



Stepan's Response to Green Not "One Size Fits All"

Presented by:
Anne Gariepy and Jackie Pytel
Stepan Company

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Outline



- Biorenewable products guide
- New formulations and products
- Guidance documents
- Stepan sustainability

Stepan's Position on Green



Simply put, our position is
our customer's position

- We offer a wide line of products.
 - Flexible feedstocks (natural, petroleum-derived)
 - Most with a good environmental profile
- We respond to customer's green formulating needs on a case-by-case basis. It is not a one-size fits all.
- We will be transparent with our chemistries, processes and commercial products.



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Biorenewable Carbon Index

Stepan S

Your Complete Surfactant Source™

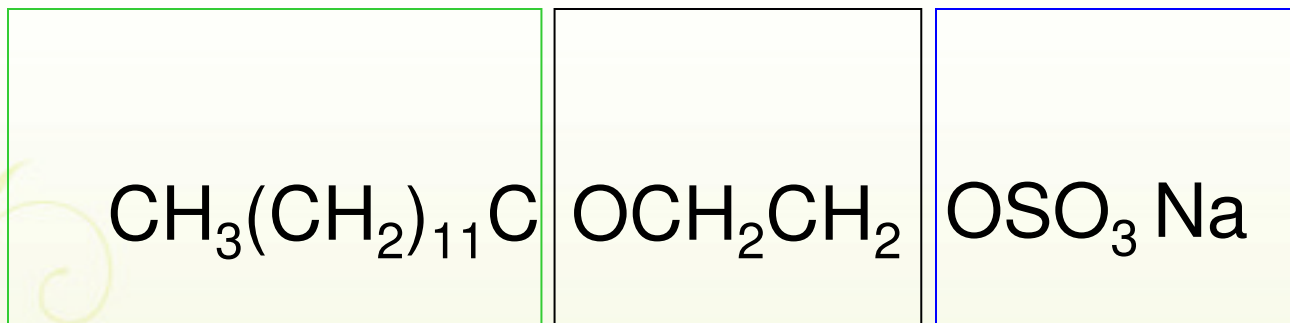
Biorenewable Carbon Index

- BCI = the percent of a Stepan product that comes from biorenewable carbons
- Biorenewable = originating from animal, plant or marine material
- BCI is a calculated value
(biorenewable carbons / total carbons) x 100
- Guide contains Stepan products with a BCI of ≥ 50

Calculation Example



STEOL® CS-130 Sodium Laureth sulfate



- Natural coconut oil based alcohol
- Biorenewable
- Average 13 natural carbons

- Ethylene oxide
- 2 petro carbons

- Sodium sulfate not counted

of Natural-Based Carbons = **13**

of Petroleum-Based Carbons = **2**

Total # of Carbons = **15**

$$\text{BCI} = 100 \times (\text{biorenewable carbons} / \text{total carbons}) = \mathbf{87}$$



PERSONAL CARE by BIORENEWABLE CARBON INDEX



BCI	Stepan Trade Name	Chemical Class	INCI Name	Form @ 25°C	%VOC	Sulfate-Free	Biodegradability	Plant-derived	Base Starting Material	Process	Notes
87	STEPAN® PTC	Nonionic	Pentaerythrityl tetracaprylate/tetracaprate	Liquid	0	*	U	*	Methyl ester	Esterification	•EO/PO free •Nitrogen free •Skin conditioning agent •Occlusive agent •Emollient
87	STEPANOL® ML 30	Anionic	MEA lauryl sulfate	Liquid	0		R	*	Fatty alcohol	Sulfonation	•EO/PO free •Stable above pH 5 •Manufactured in Europe
86	NINOL® CMFE	Nonionic	Cocamide MEA	Flake	0	*	R	*	Fatty triglyceride	Amidation	•1:1 amide •DEA free •Manufactured in Europe
86	NINOL® CMP	Nonionic	Cocamide MEA	Powder	0	*	R	*	Fatty triglyceride	Amidation	•1:1 amide •DEA free
86	NINOL® COMF-N	Nonionic	Cocamide MEA	Flake	0	*	R	*	Fatty triglyceride	Amidation	•1:1 amide •DEA free
86	NINOL® LMP	Nonionic	Lauramide MEA	Powder	0	*	R	*	Fatty triglyceride	Amidation	•1:1 amide •DEA free
86	STEOL® CS-130	Anionic	Sodium laureth sulfate	Liquid	0		R	*	Fatty alcohol	Alkoxylation, sulfation	•Low active •1 mole EO •Stable above pH 5

- % VOC
- Designates “sulfate-free”
- Biodegradability
- Designates plant derived
- Includes base starting material
- Includes Stepan processing
- Notes section



visit [www.stepan.com, products/general literature](http://www.stepan.com/products/general_literature)

New Formulations Developed to Meet Trends



- High BCI
- Naturally-Derived
- Sulfate-Free
- Amide-Free
- EO-Free

**new Personal Care formulations on our website at
www.stepan.com**

Recent Product Launches



<u>PRODUCT</u>	High BCI	Naturally-Derived	Sulfate-Free	EO-Free
STEPAN® SSL-CG	●	●	●	●
STEPAN® SLL-FB	●	●	●	●
STEPAN-MILD® L3	●	●	●	●
STEPAN-MILD® GCC	●	●	●	●

● PROVIDES ATTRIBUTE