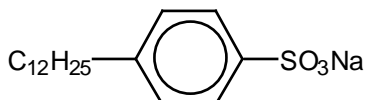


Product Bulletin

BIO-SOFT® D-SERIES

Product Name

Chemical Structure



CAS Registry No.

68081-81-2 (alternate 25155-30-0, 68411-30-3)

INCI Name

Sodium dodecylbenzene sulfonate

Applications

Linear alkylbenzene sulfonates (LAS) are the workhorses of the household, industrial and institutional detergent industries. Stepan's BIO-SOFT D sulfonates are the proven choice for many applications. They provide superior detergency, foaming, wetting and emulsification properties --and all at an economical cost. Stepan's continuous falling film sulfonation process assures high quality, excellent color, low odor and minimum salt content. BIO-SOFT D sulfonates are available in several forms and concentrations to meet your handling and formulating needs. BIO-SOFT D surfactants are used in laundry and dishwashing detergents, all-purpose cleaners, vehicle cleaning compounds and heavy duty commercial and industrial cleaners as well as industrial applications requiring special surface active properties. BIO-SOFT D sulfonates contain hydrotrope for ease of handling.

Typical Properties

	BIO-SOFT D-40	BIO-SOFT D-62 LT
Appearance at 25 °C	liquid	slurry
pH, 10% aqueous	7.5	8.0
Actives, %	38	55
Solids, % by Wt	40	62
Pour Point, °C (°F)	-1 (30)	2 (36)
Freeze Point, °C (°F)	-4 (25)	-1 (30)
Cloud Point, °C (°F)	8 (46)	---
Color, Klett (5% solids)	40	40
Viscosity at 0 °C, cps	solid	solid
Viscosity at 25 °C, cps	867	8000
Viscosity at 60 °C, cps	100	2200
Flash Point (PMCC), °C (°F)	>94 (>201)	>94 (>201)
Density, g/ml (lbs/U.S. gal)	1.07 (8.9)	1.09 (9.1)
RVOC, U.S. EPA %	0	0
Preservative	Not required	Not required

Environmental Effects

Product is readily biodegradable. A detailed biodegradability statement is available upon request.

Health Effects

Linear alkylbenzene sulfonates (LAS) are moderately to slightly toxic orally (LD₅₀ = 400 - 2000 mg/kg); and cause no skin irritation at 1% concentration. LAS causes mild to no eye irritation at below 0.1% concentration.



Storage & Handling

As with most surfactants, it is recommended that normal safety precautions (i.e., use of gloves and safety goggles) be followed when handling BIO-SOFT D series products.

Standard Packaging: The BIO-SOFT D series is available in drums (450lb, 204Kg) and in bulk quantities.

Recommended Storage Conditions: The BIO-SOFT D series should be stored in closed containers in a cool, dry place. BIO-SOFT D-62 LT stored in drums should be stirred prior to use to ensure homogeneity. Frozen material should be heated gently and stirred to ensure it is homogeneous before use.

Bulk Storage Recommendations: The BIO-SOFT D series should be stored in 316 stainless steel or fiberglass with a corrosion liner. Mild agitation is recommended while storing to maintain homogeneity. Material should be stored between 85 – 105 °F (29 – 40 °C). An internal hairpin coil constructed 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 D surfactants are listed in the following countries; the registration numbers for the active ingredients are included in parentheses: United States (TSCA 68081-81-2), Australia (AICS 68081-81-2), Canada (DSL 68081-81-2), China (IECSC 68081-81-2), Europe (EINECS 268-356-1), Japan (ENCS 3-1949), Korea (ECL Serial No. KE-02630), New Zealand (NZIoC 68081-81-2), and Philippines (PICCS 68081-81-2).

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.

The BIO-SOFT D series is USDA authorized and is available in Kosher grade.

BIO-SOFT D-40 and BIO-SOFT D-62 LT meet U.S. EPA Safe Choice Program's surfactant screen and are 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 is available upon request.



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