

Product Bulletin

Product Name	ALPHA-STEP® PC-48																													
Chemical Structure & Description	$ \begin{array}{c} \text{H} \quad \text{O} \\ \quad \\ \text{R} - \text{C} - \text{C} - \text{OCH}_3 \\ \\ \text{SO}_3\text{Na} \end{array} \quad \text{and} \quad \begin{array}{c} \text{H} \quad \text{O} \\ \quad \\ \text{R} - \text{C} - \text{C} - \text{ONa} \\ \\ \text{SO}_3\text{Na} \end{array} $																													
INCI Name	Sodium Methyl 2-Sulfolaurate and Disodium 2-Sulfolaurate																													
CAS Reg. No.	149458-07-1																													
Applications	ALPHA-STEP PC-48 is an anionic surfactant derived from oleochemicals and its hydrophobic chain distribution, which ranges from C ₁₂ to C ₁₈ , allows for excellent detergency, foaming and mildness properties in a wide variety of household, industrial and personal care applications. PC-48 is appropriate when formulating high foaming, high active personal care products such as body wash. It has a very low viscosity response and is very good at clarifying formulas with high levels of electrolytes. This versatile surfactant also functions well in hard water, having favorable hard water tolerance and lime soap dispersing ability. ALPHA-STEP PC-48 is a readily soluble liquid that can be easily formulated between a pH of 4 to 9. Applications include household and industrial liquid laundry, hand dishwash, hard surface cleaners, hand soaps, specialty foam applications, body washes and facial cleansers.																													
Typical Properties	<table border="0"> <tr> <td>Appearance at 25 °C.....</td> <td>Clear yellow liquid</td> <td>pH, 10% aqueous.....</td> <td>5-7</td> </tr> <tr> <td>Color, Gardner</td> <td>3 max.</td> <td>Flash Point (PMCC), °C (°F).....</td> <td>>94 (>201)</td> </tr> <tr> <td>Total Actives, %</td> <td>37-40</td> <td>Density, g/ml (lbs/U.S. gal).....</td> <td>1.06 (8.8)</td> </tr> <tr> <td>Solids, % by Wt.....</td> <td>42-44</td> <td>Viscosity, at 25°C, cps.....</td> <td>300</td> </tr> <tr> <td>Pour Point, °C (°F)</td> <td>-5 (23)</td> <td>Critical Micelle Concentration, mg/L.....</td> <td>599</td> </tr> <tr> <td>Freeze Point, °C (°F).....</td> <td>-8 (18)</td> <td>RVOC, U.S. EPA.....</td> <td>0</td> </tr> <tr> <td>Cloud Point (Quick Cool), °C (°F).....</td> <td>5 (41)</td> <td>Preservative</td> <td>Not required</td> </tr> </table>		Appearance at 25 °C.....	Clear yellow liquid	pH, 10% aqueous.....	5-7	Color, Gardner	3 max.	Flash Point (PMCC), °C (°F).....	>94 (>201)	Total Actives, %	37-40	Density, g/ml (lbs/U.S. gal).....	1.06 (8.8)	Solids, % by Wt.....	42-44	Viscosity, at 25°C, cps.....	300	Pour Point, °C (°F)	-5 (23)	Critical Micelle Concentration, mg/L.....	599	Freeze Point, °C (°F).....	-8 (18)	RVOC, U.S. EPA.....	0	Cloud Point (Quick Cool), °C (°F).....	5 (41)	Preservative	Not required
Appearance at 25 °C.....	Clear yellow liquid	pH, 10% aqueous.....	5-7																											
Color, Gardner	3 max.	Flash Point (PMCC), °C (°F).....	>94 (>201)																											
Total Actives, %	37-40	Density, g/ml (lbs/U.S. gal).....	1.06 (8.8)																											
Solids, % by Wt.....	42-44	Viscosity, at 25°C, cps.....	300																											
Pour Point, °C (°F)	-5 (23)	Critical Micelle Concentration, mg/L.....	599																											
Freeze Point, °C (°F).....	-8 (18)	RVOC, U.S. EPA.....	0																											
Cloud Point (Quick Cool), °C (°F).....	5 (41)	Preservative	Not required																											
Environmental Effects	Product is readily biodegradable. Additional information available upon request.																													
Health Effects	ALPHA-STEP PC-48 has an oral LD ₅₀ >5g/kg. The available toxicity data shows ALPHA-STEP PC-48, at full concentration, to be of low oral toxicity to mammals (rats) and moderate to slight toxicity to aquatic organisms. At full concentration, ALPHA-STEP PC-48 causes severe skin and eye irritation. However, at 10% active and 4 hour exposure time, ALPHA-STEP PC-48 is minimally irritating to skin. Repeated Application Soap Chamber test results show ALPHA-STEP PC-48 to be a similar cumulative skin irritant to Sodium Alcohol Ether Sulfate and less irritating than Sodium Cocoyl Isethionate and Sodium Lauryl Sulfate. Additional toxicity data is available upon request.																													
Storage & Handling	<p>Normal safety precautions (i.e., gloves and safety goggles) should be employed when handling ALPHA-STEP PC-48. Contact with the eyes and prolonged contact with the skin should be avoided.</p> <p>It is recommended that ALPHA-STEP PC-48 be stored in sealed containers. Store and handle in equipment normally used for detergents. Recommended storage temperature is 60-100°F (140-212°C). Material of construction of storage tank should be 316 stainless steel (or fiberglass with DION 382 liner). Transfer pumps should be Viking stainless steel (or other similar gear pump) with internal pressure relief capabilities. The tank and pump should be grounded. If frozen, mild heat and agitation are recommended to ensure material is homogenous before use. Keep product between pH of 4 and 9 or hydrolysis will occur.</p>																													
Workplace Exposure	Occupational exposure can occur primarily through skin contact or via inhalation of vapors and mists. Engineering controls, personal protective equipment, and other workplace practices should be used to control these exposures.																													
Clearances	All components of ALPHA-STEP PC-48 are listed in the following countries: United States (TSCA), Australia (AICS), Canada (DSL), Europe (EINECS), Korea (ECL), Japan (ENCS) New Zealand (NZIoC) and China (IECSC).																													

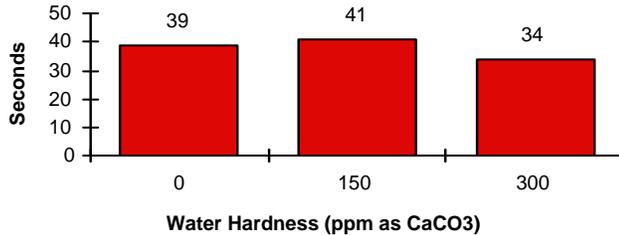


Clearances

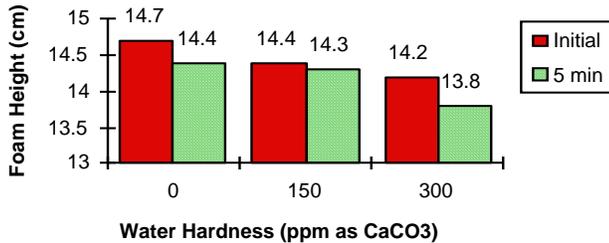
ALPHA-STEP PC-48 meets Safer Choice screen and is listed on www.cleangredients.org (an on-line database for green formulators). This product has a maximum use level of 20%. For further information, visit www.cleangredients.org. Additional Stepan ingredient listing can be found at www.stepan.com.

Surface Active Properties

Drave's Wetting (0.1% actives at 25°C)



Ross-Mile's Foaming (0.1% actives at 25°C)



Fourteen Day Cumulative Irritation Test

Product	Number of Days to Produce Irritation (Score of 1)
Negative Control (Dry Patch)	13.50
ALPHA-STEP PC-48	5.20Least Irritating
Sodium Lauryl Ether Sulfate (3 mole)	5.07
Sodium Cocoyl Isethionate	4.27
Sodium Lauryl Sulfate	2.70Most Irritating

Comparative Irritation Data

Product Stewardship

This product bulletin has been written in accordance with ACC's Product Stewardship guidelines.

Additional Safety Information

A Safety Data Sheet is available upon request.



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.

Stepan

Corporate Headquarters
Northfield, Illinois 60093, U.S.A.
Phone: 847-446-7500
Fax: 874-501-2100
Website: www.stepan.com

For Technical Service Call:
 Stepan North America **+1-800-745-7837**
 Stepan Mexico **+55-11-5089-2208**
 Stepan Quimica **+55-11-5089-2200**
 Stepan Colombia **+571-636-2808**
 Stepan Europe **+33-476-505-160**
 Stepan Asia **+656-879-9855**
 Stepan Philippines **+656-879-9855**

For Customer Service Call:
 Stepan North America **+1-800-457-7673**
 Stepan Mexico **+52-555-533-1967**
 Stepan Quimica **+55-11-5089-2200**
 Stepan Colombia **+57-6-8993125**
 Stepan UK **+44-161-338-5511**
 Stepan France **+33-476-50-51-00**
 Stepan Philippines **+63-2-842-7951**