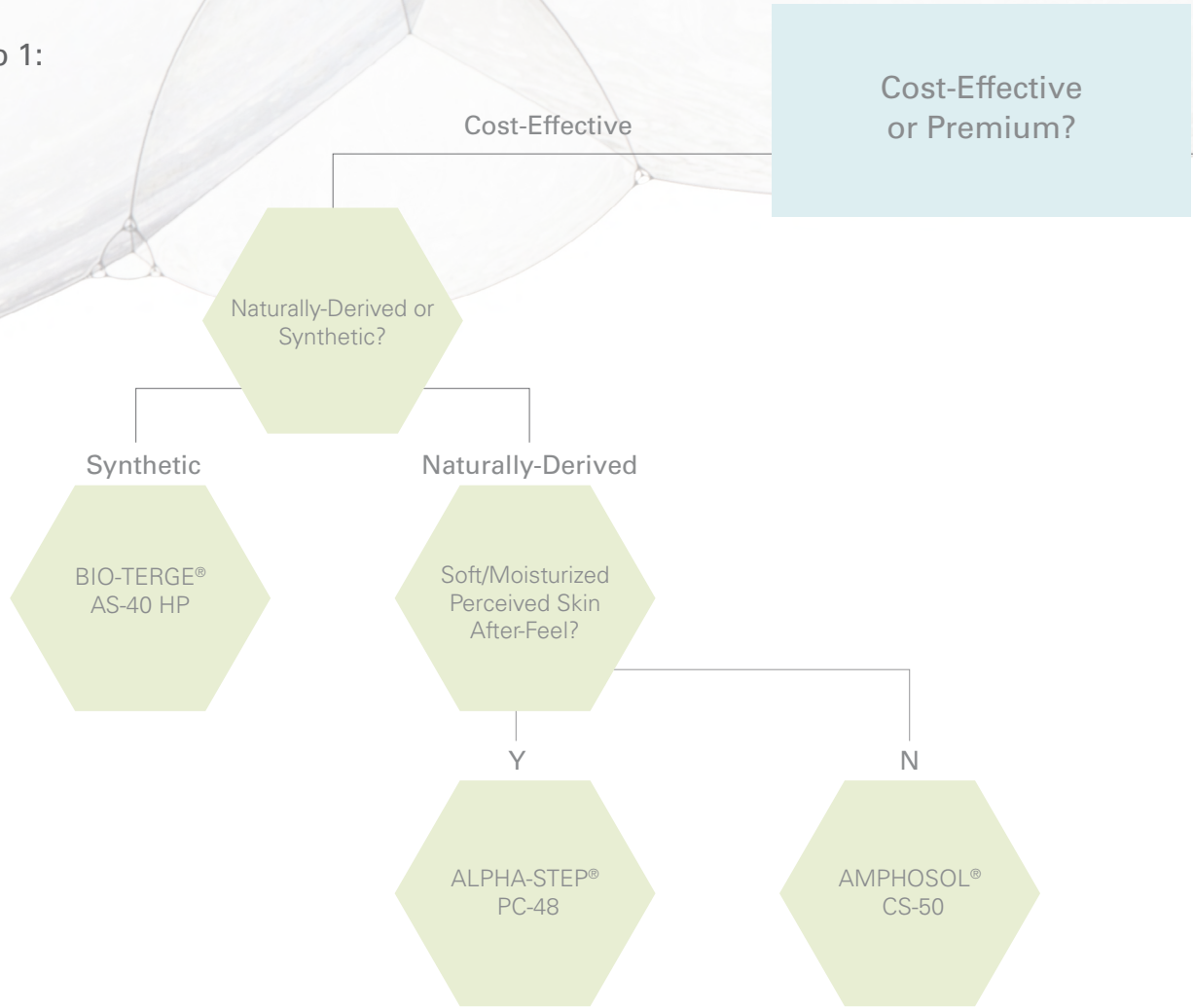
NINOL[®] CAA can be used in combination with betaines or other surfactants that carry small amounts of residual salt to build viscosity without requiring the addition of sodium chloride. Utilizing the multifunctionality of NINOL[®] CAA also eliminates the need for additional solubilizers.

NINOL[®] CAA is free of ethylene oxide (EO), so there is no concern for residual 1,4-dioxane. With NINOL[®] CAA, the resulting formulation has reduced actives and simplified ingredients along with improved foaming power and enhanced mildness.

Choosing the Right Sulfate-Free Ingredients

Each Stepan sulfate-free ingredient offers its own set of unique attributes. Knowing how to choose the correct ingredients for an application can be confusing! Use the flowchart to help you choose a primary anionic surfactant, then check out the additional ingredients below to put the finishing touches on your formulation! Please contact a Stepan Technical Service representative in your region for guidance.

Step 1:



Step 2:
Boost Performance and Increase Mildness

STEPAN TRADE NAME	INCI	PROPERTIES		
		Viscosity Building	Mildness Enhancement*	Bio-Based, %
AMPHOSOL® CDB-HP	Cetyl betaine	+++	+++	78
NINOL® CAA	Dimethyl lauramide/myristamide	+++	++	86
AMPHOSOL® HCA-HP	Cocamidopropyl betaine	++	+++	64

*Based upon average Zein score reduction when combined with anionic surfactants versus anionic surfactants alone

Step 3:
Add the Finishing Touch

STEPAN TRADE NAME	INCI NAME	PROPERTIES	BIO-BASED, %
STEPAN-MILD® GCC	Glyceryl caprylate/caprate	Emollient, foam booster	100
STEPAN-MILD® L3	Lauryl lactyl lactate	Natural silicone alternative, conditioning agent	100
NEOBEE® M-5 COSMETIC	Caprylic/capric triglyceride	Occlusive additive	100



Finishing Off Your Sulfate-Free Formulation

Whether you are looking for sensory enhancement, conditioning effects or an enriched experience, these surfactant additives can add multifunctionality to your formulation.

STEPAN-MILD® GCC

Sulfate-free | Soft and structured

INCI Name	Glyceryl Caprylate/Caprate
Appearance	Off-White Paste
Actives	100%
Melting Point	24-30°C
Preservative	None



Soft, moisturized feel
Safe, mild, non-sensitizing and non-irritating to eyes and skin
Enhances foam volume and feel
COSMOS-Approved



100% Bio-based from vegetable feedstock
Biodegradable
No preservative



Food-grade thickener
Able to produce structured liquid systems
Can be incorporated at any formulation step

STEPAN-MILD® L3

Sulfate-free | A natural silicone alternative

INCI Name	Lauryl Lactyl Lactate
Appearance	Clear Liquid
Actives	100%
Pour Point	-12°C
Preservative	None



Moisturized, hydrated feel
Significantly improves skin hydration, even after 24 hours*
Equal performance to silicones without being “heavy”



100% Bio-based from vegetable feedstock
Readily biodegradable
No preservative



Comparable performance to both large and small particle size silicones
Liquid, cold-mixable
Boosts viscosity building

*Compared to untreated skin

TECHNICAL SERVICE LOCATIONS

Stepan Company NORTH AMERICA

Tel +1-800-745-7837

Email techserv@stepan.com

Stepan LATAM

Tel +52-55-8311-2700

Email techservicelatam@stepan.com

Stepan BRAZIL

Tel +55-11-5089-2200

Email tservicemercosul@stepan.com

Stepan EUROPE

Tel +33-476-505-160

Email tech.service@stepaneurope.com

Stepan SINGAPORE

Tel +65-6879-9855

Email asia.techservice@stepan.com

2019 © Stepan Company. All Rights Reserved.

ALPHA-STEP®, AMPHOSOL®, BIO-TERGE®, LATHANOL®, NEOBEE®, NINOL®, STEPAN®, STEPAN-MILD®, and STEPANOL® are registered trademarks of Stepan Company. All other trademarks referenced herein, are the registered trademarks of the respective companies cited herein.

"% Bio-Based" references the Biorenewable Carbon Index (BCI) of the material. BCI is the number of biorenewable carbons (derived from plant, animal or marine based sources) divided by the number of total carbons in the idealized molecule.

"Meets Whole Foods Market Premium Body Care Standards": Ingredients are not expressly listed on Whole Foods Premium Body Care Unacceptable Ingredients list as of December 2019.

Whole Foods Market® is a registered trademark of Whole Foods Market IP, LP. CleanGredients® is a registered trademark of the GreenBlue Institute.

The information contained herein is based on the manufacturer's own study and the works of others and is subject to change without prior notice. The information is not intended to be all-inclusive, including as to the manner and conditions of use, handling, storage or disposal or other factors that may involve additional legal, environmental, safety or performance considerations. Nothing contained herein grants or extends a license, express or implied, in connection with any patents issued or pending of the manufacturer or others, or shall be construed as a recommendation to infringe any patents or to violate any applicable laws. STEPAN COMPANY MAKES NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR USE, AND NO WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, IS MADE, INCLUDING REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY, ACCURACY, COMPLETENESS, ADEQUACY OR OTHERWISE. Stepan Company (and its employees, subsidiaries and affiliates) shall not be liable (regardless of fault) to the vendee, its employees, or any other party in respect of this information, including in respect of its accuracy, completeness, adequacy, furnishing, use, or reliance upon, and the vendee assumes and releases Stepan Company (and its employees, subsidiaries and affiliates) from all liability, whether in tort, contract or otherwise to the fullest extent possible under the relevant law.

Dec 2019