

AEROSOL® DPOS-45 surfactant

Type: Anionic

Chemical: Mixture of Disodium Mono- & Didodecyl Diphenyloxide Disulfonates

AEROSOL DPOS-45 surfactant is an effective surface tension depressant and an emulsifying, dispersing and solubilizing agent exhibiting high electrolyte tolerance. It is extremely stable in both highly acidic and alkaline solutions and at elevated temperatures. AEROSOL DPOS-45 surfactant also possesses ability as a coupling agent and is very effective as a lime soap dispersant.

Physical and Chemical Properties

Appearance at 25°C (77°F)	Clear, light yellow to amber liquid
Average Molecular Weight	576
Active Content, % by weight	45.0 min
Colour, as is, maximum Gardner Scale	9
pH (10% Solution)	8.0 - 10.0
Sodium Chloride Content, % by weight, maximum	1.0
Sodium Sulfate Content, % by weight, maximum	1.0
Solids Content, % by weight	45.0 - 48.0
Solvent	Water
Specific Gravity, 25°C	1.16 ± 0.05
Density, lb/gal, 25°C	~9.7
Viscosity, cps, 25°C	100 - 250

Surface Active Properties

Critical micelle concentration (CMC), % by weight	0.03
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Surface Tension

Surface Tension of AEROSOL DPOS-45 Surfactant in Water

Concentration of AEROSOL DPOS % solids	Surface tension dynes/cm
0.001%	45 - 60
0.01%	35 - 45
0.1%	30 - 35
1.0%	30 - 35

Solubility @ 25°C

Mineral oil	Insoluble
Xylene	Insoluble
Perchloroethylene	Insoluble
Ethanol	Slightly soluble
Water	Soluble
20% NaOH	Soluble
15% HCl	Soluble
35% Tetrapotassium pyrophosphate	Soluble

Features

The presence of two ionic (sulfonate) groups in each AEROSOL DPOS-45 surfactant molecule enhances the following of its surfactant properties:

- Dispersing power
- Calcium tolerance
- Solubility in electrolyte solutions
- Efficiency as a dye levelling agent
- Hydrotrope and coupling agent capabilities
- Use as a sole emulsifier for latex preparation

The temperature stability of AEROSOL DPOS-45 surfactant eliminates decomposition problems in high temperature applications while minimizing discoloration and reductions in surface activity.

As a coupling agent/hydrotrope, AEROSOL DPOS-45 surfactant increases the solubility of other surfactants which characteristically would be insoluble in a system. For example, AEROSOL DPOS-45 surfactant can be used effectively to control the cloud point of formulations containing nonionic surfactants. AEROSOL DPOS-45 surfactant is also an effective coupling agent for foam boosters, defoamers and a wide variety of other additives, and it eliminates the need for using additional hydrotropes in a formulation.

Latex Applications

The use of AEROSOL DPOS-45 surfactant in latex preparations provides the following benefits:

- Reduced surfactant usage (low CMC)
- Narrow particle size distribution
- Improved mechanical stability
- Single emulsifier system
- Enhanced solubility of less soluble components
- Higher latex operating temperatures without loss of surface activity
- Increased latex chemical stability

The versatile AEROSOL DPOS-45 surfactant can effectively be used as either the primary or secondary emulsifier in the preparation of a wide variety of latexes:

- Acrylic Latex
- Styrene/Acrylic Latex

- Styrene/Butadiene Latex
- Vinyl Acetate Latex
- Vinyl Chloride Latex

Typical Styrene-Butadiene Latex Prepared With AEROSOL DPOS-45 Surfactant

Emulsion Polymerization of
Styrene/Butadiene/N-Methylolacrylamide
Solids: 45%. Monomer Ratio: S/B/NMA
48.5/48.5/3 w/w

I. RECIPE	phm
AEROSOL DPOS-45 surfactant (as is)	5.5
Boiled deionized water	86.2
Tetra-sodium pyrophosphate (2% solution)	10.0
Styrene	48.5
n-Dodecyl mercaptan	0.5
CYLINK* NMA monomer (N-methylolacrylamide, 48%)	6.3
Potassium persulfate (2% solution)	25.0
1,3-Butadiene	48.5
II. LATEX PROPERTIES	
Coagulum, % of total latex	
20-mesh, %	0.09
200-mesh, %	0.00
Total solids, % of total latex	45.0
pH	3.5
Viscosity ¹ , cps	1246
Particle size ² , nm	69
Surface tension ³ , dynes/c	70
Film uniformity	Excellent
Film clarity	Slightly translucent
III. POLYMERIZATION PROCEDURE	
Equipment	Bottle polymerizer rotated at 40 rpm
Reaction temperature, °C	65
Reaction time, hrs	16

¹ Brookfield RVF viscometer, spindle # 1 at 20 rpm.

² NICOMP QELS average.

³ Kruss tensiometer using a duNouy ring.

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EPA Status¹

Under the provisions of 40 CFR, 180.1001 (c) of the Pesticides Chemicals Regulations, AEROSOL DPOS-45 surfactant is exempted from the requirement of a tolerance when used in accordance with good agricultural practice as an inert ingredient of pesticide formulations applied to growing crops or to raw agricultural commodities after harvest.

¹ 21 CFR 182.99 Adjuvants for Pesticide Chemicals - Adjuvants, identified and used in accordance with 40 CFR 180.1001 (c) and (d), which are added to pesticide use dilutions by a grower or applicator prior to application to the raw agricultural commodity, are exempt from the requirement of tolerance.

Health & Safety Information

Before handling this material, read the corresponding Cytec Industries Inc. Material Safety Data Sheet for safety, health and environmental data.

The acute oral (rat) LD₅₀ and acute dermal (rabbit) LD₅₀ values of AEROSOL DPOS-45 surfactant are both estimated to be greater than 2000 mg/kg. Direct contact with this material may cause severe eye and mild skin irritation. Inhalation of mists of AEROSOL DPOS-45 surfactant may cause irritation of the upper respiratory tract.

Storage And Handling

AEROSOL DPOS-45 surfactant may be stored and used in a wide variety of containers or reaction vessels. Stainless steel, aluminium, and Monel alloy are recommended for reaction and storage vessels; glass and rubber are suitable lining materials. Some of the sprayed resinous coatings are satisfactory in station

ary tanks in which the coating can be built up more heavily than is customary in drums. In permanent installations, however, the added expense of aluminium, stainless steel, or cladsteel is frequently justified. Store product at temperatures above 4°C to avoid crystallization. Product freezes below 0°C. If crystallization has occurred, product can be liquified by warming to 18-24°C. It is recommended that the entire contents of the container be agitated prior to use.

TSCA - Chemical Inventory Information

US TSCA - All components of this product are included on the TSCA Inventory in compliance with the Toxic Substances Control Act, 15 U.S.C. 2601 et. seq.

Canada DSL - Components of this product have been reported to Environment Canada in accordance with subsection 25 of the Canadian Environmental Protection Act and are included on the Domestic Substances List.

EEC EINECS - All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) in compliance with Council Directive 67/548/EEC and its amendments.

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