

Stepan 

Navigating Safer Choice

***Stepan's CleanGredients®
Product & Formulation Guide***



Navigating Safer Choice

What is Safer Choice?

The United States Environmental Protection Agency's (EPA) Safer Choice Program is one of the EPA's premier partnership programs, working with industry sectors to compare and improve the human health and environmental risks, as well as the performance and cost of existing and alternative products, processes and practices.

For more information visit www.epa.gov/saferchoice.

What is CleanGredients®?

CleanGredients® is an online database of chemical product ingredients that are used primarily to formulate household, institutional, and industrial cleaning products that have been pre-approved to meet the U.S. EPA's Safer Choice Standard. CleanGredients® is a resource for formulators who are seeking chemical ingredients that will help them to obtain the Safer Choice label in a manner that reduces risk to their business, saves them money and gets their products to market faster.

For more information visit www.cleangredients.org.

What does the EPA's Safer Choice label on a product signify?

The label signifies that the Safer Choice review team has screened each ingredient in the product for potential human health and environmental effects and that—based on currently available information, predictive models, and expert judgment—the product contains only those ingredients that pose the least concern among chemicals in their class.

How does Stepan support the U.S. EPA Safer Choice Program?

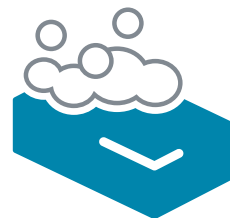
Stepan was a key stakeholder in the development of the first ingredient screen for surfactants in association with the development of the CleanGredients database. In 2006, Stepan listed its first five ingredients. Since 2006, Stepan has listed over 30 surfactants approved for those customers seeking Safer Choice certification. Stepan upholds the U.S. EPA Safer Choice Program's mission to help safeguard human and environment health through the use of safer chemistry. The program involves an independent, third-party technical review as well as a U.S. EPA review of both ingredients and end use products against an established and publicly-available standard. As the EPA's website notes, "The Safer Choice label, backed by the scientific expertise and experience of EPA, provides the assurance many consumers seek. Companies that have invested in safer chemistry and earned the label have entered an expanding marketplace for sustainable products."

Source: www.epa.gov/saferchoice/frequently-asked-questions-safer-choice.

Stepan's products listed in the CleanGredients® database can be used in a variety of household, institutional, and industrial cleaning applications. Click on the Stepan trademark to find out more about that product.

Bubbly Primaries

Foamers to clean away particulate, dirt and grime



ALPHA-STEP® PC-48

Sodium methyl-2-sulfolaurate
& Disodium 2-sulfolaurate

Naturally derived, High Foam, Multifunctional use in detergents, hand dish wash and personal care products, Great for counter top cleaners

BIO-SOFT® D-40

Sodium alkylbenzene sulfonate, linear
& Sodium xylene sulfonate

Neutralized version of BIO-SOFT® S-101 (DDBSA¹), Wide pH range stability, Compatible with both hypochlorite and peroxide bleach, easy to handle liquid

BIO-SOFT® D-62 LT

Sodium alkylbenzene sulfonate, linear
& Sodium xylene sulfonate

All the benefits of BIO-SOFT® D-40 in a higher actives slurry

BIO-SOFT® S-101

C11.4 alkylbenzene sulfonic acid, linear
DDBSA, Workhorse high foaming detergent, Provides flexibility if formulators want to neutralize

BIO-TERGE® AS-40K

Sodium C14-16 olefin sulfonate

Very high foaming with fast wetting, Great for car wash and hand soaps, Wide pH range stability, CIT/MIT² preserved

BIO-TERGE® AS-40 HP

Sodium C14-16 olefin sulfonate

Very high foaming with fast wetting, Great for car wash and hand soaps, Wide pH range stability, Excess alkalinity preserved

STEOL® CS-270 C

Sodium laureth sulfate, 2 moles EO

Naturally derived, High foaming in hard and soft water, Mild, Synergistic with other anionic surfactants, Versatile

STEPANOL® WA-EXTRA HP

Sodium lauryl sulfate

Naturally derived, High foam, Fast wetting, Compatible with hypochlorite bleach, Excess alkalinity preserved

STEPANOL® WA-EXTRA K

Sodium lauryl sulfate

All the benefits of STEPANOL® WA-EXTRA HP, CIT/MIT preserved

STEPANOL® WA-EXTRA PCK

Sodium lauryl sulfate

Naturally derived, Better viscosity builder than STEPANOL® WA-EXTRA K, Great for personal care products, CIT/MIT preserved



Dry Character

Dry, powdered or tablet formulations

STEPANOL® DCFAS-N

Sodium coco-sulfate

Naturally derived, High dense foam, Fast wetting, Needle form for ease of handling

¹ DDBSA = Dodecylbenzene sulfonic acid

² CIT/MIT = Methylchlorisothiazolinone/Methylisothiazolinone

Squeaky Clean-ers

Cleaning power for greasy, oily soils



AMMONYX® LO

Lauramine oxide
Long lasting foam, Excellent degreasing, Self-preserved

AMPHOSOL® HCG-HP

Cocamidopropyl betaine
Viscosity/Foam booster, Mild, Excess alkalinity preserved

AMPHOSOL® HCG-K

Cocamidopropyl betaine
Viscosity/Foam booster, Mild, CIT/MIT preserved

BIO-SOFT® DR-13

Alcohol ethoxylate
Effective degreasing, Meets direct release screen,
HLB 13, CP³ 56°C

BIO-SOFT® DR-139

Alcohol ethoxylate
Effective degreasing, Meets direct release screen, Easy to handle, HLB 13, CP 56°C

BIO-SOFT® EC-639

C12-14 lauryl alcohol ethoxylate, POE-8
Naturally derived, Easy to handle, High temp cleaning,
HLB 13.3, CP³ 73°C

BIO-SOFT® EC-690

C12-14 lauryl alcohol ethoxylate, POE-7
Naturally derived, Easy to handle, General purpose,
HLB 12.2, CP 51°C

BIO-SOFT® GSB-9

Nonionic Blend
More environmentally-friendly alternative with similar overall properties to NPE-9, HLB 13.3, CP 56°C

BIO-SOFT® N1-5

C11 alcohol ethoxylate, POE-5
Fast wetting, Moderate foam, Low pour point 6°C,
HLB 11.2, CP 34°C

BIO-SOFT® N1-7

C11 alcohol ethoxylate, POE-7
Fast wetting, Low interfacial and surface tension,
HLB 12.9, CP 58°C

BIO-SOFT® N1-9

C11 alcohol ethoxylate, POE-9
Good wetting, High solubility, General purpose,
HLB 13.9, CP 83°C

BIO-SOFT® N25-7

C12-15 alcohol ethoxylate, POE-7
Excellent detergent, Low interfacial tension and CMC, HLB 12.2, CP 49°C

BIO-SOFT® N91-6

C9-11 alcohol ethoxylate, POE-6
Fast wetting, High foam, Low pour point 6°C,
HLB 12.4, CP 53°C

BIO-SOFT® N91-8

C9-11 alcohol ethoxylate, POE-8
Fast wetting, High foam, High temp cleaning,
HLB 13.9, CP 81°C

BIO-SOFT® N-600

C12-13 alcohol ethoxylate blend
NPE replacement, I&I cleaning, Easy to handle,
HLB 10.6, CP <25°C

BIO-SOFT® N-900

C9-11 alcohol ethoxylate blend
NPE replacement, General purpose, Easy to handle, HLB 13.0, CP 64°C

BIO-SOFT® N-901

C9-11 and C12-13 alcohol ethoxylate blend
NPE replacement, Degreasing, Easy to handle,
HLB 12.0, CP 40°C

BIO-SOFT® N-1200

C9-11 and C12-15 alcohol ethoxylate blend
NPE replacement, Fragrance solubilization,
Dispersant, Easy to handle, HLB 13.5, CP 80°C

MAKON® DA-6

C10 branched alcohol ethoxylate
Fast wetting, Low pour point 6°C, Easy to handle,
HLB 12, CP 43°C

MAKON® UD-6

C11 alcohol ethoxylate, POE-6
Effective degreasing, Fast wetting, Low gel curve,
HLB 11.9, CP 35°C

³CP = Cloud Point at 1% aqueous

⁴MP = Melting Point

Supporting Roles

*Boost performance, build viscosity,
increase mildness, generate foam*



AMPHOSOL® CG-50

Cocamidopropyl betaine
Naturally derived, Mild, Boosts foam & viscosity,
Higher active, Preservative-free

AMPHOSOL® HCA-HP

Cocamidopropyl betaine
Naturally derived, Mild, Boosts foam & viscosity,
Excess alkalinity preserved

AMPHOSOL® HCG-HP

Cocamidopropyl betaine
Naturally derived, Mild, Boosts foam & viscosity,
Includes natural moisturizer, Excess alkalinity preserved

AMPHOSOL® HCG-K

Cocamidopropyl betaine
Naturally derived, Mild, Boosts foam & viscosity,
Includes natural moisturizer, CIT/MIT preserved

AMPHOSOL® LB-HP

Lauramidopropyl betaine
Naturally derived, Mild, Boosts foam & viscosity,
Excess alkalinity preserved

AMMONYX® LMDO

Lauramidopropylamine oxide
Naturally derived, Boosts foam & viscosity, Improves
cleaning, Good wetting, Great for hand dishwash,
Compatible with peroxide, Self-preserved

AMMONYX® LO

Lauramine oxide
Boosts foam & viscosity, Improves detergency, Fast
wetting, Great for hard surface and laundry, Stable
across wide pH range, Compatible with hypochlorite
and peroxide bleach, Self-preserved

STEPAN-MILD® GCC

Glyceryl caprylate/caprate
Naturally derived, Mild, Foam and feel enhancer,
Thickener, Structuring agent, Approved for
non-TSCA applications such as hand soaps, Meets
direct release screen

STEPAN-MILD® L3

Lauryl lactyl lactate
Naturally derived, Mild, Amide alternative, Provides
viscosity and emolliency, Great for liquid dishwash
and hand soaps

Harmonizers

*Clarity, homogeneous solutions,
Reduces cloud point of anionic surfactants,
Raises cloud point of nonionic surfactants*



ALPHA-STEP® PC-48

Sodium methyl-2-sulfolaurate
& Disodium 2-sulfolaurate
Naturally-derived, Promotes more fluid detergents,
Viscosity control

BIO-TERGE® PAS-8S

Sodium octane sulfonate
Lower foaming, Hydrotrope that adds cleaning
power, Stable across wide pH range and compatible
with hypochlorite and peroxide formulas

STEPANATE® SXS

Sodium xylene sulfonate
Very low foam, Excellent hydrotrope, Stable across
wide pH range and compatible with hypochlorite
formulas

Naturally Inspired
High bio-based content



Even though the biorenewable content of an ingredient is not a requirement for U.S. EPA Safer Choice certification, we understand our customers may have other criteria beyond Safer Choice when selecting an ingredient. Bio-content being one of them!

STEPANOL® DCFAS-N

Sodium coco-sulfate, BCI⁵ = 100
Dense foam, Fast wetting, High active dry needles

STEPANOL® WA-EXTRA HP

Sodium lauryl sulfate, BCI = 100
High foam, Fast wetting, Excess alkalinity preserved

STEPANOL® WA-EXTRA K

Sodium lauryl sulfate, BCI = 100
High foam, Fast wetting, CIT/MIT preserved

STEPANOL® WA-EXTRA PCK

Sodium lauryl sulfate, BCI = 100
Creamy foam, Fast wetting, CIT/MIT preserved

STEPAN-MILD® GCC

Glyceryl caprylate/caprinate, BCI = 100
Meets direct release screen, Mild, Foam and feel enhancer, Structuring agent

STEPAN-MILD® L3

Lauryl lactyl lactate, BCI = 100
Boosts viscosity, Mild, Emollient, Moisturizer

ALPHA-STEP® PC-48

Sodium methyl-2-sulfolaurate
& Disodium 2-sulfolaurate, BCI = 94
High foam, Multifunctional use, Mild

STEOL® CS-270 C

Sodium laureth sulfate, 2 moles EO, BCI = 75
High foaming in hard and soft water, Mild

AMMONYX® LMDO

Lauramidopropylamine oxide, BCI = 72
Boosts foam & viscosity, Improves cleaning, Good wetting

AMPHOSOL® CG-50

Cocamidopropyl betaine, BCI = 64
Mild, Boosts foam & viscosity, Includes natural moisturizer, Preservative-free

AMPHOSOL® HCA-HP

Cocamidopropyl betaine, BCI = 64
Mild, Boosts foaming & viscosity, Excess alkalinity preserved

AMPHOSOL® HCG-HP

Cocamidopropyl betaine, BCI = 64
Mild, Boosts foaming & viscosity, Includes natural moisturizer, Excess alkalinity preserved

AMPHOSOL® HCG-K

Cocamidopropyl betaine, BCI = 64
Mild, Boosts foaming & viscosity, Includes natural moisturizer, CIT/MIT-preserved

BIO-SOFT® EC-690

C12-14 lauryl alcohol ethoxylate, POE-7, BCI = 46
Easy to handle, General purpose, HLB 12.2

BIO-SOFT® EC-639

C12-14 lauryl alcohol ethoxylate, POE-8, BCI = 42
Easy to handle, High temp cleaning, HLB 13.3

⁵BCI refers to the Biorenewable Carbon Index 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.



Cleaning Gets Personal *For personal care formulations*



ALPHA-STEP® PC-48

Sodium methyl-2-sulfolaurate
& Disodium 2-sulfolaurate
Naturally derived, High Foam, Multifunctional, Viscosity control

AMPHOSOL® CG-50

Cocamidopropyl betaine
Naturally derived, Mild, Boosts foam & viscosity, Higher active, Preservative-free

AMPHOSOL® HCA-HP

Cocamidopropyl betaine
Naturally derived, Mild, Boosts foam & viscosity, Excess alkalinity preserved

AMPHOSOL® HCG-HP

Cocamidopropyl betaine
Naturally derived, Mild, Boosts foam & viscosity, Includes natural moisturizer, Excess alkalinity preserved

AMPHOSOL® HCG-K

Cocamidopropyl betaine
Naturally derived, Mild, Boosts foam & viscosity, Includes natural moisturizer, CIT/MIT preserved

AMPHOSOL® LB-HP

Lauramidopropyl betaine
Naturally derived, Mild, Boosts foam & viscosity, Excess alkalinity preserved

BIO-TERGE® AS-40K

Sodium C14-16 olefin sulfonate
Very high foaming with fast wetting, Wide pH range stability, CIT/MIT preserved

BIO-TERGE® AS-40 HP

Sodium C14-16 olefin sulfonate
Very high foaming with fast wetting, Wide pH range stability, Excess alkalinity preserved

STEOL® CS-270 C

Sodium laureth sulfate, 2 moles EO
Naturally derived, High foaming in hard and soft water, Mild, Synergistic with other anionic surfactants, Versatile

STEPANOL® DCFAS-N

Sodium coco-sulfate
Naturally derived, High dense foam, Fast wetting, Needle form for ease of handling

STEPANOL® WA-EXTRA HP

Sodium lauryl sulfate
Naturally derived, High foam, Fast wetting, Excess alkalinity preserved

STEPANOL® WA-EXTRA K

Sodium lauryl sulfate
All the benefits of STEPANOL® WA-EXTRA HP, CIT/MIT preserved

STEPANOL® WA-EXTRA PCK

Sodium lauryl sulfate
Naturally derived, Better viscosity builder than STEPANOL® WA-EXTRA K, CIT/MIT preserved

STEPAN-MILD® GCC

Glyceryl caprylate/caprate
Naturally derived, Mild, Foam and feel enhancer, Thickener, Structuring agent

STEPAN-MILD® L3

Lauryl lactyl lactate
Naturally derived, Mild, Amide alternative, Provides viscosity and emolliency



Need a Place to Start?

Stepan's Starter Formulations



These starter formulations allow Stepan to share learnings and insights gained from years of experience working with our third-party profiler and the U.S. EPA. Each formulation contains components that are either approved on CleanGredients® or on the U.S. EPA's Safer Chemical Ingredients List (SCIL) and may be suitable as a starting point for U.S. EPA's Safer Choice certification program. Stepan developed these starter formulations in an effort to assist formulators that are either unfamiliar with the U.S. EPA Safer Choice Program or wish to save time and/or resources.

Not seeing a formulation that meets your needs? Stepan is here to help. We can assist with ingredient recommendations to customize a formula to meet your performance and formulation criteria. [Contact us today!](#)

Click on the Stepan formulation for full details.

All-Purpose Cleaners



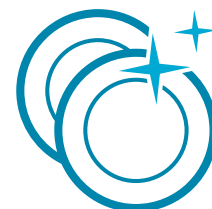
- Formulation No. 1091** Green Spray and Wipe Hard Surface Cleaner
- Formulation No. 1120** All-Purpose Spray and Wipe Cleaner
- Formulation No. 1334** Green All-Purpose Cleaner Concentrate
- Formulation No. 1335** All-Purpose Spray and Wipe Cleaner: A Green Alternative

Bathroom Cleaners



- Formulation No. 1125** Green Daily Shower Cleaner
- Formulation No. 1126** Green Tub and Tile Cleaner
- Formulation No. 1127** Green Foaming Alkaline Bathroom Cleaner
- Formulation No. 1337** Bathroom Cleaner: A Green Alternative

Hand Dishwash



- Formulation No. 1267** Economy Liquid Dish Detergent Using BIO-SOFT S-101
- Formulation No. 1317** Premium Liquid Dish Detergent

Degreasers

- Formulation No. 1099** Green All-Purpose Degreaser
- Formulation No. 1184** Green Foaming All-Purpose Degreaser
- Formulation No. 1336** Green Degreaser Concentrate
- Formulation No. 1340** Kitchen Degreaser: A Green Alternative



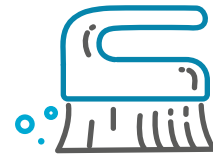
Glass Cleaners

- Formulation No. 1092** Fast Wetting Glass and Window Cleaner
- Formulation No. 1110** 1-to-9 Dilutable Fast Wetting Glass and Window Cleaner
- Formulation No. 1128** High Foaming Glass and Window Cleaner
- Formulation No. 1293** 1-to-20 Green Bio-based Dilutable Glass and Window Cleaner Concentrate
- Formulation No. 1338** Green Glass Cleaner Concentrate
- Formulation No. 1339** Green Glass Cleaner



Outdoor Cleaners

- Formulation No. 1323** Heavy Duty Degreaser Concentrate for Outdoor Use
- Formulation No. 1324** Solvent-Free Spray Cleaner for Outdoor Use



Vehicle Care

- Formulation No. 1326** Engine/Truck Degreaser (Concentrate and Ready-to-Use)
- Formulation No. 1328** Car Wash/Boat Wash



Frequently Asked Questions

What criteria are used to evaluate an ingredient and an end use product?

The first document you should review is the Safer Choice Standard which identifies the requirements that both ingredients and end use products must meet to earn the Safer Choice label. In addition, there are the Master Criteria for Safer Ingredients and various Functional-Class Criteria. These documents define the characteristics and toxicity thresholds for ingredients that are acceptable in Safer Choice products. The U.S. EPA also provides guidance on ingredient disclosure and packaging. Further information can be found at www.epa.gov/saferchoice/standard.

What is the advantage of using an ingredient listed on the CleanGredients® database?

All ingredients will be reviewed by a third-party profiler and the U.S. EPA against a stringent set of health and environmental criteria. A product is only allowed to carry the Safer Choice label if each ingredient is among the safest in its ingredient class. Additionally, the product as a whole has to meet safety criteria, qualify as high-performing and be packaged in an environmentally-friendly manner. It is at the discretion of the ingredient suppliers to showcase a particular ingredient on www.cleangredients.org. The advantage to formulators is that these ingredients have been pre-approved by the U.S. EPA as meeting the Safer Choice standards. Therefore, a formulator is assured that the particular ingredient in question has passed the EPA's review and a formulator will have reduced costs associated with review of that particular ingredient. There are other fees associated with an end use product review, but using an ingredient that is listed on CleanGredients can help reduce the cost to a formulator in obtaining a Safer Choice certification.

Can I use an ingredient not listed on CleanGredients®?

Yes. However, each ingredient will need to be reviewed by a third-party profiler and the U.S. EPA. The advantage of referencing a pre-approved ingredient is that you know it has already been reviewed and this can help reduce the cost associated with the end-use product review. You may also consider referencing the [Safer Chemical Ingredient List \(SCIL\)](#). This is a list of chemical ingredients, arranged by functional-use class that the Safer Choice Program has evaluated and determined to be safer than traditional chemical ingredients. This list is designed to help manufacturers find safer chemical alternatives that meet the criteria of the Safer Choice Program. This list is not intended to be exclusive. A third-party profiler and the U.S. EPA will still review and charge a fee, even if the ingredient is found on the SCIL.

The Safer Chemical Ingredient List (SCIL) lists ingredients by chemical name. Can I use any company's product?

When seeking U.S. EPA Safer Choice approval, you will be required to reference each ingredient by trade name, supplier name and chemical description. If you intend to reference more than one supplier for the same ingredient, the U.S. EPA requires a formulator to document each unique trade name/supplier name on the formulation information submission in the Safer Choice Community, the online portal used by the third-party profilers and Safer Choice to manage submissions. Each unique trade name is reviewed separately and each unique trade name is charged a separate fee for review. Even if a surfactant active has the identical chemical name and CAS number as another supplier, the processing and potential residual, impurities or by-products may vary between suppliers. The U.S. EPA takes this into account in their review.

Once my product is approved for the Safer Choice label, is it good forever?

No. Improvements in chemistry choices are happening all the time and Safer Choice adapts their criteria to stay current with the best options. Every three years your product must be re-reviewed against the currently-approved standard(s).

Frequently Asked Questions (cont.)

There are many eco-labels in the marketplace. How is the Safer Choice Program different?

According to the U.S. EPA, the Safer Choice's labeling program is different from other eco-labels in that: "First, we are focused on chemistry and identifying safer chemicals. Our approach to product review is grounded in EPA's more than 40 years of experience in evaluating the human health and environmental characteristics of chemicals. This expertise enables us to go beyond established lists of 'bad actor' chemicals and to use expert judgment to determine the likely health and environmental hazards of chemicals that haven't been widely studied. Second, we look at a full set of health and environmental endpoints based on a range of data, experimental and modeled, and expert judgment. Finally, we work closely with companies to help them find safer chemicals for their products."

Source: <https://www.epa.gov/saferchoice/frequently-asked-questions-safer-choice>

Is Safer Choice related to the USDA's BioPreferred® Program?

No. The BioPreferred Program is managed by the U.S. Department of Agriculture (USDA), with the goal to increase the purchase and use of U.S. bio-based products. This program has a mandatory purchasing requirement for federal agencies and their contractors and a voluntary labeling initiative. For more information, please go to the [BioPreferred website](#).

Where can I find more information?

[EPA's Safer Choice website](#) has the Safer Choice program history, standards, compliance schedules, an FAQ webpage, the EPA's SCIL ingredient list, packaging guidance and more.

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