

AEROSOL® A-102 E Surfactant

Type:	Anionic
Chemical:	Disodium ethoxylated alcohol [C ₁₀ -C ₁₂] half ester of sulfosuccinic acid
CAS No.:	68954-91-6
Molecular Formula:	C ₂₆ H ₄₈ O ₁₁ Na ₂ S (average)
Molecular Weight:	614 (average)

AEROSOL A-102 E surfactant is an excellent primary emulsifier for emulsion polymerization of acrylic, vinylacrylic, styrene-acrylic and EVA systems. Its unique structure imparts both steric and charge stabilization, leading to systems with very good electrolytic and mechanical stability. Its excellent acid stability and low surface and interfacial tension values also make it useful as a stabilizer/dispersant in a variety of aqueous systems. AEROSOL A-102 E surfactant is non-dermatitic.

Surface Active Properties

Critical Micelle Concentration (CMC), % by weight	0.08 - 0.10
Surface tension, 25°C	
<u>Concentration, % by weight</u>	<u>dynes/cm</u>
0.005	49.9
0.010	45.2
0.110	33.4
Interfacial tension, dynes/cm, 25°C, 0.1% solution against mineral oil, after 5 minutes	7.2
Ross Miles Foam Test, ASTM D-1173, 0.5% solution, 25°C	
Initial foam volume, mL	300
Foam volume after 15 minutes, mL	75
Rewetting sulfur	Excellent rewetting of dry powder containing 0.1% surfactant

Representative Applications

AEROSOL A-102 E surfactant is widely used as a primary emulsifier in acrylic, vinyl-acrylic, styrene-acrylic and EVA latexes, going into the following applications:

- Adhesives
- Paint Binders
- Textile Binders
- Paper Coatings
- Over Print Varnish Systems

AEROSOL A-102 E surfactant is also widely used as a stabilizer/dispersant in medium-HLB resin and pigment systems.

Advantages of AEROSOL A-102 E Surfactant in Emulsion Polymerization

- Low particle size at low usage levels
- Can produce high solids latex at manageable viscosity
- Gives latexes with good mechanical and electrolyte stability and low coagulum levels
- Latexes form clear films with good resistance to moisture and yellowing
- In combination with AEROSOL MA-80 or AEROSOL LF4 surfactants, gives excellent adhesion
- Allows for incorporation of higher levels of water soluble specialty monomers, such as CYLINK® NMA and CYLINK C4 (wet adhesion monomer).

Physical and Chemical Properties

Appearance at 25°C (77°F)	Clear, colorless-to-light yellow liquid
Solids, % by weight	29 - 31
Solvent	Water
Color, APHA, as is, maximum	150
Specific gravity, 25°C	~1.08
Viscosity, cps, 25°C	
Brookfield RFV, No. 3 spindle, 50 rpm	~40
Freezing point, °C	
30% solution ¹	-4 (25°F)
Flash point, °F	
Setaflash (closed cup)	>200 (93°C)
pH, as is	5.2 - 5.6
Acid number, as is, maximum	6.0
Iodine value, as is, maximum	0.5
Stability in acid, at room temperature	Excellent ²
Stability in base, at room temperature	Fair ³
Solubility in organic solvents	
Polar solvents	Sparingly soluble, but quite soluble in dimethyl sulfoxide
Nonpolar solvents	Insoluble

¹ Readily redissolves on heating.

² 50 mL of 0.25% surfactant solution remained clear on prolonged standing after 50 mL of a 10% HCl solution were added.

³ Turbidity begins to appear after 9-11 mL of a 10% NaOH solution are slowly added to 50 mL of a 0.25% surfactant solution; the faint turbidity tends to clear on standing.

Biodegradability

Using a surface tension method for determining the concentration of surfactant remaining, it was found that AEROSOL A-102 E surfactant was over 90% biodegraded in seven days by a bacteria culture acclimated to the surfactant beforehand.

Electrolyte Tolerance¹

Ca(NO ₃) ₂ • 4H ₂ O	Excellent ²
MgSO ₄ (anhydrous)	Excellent ²
Ba(OH) ₂ • 8H ₂ O	Good ³
FeCl ₃ • 6H ₂ O	Good ³
AlCl ₃ • 6H ₂ O	Poor-Fair ⁴

¹ The information outlined above was obtained by first preparing 5% surfactants solutions (100% active basis) and by adding drop wise to these salt solutions.

² **Excellent**—Able to infinitely dilute surfactant solution with salt solution. No turbidity observed when the volume of surfactant solution was doubled with the salt.

³ **Good**—The first few drops of salt solution yield a precipitate which dissolves on shaking. At 1:1 salt to surfactant volume ratio, a turbidity develops which can be clarified by additional shaking.

⁴ **Poor-Fair**—As dropwise addition of salt proceeds, turbidity develops at 1:1 volume ratio.

Health and Safety Information

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

On the basis of toxicity tests, AEROSOL A-102 E surfactant is not expected to present any significant hazards to health in ordinary industrial handling.

Storage and Handling

AEROSOL A-102 E surfactant may be stored and used in a wide variety of containers or reaction vessels. Stainless steel, aluminum 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 stationary tanks in which the coating can be built more heavily than is customary in drums. In permanent installations, however, the added expense of aluminum, stainless steel or clad-steel is frequently justified.

The efficacy of AEROSOL A-102 E is not impaired by freezing or thawing. However, if the product undergoes a freeze-thaw cycle, it is recommended that the entire contents of the container be agitated prior to use.

Regulatory Information

This product is manufactured in compliance with all provisions of the Toxic Substance Control Act, 15. U.S.C. (TSCA).

All components of this product are included on the European Inventory of Existing Chemical Substances (EINECS), the Australian Inventory of Chemical Substances (AICS), the Japan Inventory (ENCS), the Korea Inventory (ECL), and the Philippines (PICS) Inventory.

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