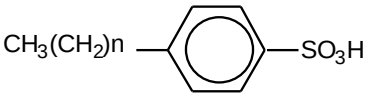
Stepan®

Product Bulletin

Product Name

BIO-SOFT® S-101

Chemical Structure



n = 10.4 avg.

Chemical Description

Linear Alkylbenzene Sulfonic Acid

CAS Registry Number

68584-22-5 (Alternate CAS No. 27176-87-3, 85536-14-7)

Applications

BIO-SOFT S-101 is an economical and versatile, biodegradable surfactant intermediate. This product can be neutralized with a variety of inorganic bases and organic amines to give a wide range of sulfonates with the properties of your choice. BIO-SOFT S-101 can be used to make both liquid and dry products, and left unneutralized, it is an effective surfactant in acidic environments. BIO-SOFT S-101 contains a minimum of sulfuric acid and upon neutralization produces material with little salt, light color, and low odor, allowing wide latitude in formulating.

BIO-SOFT S-101 can be used in all types of household, industrial and institutional cleaners including laundry, dishwash, carwash, hard surface and general-purpose detergents. It can also be utilized as an intermediate in preparation of emulsifiers and wetting and foaming agents. Unneutralized BIO-SOFT S-101 is an effective surfactant in acidic products such as liquid bowl, aluminum, and dairy cleaners.

Neutralization Information: Temperature and pH must be controlled during neutralization of BIO-SOFT S-101 to prevent darkening of the product and corrosion of stainless-steel equipment. The reaction temperature should not be allowed to exceed 50°C (122°F) and the pH should not go below 6.5. Approximate amounts of BIO-SOFT S-101 and various alkalis for neutralization to make 100 lbs of active dodecylbenzene sulfonate are shown below. Actual requirements will vary with each shipment.

Neutralization of BIO-SOFT S-101*

Alkali	BIO-SOFT S-101
25.6 lbs. NaOH (50%)	97.1 lbs.
38.2 lbs. KOH (45%)	92.7 lbs.
33.5 lbs. Triethanolamine (85%)	71.9 lbs.
40.7 lbs. Ammonium Hydroxide (28% NH3)	98.5 lbs.

**to obtain 100 lbs of LAS*

Typical Properties

Appearance at 25°C	Dark amber, viscous liquid
pH, as is	<1
Actives (EW 318), %	95.5 Min.
Pour Point, °C (°F)	-15 (5)
Freeze Point, °C (°F)	-18 (-0.4)
Color Klett, 5% active Sodium salt	30 Max.
Viscosity at 25°C, cps	890
Flash Point, PMCC, °C (°F)	>94 (>201)
Density, g/mL (lbs/U.S. gal)	1.06 (8.81)
RVOC, U.S. EPA, %	0

Environmental Effects

BIO-SOFT S-101 is biodegradable. A detailed biodegradability statement is available upon request.

Health Effects

BIO-SOFT S-101 is slightly toxic orally (LD_{50} = 500 - 2000 mg/kg) and when tested undiluted is corrosive to skin and eyes.

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Storage & Handling

Normal safety precautions (e.g., gloves and safety goggles) should be employed when handling BIO-SOFT S-101. Contact with eyes, nose or prolonged contact with skin should be avoided. Wash thoroughly after handling BIO-SOFT S-101. See SDS for more information.

Danger! BIO-SOFT S-101 is corrosive and should be handled with extreme care. Use personal protective equipment (e.g., safety goggles and face shield along with chemical resistant clothing and gloves) and do not allow contact with eyes or skin. Wash thoroughly after handling BIO-SOFT S-101. See Sections 7 and 8 of the SDS for further information on handling and personal protective equipment.

Standard Packaging: BIO-SOFT S-101 is available in drums, totes, and bulk quantities.

Non-Bulk Storage Recommendations: BIO-SOFT S-101 should be stored in closed containers and kept in a cool, dry place away from incompatible materials (see Section 10 of the SDS) between 21°C-38°C (70°F-100°F). If material is frozen it should be heated gently and stirred to ensure it is homogeneous prior to use.

Bulk Storage Recommendations: BIO-SOFT S-101 should be stored in vessels of 316 stainless steel or fiberglass with a corrosion liner. Heating and agitation are recommended for outside storage. Material should be stored between 21°C-38°C (70°F-100°F). Tempered water is recommended if heating is required. Pumps, pipes, and transfer lines should be 316 stainless steel.

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 safety practices should be used to control these exposures. See SDS for more information.

Clearances

The international inventories (country clearances) of BIO-SOFT S-101 can be found in Section 15 of the Safety Data Sheet (SDS). It is the responsibility of the formulator to review the chemical control regulations for each country where the end-product is intended to be sold or used. If you have any further questions regarding inventories, please contact North America Technical Service at techserv@stepan.com.

BIO-SOFT S-101 is also approved for use under 40CFR 180.910, 180.930, 180.940.

BIO-SOFT S-101 is available in Kosher grade.

BIO-SOFT S-101 meets the U.S. EPA Safe Choice Program's surfactant screen and is listed on www.cleangredients.org (an on-line database for green formulators). For further information, visit www.cleangredients.org. Additional Stepan ingredient listing can be found at www.stepan.com.

Product Stewardship

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

Additional Safety Information

A Safety Data Sheet (SDS) is available upon request.

Responsible Care®

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