

Green



**New Personal
Care
Formulations**

**STEPAN-
MILD GCC
Attributes**

**Sulfate
free**

**Cocamide
DEA
free**

Stepan 



***Innovative chemical solutions for a cleaner,
healthier, more energy efficient world***

Green Trend

BCI : Biorenewable Carbon Index (internal index –
adapted to raw materials and formulation)
Ecocert validation according Cosmetic Standards
EU Cosmetic Ecolabel : potential candidate
COSMOS / NaTrue certification



**Please refer to our specific documentation
“ Our green answers – Cosmetics uses “**



BCI : Biorenewable Carbon Index – Ecocert /Cosmos / NaTrue

- **BCI** is an internal “green” Stepan’s index that provides you a single value based on the % of carbon derived from Biorenewable resource (**Biorenewable** is defined as originating from animal, plant or marine material),
- The **BCI** is calculated (not analytical) by taking the number of biorenewable carbons divided by the total number of carbons from idealized molecule,
- Water or other **solvents** are not considered in the calculation,
- The **BCI calculation** could be applied to a formulation itself – taking only Stepan products and their respective level of active into consideration,
- A product is qualified as “green” for a BCI equal or above 50,
- The BCI products listed present a good environmental profile and, therefore, they meet different definitions of green – see last page.
- Complete BCI catalog available on <http://www.stepan.com/Products/General-Literature.aspx>



Biorenewable **Carbons** / Total Carbons x 100

EXAMPLE : LATHANOL LAL

INCI name : Sodium Lauryl Sulfoacetate

	Fatty chain C12 (mainly)			Sulfoacetate	$\text{CH}_3(\text{CH}_2)_{10}\text{CH}_2\text{O}-\overset{\text{O}}{\parallel}\text{CCH}_2\text{SO}_3\text{Na}$ $(12 / 14) * 100 = 86$
	CH ₃	(CH ₂) ₁₀	CH ₂ O	O=CCH ₂ SO ₃	
Number of carbons	1	10	1	2	
Origin	Biorenewable			synthetic	

PRODUCTS	INCI designation	BCI	ECOCERT cosmetic	Cosmos / NaTrue
STEPAN-MILD GCC	Glyceryl caprylate/caprate	100		COSMOS / NaTrue candidate
LATHANOL LAL Coarse	Sodium lauryl sulfoacetate	86		Not valid for COSMOS
STEPANOL ALS 25B	Ammonium lauryl sulfate	100		In progress
STEPANOL WA-Extra HA	Sodium lauryl sulfate	100		In progress



NATURAL HAIR CONDITIONING MASQUE

	% w/w
NEOBEE® M5 - Caprylic/Capric Triglyceride	4.8
STEPANQUAT® GA90 - Methyl bis[ethyl (palmate)]-2-hydroxythethyl ammonium methyl sulfate	12
STEPAN-MILD® GCC - Glyceryl Caprylate / Caprate	0.7
Cetyl/Stearyl Alcohol	4.8
Isopropyl Palmitate	0.6
DI water	qs 100
Fragrance / Preservative / pH adjuster	Qs (pH = 3.3)



BCI = 87.5

STEPANTEX PA88E can be replaced by **STEPANQUAT GA90**

Good conditioning
Thick creamy texture
Easy to process



GREEN BODY WASH

	% w/w
LATHANOL LAL Coarse - Sodium lauryl sulfoacetate	0.7
STEPAN-MILD® GCC - Glyceryl Caprylate / Caprate	0.5
STEPANOL® ALS25B – Ammonium lauryl sulfate	32
AMPHOSOL CG-UN - Cocamidopropyl betaine	6.45
Organic Fruit Water	12
Decyl glucoside	3.61
DI water	qs 100
Euxyl K172 / Perfume	1.2 / 0.2



Comply with Ecocert
Standards
Clear appearance
Good Foaming

***Innovative chemical solutions for a cleaner,
healthier, more energy efficient world***

**Sulfate
free**

● Alpha-step® PC48

● Stepan-Mild® PCL

● Stepan-Mild® LSB

● Amphosol® CDB Special

● Stepan-Mild® GCC

● Lathanol LAL Coarse

**Color Care protection
Mild and Friendly to Skin
Low In vitro eyes irritancy
Skin Feel Enhancement**



Stepan 



Sulfate free systems

No industry definition nor government regulation

Stepan defines "Sulfate-free" as:

- No alcohol sulfate
- No alcohol ether sulfate

The definition does not include inorganic sulfates (e.g. sodium sulfate used as a processing aid)

Properties are different from usual Sulfate systems

- Cost is higher
- Challenge to get high foam volume,
- Difficulty to thicken Sulfate free system



Sulfate free foam bath

2 in 1 body wash and bubble bath

	% w/w
LATHANOL® LAL COARSE - Sodium Lauryl sulfoacetate	7
ALPHA-STEP® PC 48 - Sodium Methyl 2-Sulfolaurate (and) Disodium 2-Sulfolaurate	13
AMPHOSOL® CG-K - Cocamidopropyl Betaine	6.5
STEPAN-MILD® GCC - Glyceryl Caprylate/Caprates	1.5
Glycol Distearate	2
WATER	Qs 100



Mild & Friendly to Skin
Skin Feel enhancement
Luxurious foam



Sulfate free body wash

Dermatologically tested

BCI = 89

% w/w



WATER	qs 100
ALPHA-STEP®PC 48 - Sodium Methyl 2-Sulfolaurate (and) Disodium 2-Sulfolaurate	17.90
AMPHOSOL®CDB Special - Cetyl Betaine	14
STEPAN-MILD®PCL - Sodium Methyl-2 Sulfolaurate, Disodium 2-Sulfolaurate, Sodium Lauryl Sulfoacetate	4.35
STEPAN-MILD®GCC - Glyceryl Caprylate/Caprate	0.7
Fragrance /Preservative /Citric Acid	0.4/1.2 pH < 5.5

Mild & Friendly to Skin
Skin Feel enhancement
Low in vitro eye irritancy



Sulfate Free Facial Cleanser

BCI = 68.7

% w/w

WATER	qs 100
STEPAN-MILD® LSB - Sodium Lauryl Sulfoacetate and Disodium Laureth Sulfosuccinate	16
AMPHOSOL® CG-UN - Cocamidopropyl betaine unpreserved	19.35
STEPAN-MILD® GCC - Glyceryl Caprylate/Caprate	0.5
Hypoallergenic perfume / Euxyl 712 / Citric acid	0.2 / 1.2 q.s. to pH = 5,5

Sulfate and Nitrosamine free
Suitable for foamer packagings
Skin Feel Enhancement
Luxurious foam



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**STEPAN-
MILD GCC
Attributes**

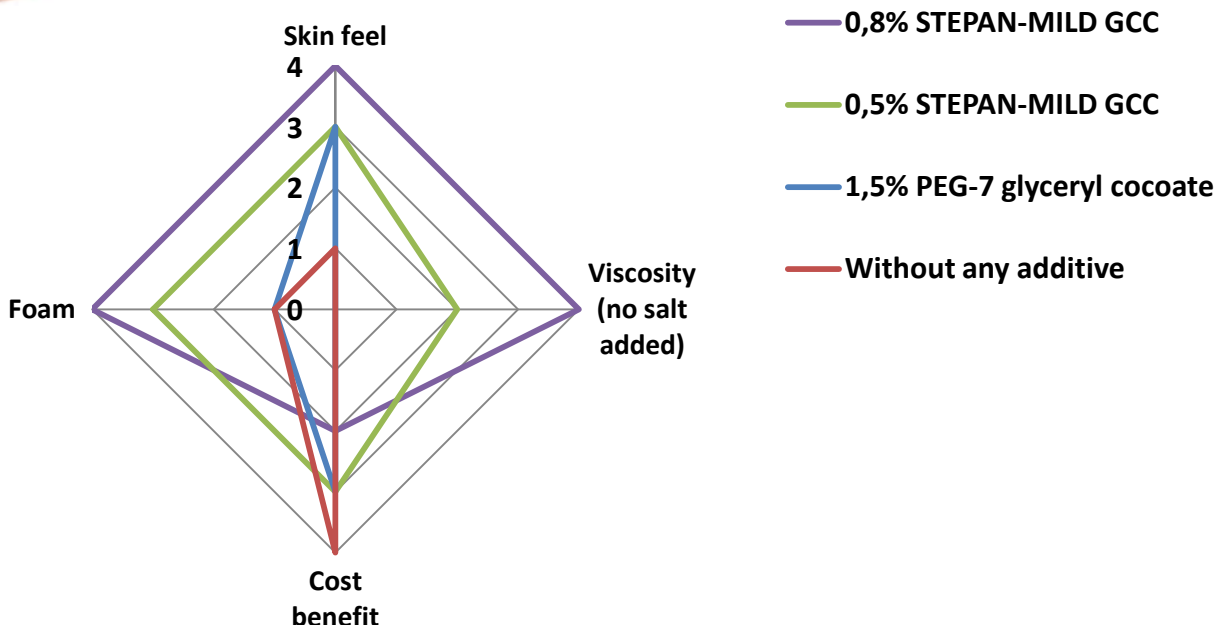


STEPAN-MILD® GCC
Enhances foam performance
Builds viscosity without adding NaCl
Improves skin feel at small rates





Performances Mapping



Hand Wash with STEPAN-MILD GCC

Economic mild hand wash

	% w/w
DI water	q.s. 100
Fragrance	0.2
STEOL® CS 230 HA - Sodium Laureth Sulfate	7.25
AMPHOSOL® CGK - Cocamidopropyl Betaine	6.50
STEPANOL® ALS 25B - Ammonium Lauryl Sulfate	4.51
NINOL® 40 CO-E - Cocamide DEA	0.96
Glycerine	4
pH adjuster (Citric acid) / Preservative	q.s./ pH = 5.5-6
STEPAN-MILD® GCC - Glyceryl Caprylate/Caprate	0.8



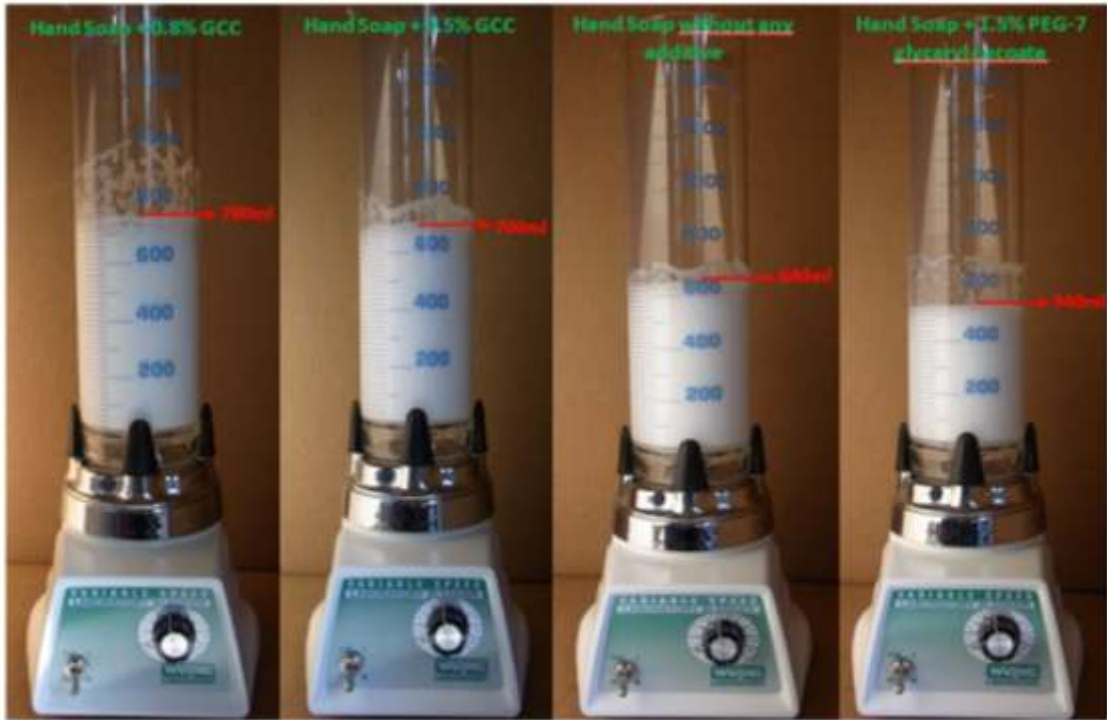
Soft to skin
No salt added
Creamy foam



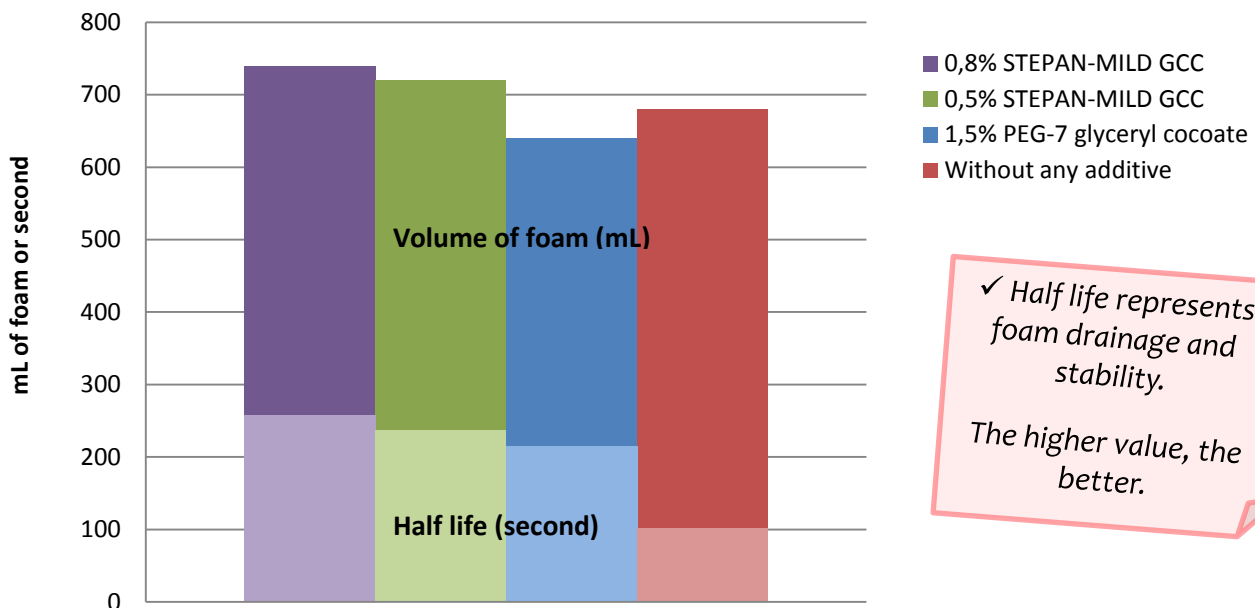
Hand Wash Formulations PERFORMANCE

GCC vs. PEG-7 glyceryl cocoate

FLASH FOAM TEST



✓ Procedure : Blender with special bowl is used to create foam. 1% solution in DI water is mixed for 30s. Then, foam volume and half-life are measured.



✓ Half life represents foam drainage and stability.

The higher value, the better.



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**Cocamide
DEA
free**

- **Lathanol® LAL**
- **Stepan-Mild® GCC**

Need to reformulate
Difficulty to build viscosity without CDEA
Cost of the formulation
Foam volume



Stepan 

CDEA replacement

FOAMING APPEARANCE WITH AND WITHOUT CDEA

Reference



- ✓ Good foam volume
- ✓ Light foam
- ✓ Big bubbles

1% GCC



- ✓ Abundant and rich foam
- ✓ Good bubble sizes mix
- ✓ Pleasant skin feel

1% LAL



- ✓ Creamy foam
- ✓ Fine and dense bubbles
- ✓ Pleasant skin feel

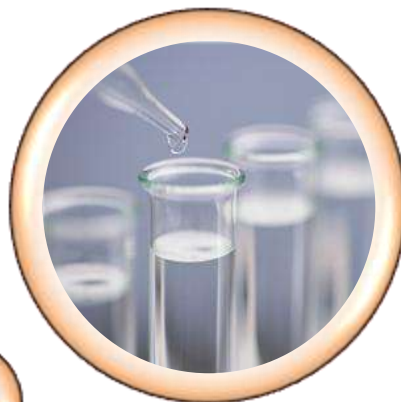
Reference formulation based on SLES/CAPB system and Cocamide DEA

CDEA Free Hand Wash

	% w/w
DI water	qs100
STEOL® CS 230 HA - Sodium Laureth Sulfate	8.27
AMPHOSOL® CGK - Cocamidopropyl Betaine	7.40
STEPANOL® ALS 25B - Ammonium Lauryl Sulfate	5.16
STEPAN-MILD® GCC - Glyceryl Caprylate/Caprate	0.5
Glycerine	qs
pH adjuster (Citric acid) /Fragrance /Preservative	qs
Sodium Chloride (for viscosity adjustment)	0.5 to 0.6

Soft to skin
Creamy foam
CDEA free

More information about our formulation / procedures and performances available upon request.



Products Characteristics & Properties




Any Additional Questions ?
tech.service@stepaneurope.com



Products listing



Potential cosmetic Ecolabel candidates
Non exhaustive list – see specific brochure

	CAS	Chemical description	Properties	BCI
LATHANOL LAL Coarse  ECOCERT	1847-58-1	Sodium lauryl sulfoacetate	Primary/secondary surfactant, great viscosity building, rich foam, mildness, hard water stability	87
STEPAN-MILD GCC 	91744-32-0	Glyceryl Caprylate/ Caprate	Thickener, Foam booster, improve skin softness, potential alternative to silicone	100
STEPAN-MILD LSB	39354-45-5 & 1847-58-1	Disodium laureth sulfosuccinate & Sodium lauryl sulfoacetate	Mild surfactant blend, good foam quality and stability, Viscosity builder, easy to handle	64
STEPAN-MILD PCL	85681-86-3 & 85186-99-8 & 1847-58-1	Sodium Methyl 2-Sulfolaurate (and) Disodium 2-Sulfolaurate, Sodium Lauryl Sulfoacetate	High foam enhancer, great viscosity response, good skin after feel, easy to handle	90
AMPHOSOL CDB Special	693-33-4 & 683-10-3	Cetyl (C16 dimethyl amine) betaine	Great synergy to improve viscosity response of sulfate free formulations – good foaming properties, Good hard water stability & hydrotropic properties for PC48	78
ALPHA-STEP PC48	85681-86-3 & 85186-99-8	Sodium Methyl 2-Sulfolaurate (and) Disodium 2-Sulfolaurate		94
STEPANOL ALS 25B  ECOCERT	90583-11-2	Sulfuric Acid, mono-C12-14-alkylesters, ammonium salts	Great viscosity response, high foaming properties	100
STEPANQUAT GA90 	EC 931-203-0	Dipalmitoylethyl hydroxyethylmonium methosulfate	Good anti-static properties, conditioning effect, good detangling	81