



Stepan **S**[®]

Personal Care

Sulfate-Free



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.

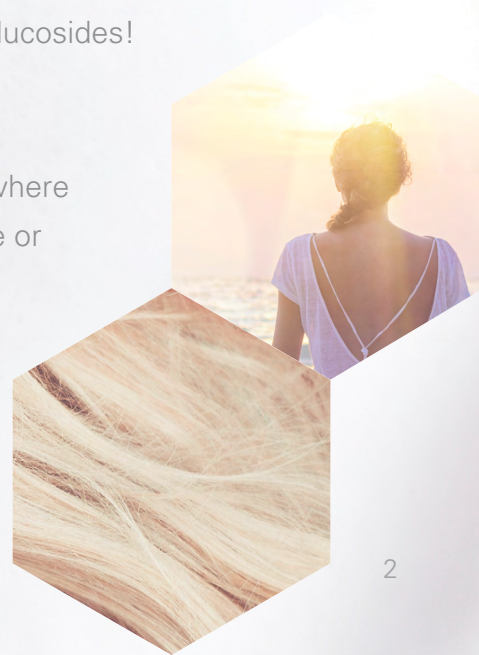
Are there any downsides?

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

Glyceryl Caprylate/Caprate

5.00

Shea Butter

0.40

Soybean Oil

4.50

Fragrance

0.40

ALPHA-STEP® PC-48

7.50

Sugar

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

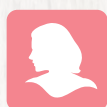
INCI Name Sodium C14-16 Olefin Sulfonate

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

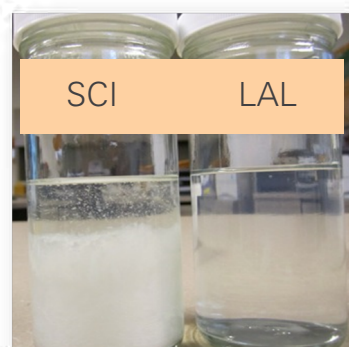


Easier to solubilize than
isethionates
Create low-water products
Achieve water-white
formulas

This Is My Natural Color

Naturally-Derived Color
Care Shampoo

Formulation No. 1189



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



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

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

INCI Name Disodium Laureth Sulfosuccinate

Appearance Clear Liquid

Actives 32%

Pour Point -3°C

Preservative Benzoic Acid



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



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

Sodium Lauryl Sulfate

30.00

AMPHOSOL® HCG-HP

Cocamidopropyl Betaine

6.00

STEPAN-MILD® SL3-BA

2.00

STEPAN-MILD® L3

Lauryl Lactyl Lactate

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)

Pentylene Glycol

NEOBEE® M-5 Cosmetic
Caprylic/Capric Triglyceride

dl-Menthol

Titanium Dioxide 3328 USP BC (Princeton Chemicals, Inc.)

STEPAN-MILD® LSB

AMPHOSOL® HCA-HP
Cocamidopropyl Betaine

Polargel® NF BC 342 (Princeton Chemicals, Inc.)

Salicylic Acid, USP Grade

AE COSMOFLUOR® #61 (Princeton Chemicals, Inc.)

% 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-Sulfolaurate 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



A close-up photograph of a baby's face, looking directly at the camera. The baby is wearing a white, textured towel hood that covers their head and ears. The baby's skin is fair and smooth, and their eyes are dark and clear. The background is softly blurred, showing more of the towel and the baby's shoulder.

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

Performance Surfactant Blend

55.50

AMPHOSOL® CS-50

5.50 ———



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

STEPAN-MILD® L3

Lauryl Lactyl Lactate

0.50 ———



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

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® CDB-HP

Sulfate-free | Gentle feel, powerful thickening

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



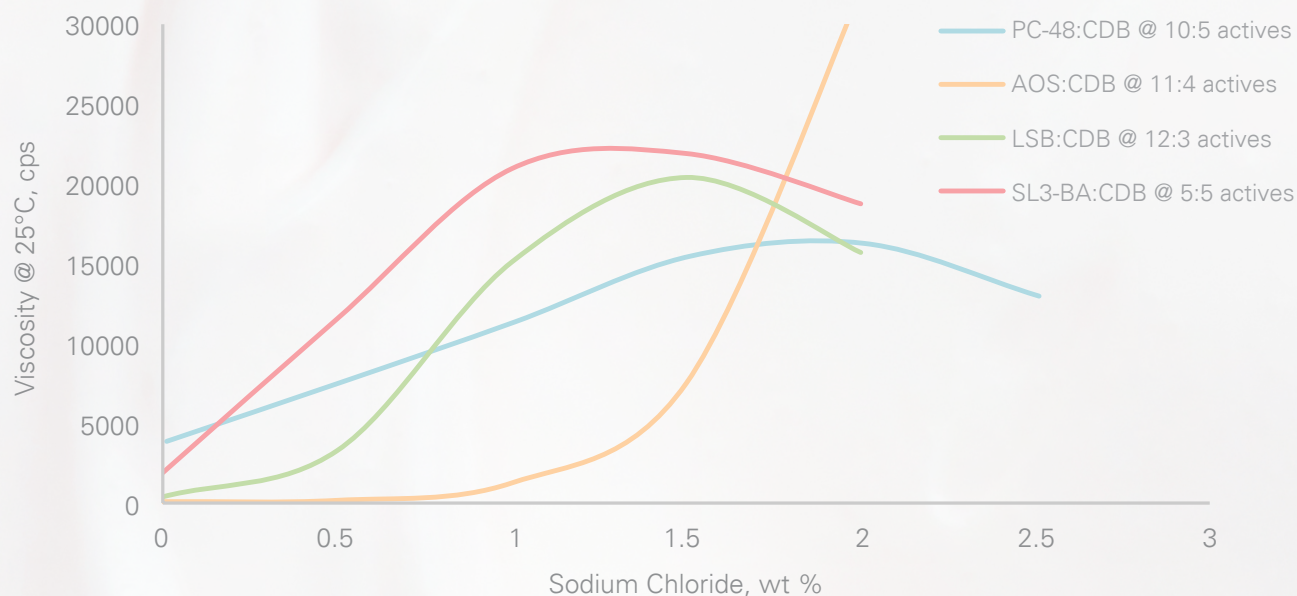
Meets Whole Foods
Market® Premium Body
Care Standards
Enhances mildness
Antistatic agent



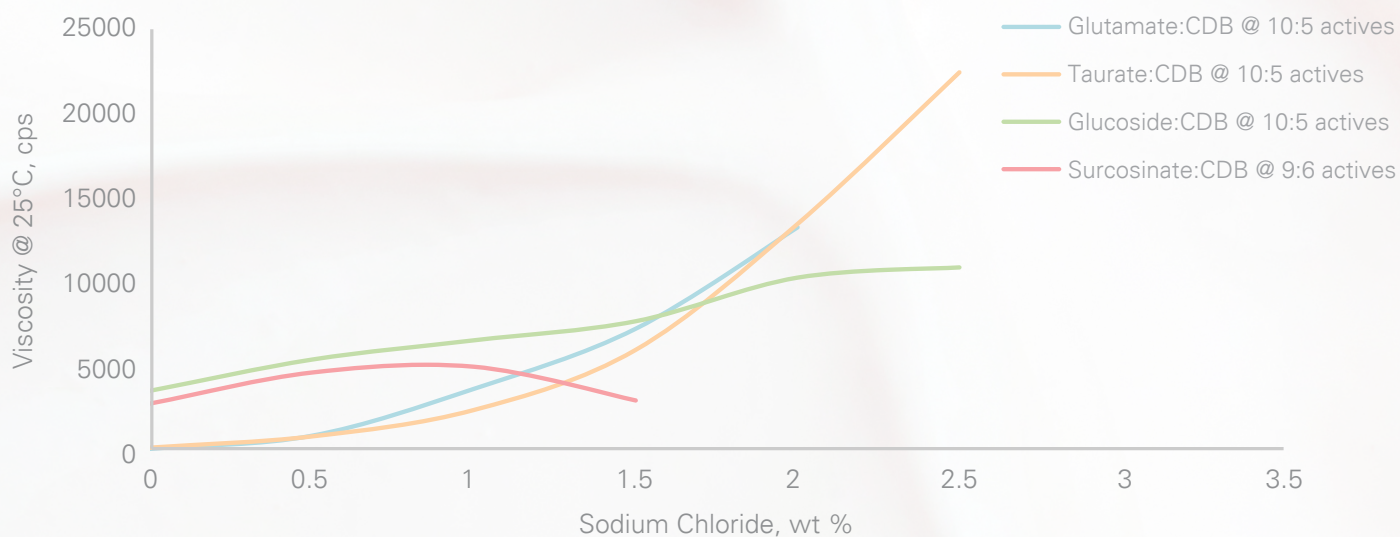
78% Bio-based
Readily biodegradable
No preservative



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

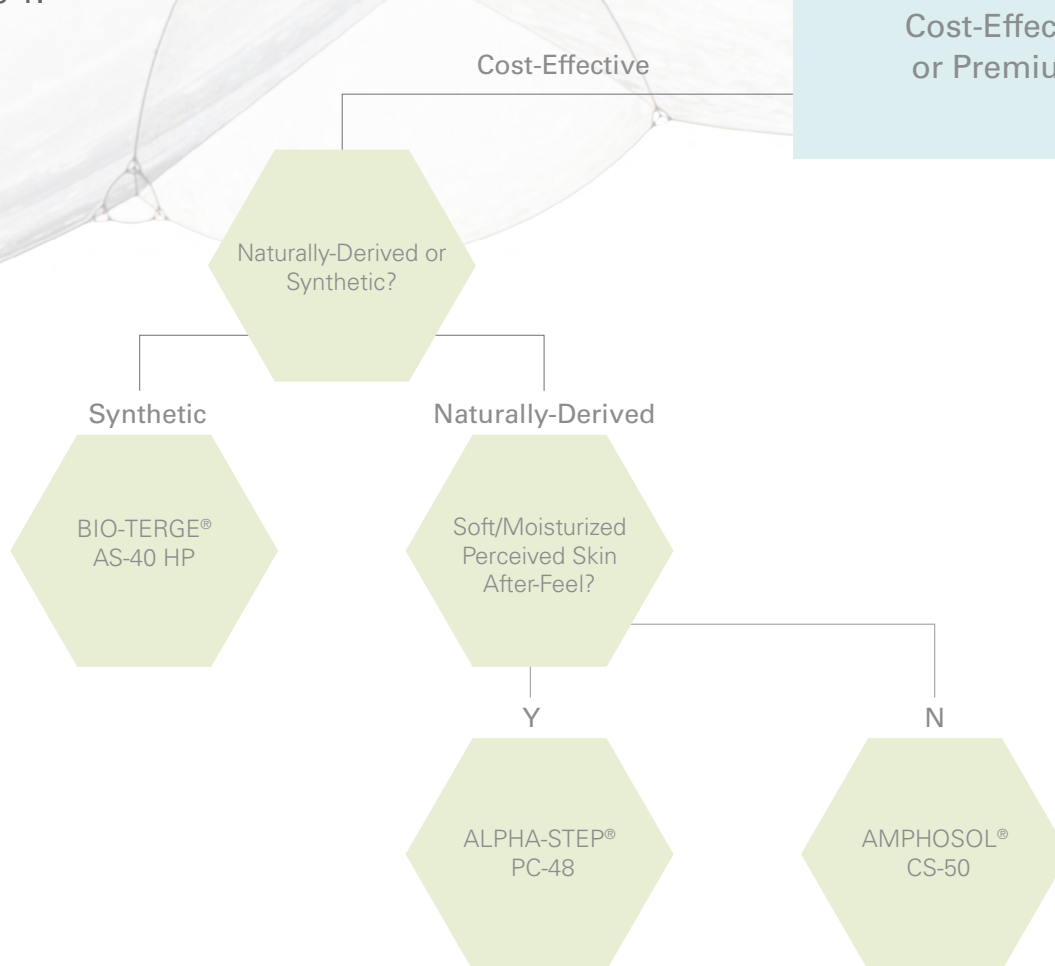
NINOL[®] CAA can be used in combination with betaines or other surfactants that carry small amounts of residual salt to build viscosity without requiring the addition of sodium chloride. Utilizing the multifunctionality of NINOL[®] CAA also eliminates the need for additional solubilizers.

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:

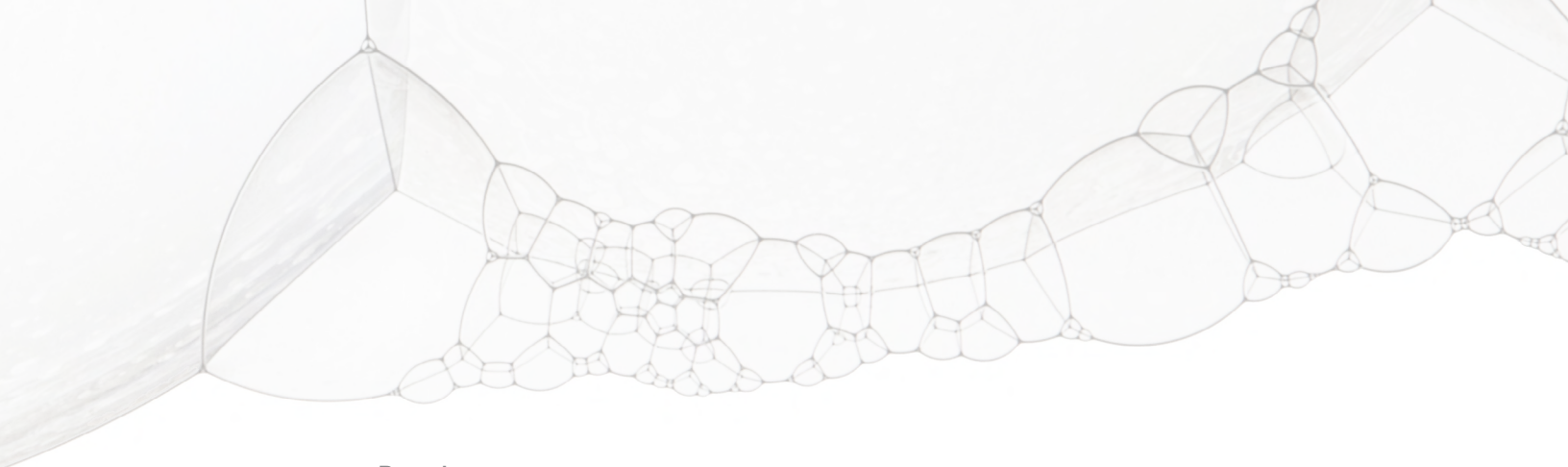


Step 2:

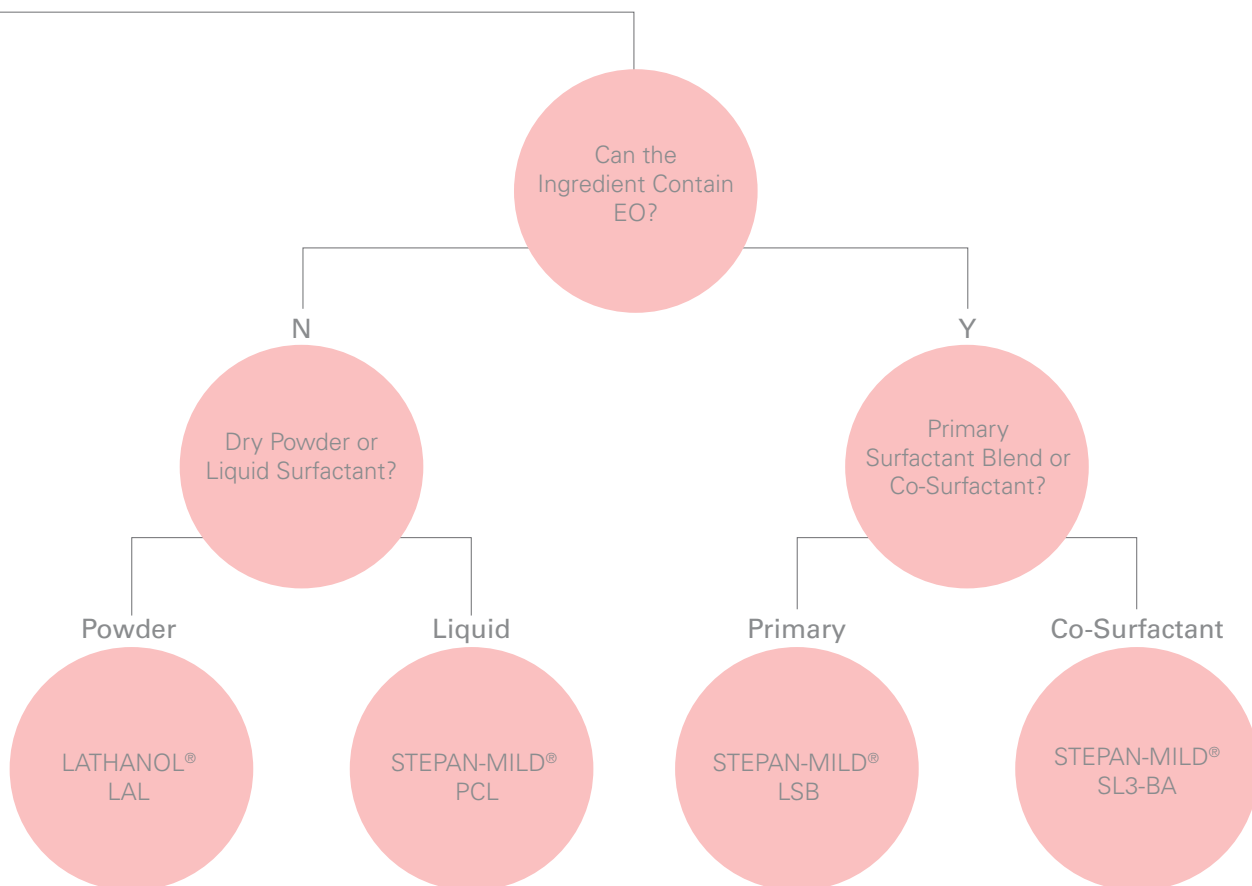
Boost Performance and Increase Mildness

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



Premium



Step 3: Add the Finishing Touch

STEPAN TRADE NAME	INCI NAME	PROPERTIES	BIO-BASED, %
STEPAN-MILD® GCC	Glyceryl caprylate/caprates	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

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"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.

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Dec 2019