

# AEROSOL<sup>®</sup> A-103 surfactant

<b>Type:</b>	Anionic
<b>Chemical:</b>	Disodium ethoxylated nonylphenol half ester of sulfosuccinic acid
<b>CAS No.:</b>	9040-38-4
<b>Molecular Formula:</b>	C <sub>38</sub> H <sub>64</sub> O <sub>16</sub> Na <sub>2</sub> S (average)
<b>Molecular Weight:</b>	854 (average)
<b>FDA Status:</b>	Approved under 21 CFR 178.3400 (with limitations - refer to AEROSOL brochure PRT-026-F)

AEROSOL A-103 surfactant is an excellent primary emulsifier for emulsion polymerization of acrylic, vinyl-acrylic and EVA latexes, especially for high gloss systems. Its unique structure imparts both steric and charge stabilization, leading to systems with very good electrolytic and mechanical stability. Its excellent compatibility with divalent and trivalent cations and quarternary ammonium surface active agents as well as its surface modifying properties at low concentrations also make it useful as a stabilizer/ dispersant in a variety of water-based applications such as resin dispersions, lime soap dispersant, etc. AEROSOL A-103 is non-dermatitic, and is **VOC-free**.

## SURFACE ACTIVE PROPERTIES

### Critical Micelle Concentration

(CMC), % by weight 0.01 - 0.02

### Surface tension, 25°C

Concentration, % by weight	dynes/cm
0.005	40.3
0.010	36.0
0.110	34.4

### 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 275  
Foam volume after  
15 minutes, mL 130

## REPRESENTATIVE APPLICATIONS

AEROSOL A-103 surfactant is widely used as a primary emulsifier in acrylic, vinyl-acrylic and EVA latexes, going into the following application areas:

- Adhesives
- Paint Binders
- Textiles / Nonwoven Binders
- Paper Coatings
- Over Print Varnish Systems

AEROSOL A-103 surfactant is also used as a stabilizer/ dispersant in low to medium-HLB resin/pigment systems.

## ADVANTAGES OF AEROSOL A-103 SURFACTANT IN EMULSION POLYMERIZATION

- Very effective in producing latexes with very low particle size and narrow PSD for high-gloss systems, at low usage levels.
- Can produce high solids latex (50%+) at manageable viscosity.
- Provides latexes with good mechanical and electrolyte stability and very low coagulum levels.
- Latexes form clear and continuous films with good resistance to moisture and yellowing on heating, especially in comparison to sulfates and sulfonates in vinyl-acrylic systems.
- In combination with AEROSOL<sup>®</sup> MA-80 I or AEROSOL<sup>®</sup> 22 surfactants, gives latexes with excellent adhesion.
- Allows for incorporation of higher levels of water soluble specialty monomers, such as CYLINK<sup>®</sup> NMA and CYLINK<sup>™</sup> C4 wet adhesion monomer, in latex.

## FDA STATUS

AEROSOL A-103 is approved under 21 CFR 175.105 without any limitations, and under 21 CFR 178.3400 with limitations on usage levels (not to exceed 5% by weight of the total monomers used).

# CYTEC

## CYTEC INDUSTRIES INC.

Surfactants & Specialty Monomers  
Five Garret Mountain Plaza  
West Paterson, NJ 07424-3360  
973-357-3100  
In USA 1-800-253-4078  
<http://www.cytec.com>

PRT-088-D

## PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 25°C (77°F)	Colorless-to-light yellow liquid
Solids, % by weight	33-35
Solvent	Water
Color, APHA, as is, maximum	150
Specific gravity, 25°C	~1.09
Density, lb/gal, 25°C	~9.1
Viscosity, cps, 25°C	
Brookfield RVF, No 3 spindle, 50 rpm	~170-190
Freezing point, °C	
30% solution <sup>1</sup>	-9 (16°F)
Flash point, °F	>212 (>100°C)
Setaflash (closed cup)	
pH, as is	4.5-6.0
Acid number, as is, maximum	10.0
Iodine value, as is, maximum	0.5
Stability in acid	
at room temperature	Excellent <sup>2</sup>
Stability in base	
at room temperature	Fair <sup>3</sup>
Solubility in organic solvents	
Polar solvents	Partially soluble, but quite soluble in methyl ethyl ketone
Non-polar solvents	Generally insoluble

<sup>1</sup> Readily redissolves on heating.

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

<sup>3</sup> 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.

## ELECTROLYTE TOLERANCE<sup>1</sup>

Ca(NO <sub>3</sub> ) <sub>2</sub> • 4H <sub>2</sub> O	Excellent <sup>2</sup>
MgSO <sub>4</sub> (anhydrous)	Excellent <sup>2</sup>
AlCl <sub>3</sub> • 6H <sub>2</sub> O	Very good <sup>3</sup>
Ba(OH) <sub>2</sub> • 8H <sub>2</sub> O	Good <sup>4</sup>
FeCl <sub>3</sub> • 6H <sub>2</sub> O	Good <sup>4</sup>

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

<sup>2</sup> **Excellent**-Able to infinitely dilute surfactant solution with salt solution. No turbidity observed when the volume of surfactant solution was doubled with the salt.

<sup>3</sup> **Very good**-Slight turbidity develops at 2:1 salt to surfactant volume ratio.

<sup>4</sup> **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.

## HEALTH AND SAFETY INFORMATION

Before handling this material, read the corresponding Cytec Industries Inc. Material Safety Data Sheet (#0047) for safety, health and environmental data.

On the basis of toxicity tests, AEROSOL A-103 surfactant is not expected to present any significant hazards to health in ordinary industrial handling.

## STORAGE AND HANDLING

AEROSOL A-103 surfactant should be stored above 60°F (15.5°C) over prolonged periods to prevent gelation.

AEROSOL A-103 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-103 surfactant is not impaired by freezing or thawing. However, if a freeze-thaw cycle occurs, 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.

## IMPORTANT NOTICE

The information and statements in this manual are believed to be reliable but are not to be construed as a warranty or representation for which we assume legal responsibility or as an assumption of duty on our part. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information, products or vendors referred to in this manual. **NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE.** Nothing in this manual is to be taken as permission, inducement or recommendation to practice any potential invention without a license.

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