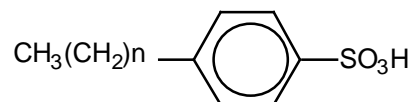


Product Bulletin

BIO-SOFT® S-101



n = 10.4 avg.

Linear Alkylbenzene Sulfonic Acid

68584-22-5

Dodecyl Benzene Sulfonic Acid

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 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. Additional information is available on the neutralization and use of BIO-SOFT S-101 in a Stepan Technical Information Bulletin entitled "Neutralizing BIO-SOFT Acids".

Neutralization of BIO-SOFT S-101*

<u>Alkali</u>	<u>BIO-SOFT S-101</u>
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

Appearance.....	Dark, viscous liquid
pH, as is.....	<1
Actives (EW 318), % min.....	96
Pour Point, °C (°F).....	-15 (5)
Freeze Point, °C (°F).....	-18 (0)
Color, Klett (5% active sodium salt in water).....	30 max.
Viscosity, cps at 5 °C.....	5,600
Viscosity, cps at 25 °C.....	890
Viscosity, cps at 50 °C.....	220
Flash Point (PMCC), °C (°F).....	>94 (>201)
Density, g/ml (lbs/U.S. gal).....	1.06 (8.81)
RVOC, U.S. EPA, %.....	0

Product Name
Chemical Structure

Chemical Description
CAS Registry No.
INCI Name
Applications

Typical Properties



Environmental Effects

Product is readily biodegradable. Additional information is available upon request.

Health Effects

BIO-SOFT S-101 is slightly toxic orally (LD₅₀ = 500 - 2000 mg/kg) and when tested undiluted is corrosive to skin and eyes.

Storage & Handling

BIO-SOFT S-101 is a strong acid and should be handled with extreme care. Avoid contact with eyes and skin. Wash thoroughly after handling material.

Standard Packaging: BIO-SOFT S-101 is available in drums (475 lb, 215 kg) and in bulk quantities.

It is recommended that BIO-SOFT S-101 be stored in closed containers and kept in a cool, dry place. If material is frozen it should be heated gently and stirred to ensure it is homogeneous before use.

Bulk Storage Information: 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 80 - 100°F. An internal hairpin coil of 316 stainless steel with low pressure steam (under 50 psig) should be used 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 practices should be used to control these exposures.

Clearances

All components of BIO-SOFT S-101 are listed in the following countries; the registration numbers for the active ingredients are included in parentheses: United States (TSCA 68584-22-5), Europe (EINECS 271-528-9), Japan (ENCS 3-1907), Korea (ECL Serial No. KE-02595), Canada (DSL 68584-22-5), Australia (AICS 68584-22-5), Philippines (PICCS 68584-22-5), and China (IECSC 68584-22-5).

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.

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.

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.



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