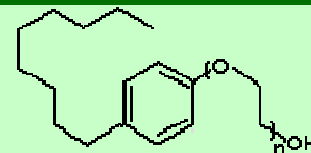


# NONYLPHENOL ETHOXYLATE

## PRODUCT IDENTIFICATION

CAS NO	26027-38-3
EINECS NO.	
FORMULA	C <sub>9</sub> H <sub>19</sub> C <sub>6</sub> H <sub>4</sub> (OCH <sub>2</sub> CH <sub>2</sub> ) <sub>n</sub> OH
MOL WT.	
H.S. CODE	
TOXICITY	Oral rats LD50: 1600mg/kg
DERIVATION	
SYNONYMS	POE nonyl Phenyl Ether; Eth



Polyoxyethylene Nonylphenyl Ether; nonylphenyl polyethyleneglycol ether, nonionic; macrogol nonylphenyl ether; Polyethylene Mono(nonylphenyl)ether Glycols;

## RAW MATERIALS

## CLASSIFICATION SURFACTANT

## PHYSICAL AND CHEMICAL PROPERTIES (10 mol)

PHYSICAL STATE	White paste
MELTING POINT	1 C
BOILING POINT	
SPECIFIC GRAVITY	1.06
SOLUBILITY IN WATER	Soluble (soluble in methanol, xylene; insoluble in Kerosene)
pH	6.3 (10% sol.)
VISCOSITY (CPA)	240 at 25 C
VAPOR DENSITY	
REFRACTIVE INDEX	
NFPA RATINGS	Health: 1; Flammability: 1; Reactivity: 0
FLASH POINT	94 C
STABILITY	Stable under ordinary conditions

## GENERAL DESCRIPTION & APPLICATIONS

Nonionic surfactants are surface active agents which do not dissociate into ions in aqueous solutions, unlike anionic surfactants which have a negative charge and cationic surfactants which have a positive charge in aqueous solution. Nonionic surfactants are more widely used as detergents than ionic surfactants because anionic surfactants are insoluble in many hard water and cationic surfactants are considered to be poor cleaners. In addition to detergency, nonionic surfactants show excellent solvency, low foam properties and chemical stability. It is thought that nonionic surfactants are mild on the skin even at high loadings and long-term exposure. The hydrophilic group of nonionic surfactants is a polymerized alkene oxide (water soluble polyether with 10 to 100 units length typically). They are prepared by polymerization of ethylene oxide, propylene oxide, and butylene oxide in the same molecule. Depending on the ratio and order of oxide addition, together with the number of carbon atoms which vary the chemical and physical properties, nonionic surfactant is used as a wetting agent, a detergent, or an emulsifier.

HLB (Hydrophilic-Lipophilic Balance) values for proper applications.

<10 : Lipid soluble (or water-insoluble)

>10 : Water Soluble

## 4-8 : Antifoaming

## 7-11 : Water-in-oil emulsion

12-16 : Oil-in-water emulsion

11-14 : Good Wetting

12-15 : Good detergency

## 16-20 : Stabilizing

Nonionic surfactants include alcohol ethoxylates, alkylphenol ethoxylates, phenol ethoxylates, amide ethoxylates, glyceride ethoxylates (soya bean oil and castor oil ethoxylates), fatty acid ethoxylates, and fatty amine ethoxylates. Another commercially significant nonionic surfactants are the alkyl glycosides in which the hydrophilic groups are sugars (polysaccharides).

Alcohol ethoxylates, clear to yellowish liquid to waxy solids depending on alkyl chain length and the number of ethoxy groups, are non ionic surfactants which contain both hydrophobic tail portion (alcohol part) and hydrophilic polar

head groups (ethoxy chain part), and are thus tend to dissolve in both aqueous and oil phase and to reduce the surface tension of liquids. Ethylene oxide (also called epoxyethane and oxirane) is the simplest cyclic ether or epoxide, with the formula  $C_2H_4O$ ; reactive material which is added to the base of alcohols (or amines) to form ethoxylated surfactants. The Hydrophilic-Lipophilic Balance (HLB) of EO surfactant is related to the hydrophilic portion of the molecule. More hydrophilic groups enable more solubility in water as more hydrogen bondings exist. They are non-ionic in solution which has no electrical charge, which means well-work in hard water at low temperatures as well as stability in acid and alkali solution and compatibility with other surfactants. Generally, surfactant's name are formed by adding the mole number of ethylene oxide. There is a wide HLB range depend their molar ratios between nonylphenol and E.O. The common mole ratio forms for detergency are NPE 9 - 12, where the number indicates ethoxylate chain length. The lower number mole ratio products are used as wetting agent whereas the higher moles ratio products are emulsifiers and solubilizer. Nonylphenol ethoxylates features excelent emulsifying and high detergency properties. End applications include;

Detergents and Industrial Cleaners, Dispersants, Stabilizers, Sanitizers, Defoaming Agents. Agrochemical Emulsifiers, Metal Working, Textile Processing, Paper De-inking, Drilling Products Intermediate Anionic Surfactants Synthesis, Dust Control, Adhesive, Plastic Industry, Lube Oil, Cosmetic and Pharmaceuticals.

#### SALES SPECIFICATION

##### EO 2 MOL

APPEARANCE	Clear oily liquid
SPECIFIC GRAVITY	$1.03 \pm 0.010$
CLOUD POINT (1% H <sub>2</sub> O)	< 25 C
APPRX HLB	5.7

##### EO 4 MOL

APPEARANCE	Clear oily liquid
SPECIFIC GRAVITY	$1.03 \pm 0.010$
CLOUD POINT (1% H <sub>2</sub> O)	< 25 C
APPRX HLB	9

##### EO 5 MOL

APPEARANCE	Clear oily liquid
SPECIFIC GRAVITY	$1.035 \pm 0.010$
CLOUD POINT (1% H <sub>2</sub> O)	< 25 C
APPRX HLB	10

##### EO 6 MOL

APPEARANCE	Clear oily liquid
SPECIFIC GRAVITY	$1.04 \pm 0.010$
CLOUD POINT (1% H <sub>2</sub> O)	< 25 C
APPRX HLB	11

##### EO 8 MOL

APPEARANCE	Clear oily liquid
SPECIFIC GRAVITY	$1.06 \pm 0.010$
CLOUD POINT (1% H <sub>2</sub> O)	< 25 C
APPRX HLB	12

##### EO 10 MOL

APPEARANCE	Clear oily liquid
SPECIFIC GRAVITY	$1.065 \pm 0.010$
pH	6.3 (10% Sol.)
HYDROXYL NUMBER	86 - 91
COLOR, APHA	30 max
APPRX HLB	13

##### EO 12 MOL

APPEARANCE	Paste
SPECIFIC GRAVITY	$1.07 \pm 0.010$
CLOUD POINT (1% H <sub>2</sub> O)	78 - 83 C
APPRX HLB	14

##### EO 14 MOL

APPEARANCE	Paste
SPECIFIC GRAVITY	$1.07 \pm 0.010$
CLOUD POINT (1% H <sub>2</sub> O)	92 - 99 C
APPRX HLB	15

EO 30 MOL	
APPEARANCE	Solid
SPECIFIC GRAVITY	1.08 ± 0.010
CLOUD POINT (1% H2O)	> 100 C
APPRX HLB	17
EO 50 MOL	
APPEARANCE	Solid
SPECIFIC GRAVITY	1.08 ± 0.010
CLOUD POINT (1% H2O)	> 100 C
APPRX HLB	18
TRANSPORTATION	
PACKING	210kgs in Drum
HAZARD CLASS	9
UN NO.	8027
CAS RN OF ETHOXYLATED NONYLPHENOL	
9002-95-3; 9016-45-9; 9067-50-9; 11098-16-1; 11103-60-9; 11107-93-0; 12612-63-4; 12767-68-9; 12789-12-7; 12790-67-9; 27942-26-3; 28776-15-0; 29319-48-0; 30676-83-6; 32196-52-4; 37187-23-8; 37210-94-9; 37230-99-2; 37280-80-1; 37330-04-4; 37336-52-0; 39042-04-1; 39289-57-1; 39316-73-9; 39316-45-5; 39346-85-5; 39373-71-2; 39392-83-1; 39393-36-7; 39421-49-3; 39453-05-9; 39454-98-3 39475-46-2; 42617-03-8; 50855-29-3; 50934-84-4; 51609-19-9; 51668-51-0; 51938-59-1; 51938-60-4; 52038-46-7; 52051-49-7; 52434-07-8; 52440-03-6; 52440-22-9; 52440-78-5; 52440-94-5; 52504-19-5; 52504-18-4; 52683-07-5; 53125-17-0; 53529-49-0; 53663-55-1; 53763-35-2; 53763-36-3; 54174-36-6; 54985-54-5; 55126-80-2; 55838-69-2; 56214-26-7; 56590-96-6; 57308-02-8; 57571-69-4; 58339-76-7; 59330-69-7; 60098-67-1; 60476-27-9; 61614-07-1; 61840-55-9; 62169-44-2; 62229-29-2; 62229-24-7; 63440-03-9; 63798-88-9; 64296-14-6; 64940-97-2; 65035-41-8; 65035-40-7; 65777-14-2; 66525-84-6; 67053-58-1; 68858-84-4; 69154-14-9; 70025-66-0; 72847-44-0; 72847-45-1; 74434-41-6; 74656-63-6; 74749-71-6; 75882-09-6; 76829-05-5; 77271-60-4; 78009-08-2; 80341-59-9; 80966-32-1; 81296-82-4; 83271-48-1; 86243-62-1; 86727-29-9; 93095-76-2; 95828-59-4; 96231-61-7; 96827-63-3; 96957-64-1; 96958-28-0; 96958-17-7; 99402-83-2; 99531-82-5; 100777-03-5; 102188-45-4; 102735-76-2; 103939-37-3; 105269-88-3; 106152-98-1; 107231-62-9; 111623-62-2; 113595-38-3; 114101-89-2; 116711-78-5; 120038-12-2; 123019-34-1; 123068-21-3; 124057-60-9; 124401-72-5; 131160-29-7; 137263-06-0; 139281-67-7; 142985-89-5; 143929-07-1; 172521-16-3; 188612-23-9; 190386-13-1; 190856-87-2; 195065-75-9; 204842-55-7; 205577-03-3;	