

Technical Bulletin

SURFONIC[®] L12-3 Surfactant

PRODUCT DESCRIPTION

SURFONIC[®] L12-3 surfactant is the three-mole ethoxylate of linear, primary 10-12 carbon number alcohol. It is an oil-soluble, nonionic surface active agent which is compatible with other nonionic surfactants and with most anionic and cationic surfactants. The product is a clear to slightly turbid liquid suitable for use as an intermediate for manufacture of anionic surfactants.

APPLICATIONS

- Detergents
- Laundry Prespotters
- Adjuvants for Agricultural Herbicides and Insecticides
- Personal Care Products
- Hard Surface Cleaners

SALES SPECIFICATIONS

<u>Property</u>	<u>Specifications</u>	<u>Test Method*</u>
Appearance at 25°C	Clear to slightly turbid, substantially free of foreign matter	ST-30.1
Color, Pt-Co	50 max.	ST-30.12
Hydroxyl Number, mg KOH/g	185 - 195	ST-31.39
pH, 1% in 10:6 IPA:H ₂ O	6.5 - 7.5	ST-31.36, F
Water, wt%	0.1 max.	ST-31.53

*Methods of Test are available upon request.

TYPICAL PROPERTIES

Chemical Properties

Molecular Weight (theoretical)	295
EO Content, wt% (theoretical)	44.7
HLB Value	9.0
Water Solubility	Insoluble

Regulatory Information

DOT Classification	Marine Pollutant
TDG Classification	Marine Pollutant
HMIS Code	2-1-0
CAS Number	66455-15-0
TSCA Inventory	Yes
WHMIS Classification	D2B
Canadian DSL	Yes

Physical Properties

Flash point, PMCC, °F	280
Flash point, PMCC, °C	138
Pour point, °F	10
Pour point, °C	-12
Cloud point, ml H ₂ O/gram 1% solution in 1:1 n-propanol/water	45
Density, g/ml at 25°C (77°F)	0.933
Weight, lbs/US gal at 25°C (77°F)	7.78
Viscosity, kinematic cSt at 25°C (77°F)	35
cSt at 37.8°C (100°F)	13
Vapor Pressure at 25°C, Torr	5 x 10 ⁻³



TOXICITY AND SAFETY

For information on the toxicity and safe handling of this product, please read the Material Safety Data Sheet prior to use of the product.

HANDLING AND STORAGE

SURFONIC® L12-3 surfactant may be satisfactorily stored in carbon steel tanks using steel pipes and pumps. Caution must be exercised, however, to keep the material in the anhydrous state to prevent severe corrosion to the carbon steel tank and related equipment. A drier on the breathing nozzle is recommended to help maintain anhydrous conditions in the storage tank.

For longer term color stability, it is recommended that the product be stored under an inert atmosphere. Solid sediment may form upon standing. There should be circulation in the storage vessel to keep solids suspended.

Low pressure steam coils in storage tanks and steam tracing of transfer lines should be provided in cases where low environmental temperatures may make pumping of the product difficult.

SHIPPING DATA

Product is available in tank cars, tank trucks and drums of 420 pounds (190 kilograms) net weight. Small samples can be obtained by contacting any Indorama Ventures sales office.

BIODEGRADABILITY AND ENVIRONMENTAL SAFETY

Linear alcohol ethoxylates, including the SURFONIC® L series surfactants, undergo rapid and extensive biodegradation under both laboratory and environmental conditions. Their mineralization to CO₂ and water (ultimate biodegradation) is essentially complete during biological wastewater treatments at warm to cold water temperatures. They are degraded by bacteria in rivers, lakes, groundwater and sediment as well.

The major mechanism of biodegradation is cleavage of the ethoxylate chain from the alkyl group with oxidation of the latter to fatty acid. The fatty acid degrades more rapidly than the ethoxylate chain, which is broken down by sequential oxidation and removal of ethoxylate units.

Alcohol ethoxylates begin to lose their toxicity toward aquatic organisms as soon as biodegradation begins. Water containing degraded surfactant has been shown not to adversely affect fish, invertebrates and algae. Thus, while alcohol ethoxylates are toxic to aquatic organisms, in the event of a spill into a waterway any acute effects would be limited in area and time.

SURFONIC® L-series surfactants and other linear alcohol ethoxylates pose no serious threat to the environment. They do not accumulate in any environmental compartment and are found, if at all, only at concentrations below chronic effects levels.

Cleaning products containing SURFONIC® L-series surfactants may be disposed of safely by flushing down the drain with water.

General References

1. Swisher, R. D., Surfactant Biodegradation, Marcel Dekker, 1987.
2. Talmage, S. S., Environmental and Human Safety of Major Surfactants: Alcohol Ethoxylates and Alkylphenol Ethoxylates, a report to the Soap and Detergent Association, Lewis Publishers, 1994.

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