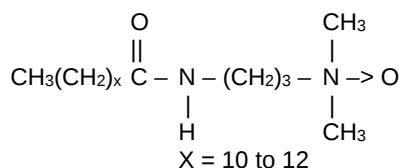


Product Bulletin

Product Name

AMMONYX® LMDO

Chemical Structure



INCI Name

Lauramidopropylamine Oxide
Myristamidopropylamine Oxide

CAS No.

61792-31-2 and 67806-10-4

Description

AMMONYX LMDO is an amido amine type of amine oxide.

Applications

Functional Properties

- Viscosity Modifier
- Foam Enhancer/Stabilizer
- Conditioner
- Reduces Static Electricity
- Detergent
- Effective on greasy soils
- Emollient
- Can be formulated with anionic, nonionic & cationic surfactants

End Product Uses

- Shampoos
- Hand Soaps
- Bubble Baths
- Hair Conditioners
- I&I Cleaners
- Wax Strippers
- All-Purpose Cleansers
- Light Duty Liquid Dish Detergent

Typical Properties

Appearance at 25 °C.....	Clear liquid	Amine Oxide (MW 307), %.....	33.0
Hydrogen Peroxide, %	0.14	Free Amine (MW 291), %.....	0.4
Color, % Transmittance at 420 nm.....	90 min.	pH, 10% aq.....	8.0
Viscosity at 10 °C, cps.....	60	Pour Point, °C (°F).....	-4 (25)
Viscosity at 25 °C, cps.....	45	Flash point (PMCC), °C (°F)...	>94 (>201)
Density, g/ml (lbs/U.S. gal).....	0.99 (8.29)	RVOC, U.S. EPA, %.....	0
Preservative	Not required		

Environmental Effects

AMMONYX LMDO is readily biodegradable. Additional information available upon request.

Health Effects

AMMONYX LMDO is slightly toxic orally (LD₅₀ is between 500-1000 mg/kg in rats), and causes slight skin and minimal eye irritation at 5% active.

Storage & Handling

Normal safety precautions (i.e. gloves and safety goggles) should be employed when handling AMMONYX LMDO. Contact with the eyes and prolonged contact with the skin should be avoided. Wash thoroughly after handling material.

Bulk Storage Information: It is recommended that AMMONYX LMDO be stored in sealed containers at temperatures between 10 °C-38 °C (50 °F-100 °F). Prolonged storage at temperatures greater than 100°F is not recommended.

Standard Packaging: AMMONYX LMDO is available in bulk, totes and 55 gallon drums (net weight 420 lb/190 kg).



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 AMMONYX LMDO are listed in the following countries; the registration numbers for the active ingredients are included in parentheses: United States (TSCA 61792-31-2, 67806-10-4), Canada (DSL 61792-31-2, 67806-10-4), New Zealand (NZIoC 61792-31-2, 67806-10-4) Australia (AICS 61792-31-2, 67806-10-4) and Europe (EINECS 263-218-7, 267-191-2).

AMMONYX LMDO 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.

Formulation

Cold Water Dishwash Detergent Blend with AMMONYX LMDO

	<u>Ingredients</u>	<u>Wt. % (as is)</u>
1.	Water	39.67
2.	STEOL® CA-460	13.47
3.	ALPHA-STEP® MC-48	8.73
4.	AMPHOSOL® CA	4.33
5.	AMMONYX LMDO	3.94
6.	STEPANOL® AM	27.86
7.	Ethanol	2.00
8.	Citric Acid	q.s.
	TOTAL	100.00

Mixing Procedure:

Add the ingredients in the order shown with continuous stirring. After each addition, mix until homogeneous.

Physical Properties:

Appearance at 25 °C.....	Clear, light yellow liquid
pH, as is	7
Viscosity at 25 °C, cps.....	50
Solids, by wt%.....	24
Flash Point (PMCC), °F.....	142
Actives, %	23
Density, lb/U.S. gal.....	8.44
Storage Stability	Passed 3 freeze/thaw cycles

Use Instructions:

Add the dishwash to sink while filling with cold water (23 °C).

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. STEPAN COMPANY MAKES NO PRODUCT WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR USE, EXPRESS OR IMPLIED, AND NO OTHER WARRANTY OR GUARANTY, EXPRESS OR IMPLIED, IS MADE, INCLUDING AS TO INFORMATION REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY, ACCURACY, COMPLETENESS, OR ADEQUACY. Stepan Company (and its employees, subsidiaries and affiliates) shall not be liable (regardless of fault) to the vendee, its employees, or any other party for any direct, indirect, special or consequential damages arising out of or in connection with the accuracy, completeness, adequacy, furnishing, use, or reliance upon information provided herein. 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**