

NAS 08 - NIAPROOF Anionic Surfactant 08

$C_4H_9CH(C_2H_5)CH_2SO_4Na$ (Sodium 2-Ethylhexyl Sulfate)

General Information

NIAPROOF Anionic Surfactant 08 is an aqueous solution containing 40 percent by weight of sodium 2-ethylhexyl sulfate. It is a unique wetting assistant because of its solubility, stability, and penetrating action in strong acidic and alkaline solutions containing 10 to 20 percent of dissolved electrolyte. It is chemically stable even at the boiling point of 15 percent caustic solutions.

Concentrations from 0.25 to 0.75 percent *NIAPROOF Anionic Surfactant 08* are suggested for initial trials.

NIAPROOF Anionic Surfactant 08 is effective in speeding the preparation of soda cellulose and in many other applications involving the penetration of concentrated acid, alkali, or salt solutions. It is one of the few anionic surface active agents stable in the presence of concentrated bleaching powder solutions. It is an excellent coupling agent for inorganic salts that are incorporated in organic solvent-water mixtures.

TYPICAL PROPERTIES

Active Ingredient

Sodium 2-Ethylhexyl Sulfate

Appearance

Essentially colorless liquid

Active Ingredient % by Wt.

39

Solubility in Water at 20°C

Miscible

pH_(a)

7.3

Specific Gravity at 20/20°C

1.109

Surface Tension at 25°C dynes per cm_(a)

50

FOOTNOTE: (a) 0.1% aqueous solution



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PRODUCT SPECIFICATIONS

SPECIFICATION

Sodium 2-Ethylhexyl Sulfate
Alkalinity
Solubility in Sodium Hydroxide
Iron
Separation Test
Dilution Test
Color
Odor
Suspended Matter

CONTROL LIMITS

38:5 -40.5%, bywgt.
0.4 – 0.8% by wgt. as Na₂CO₃
Complete - no turbidity
0.5 ppm, Max.
Homogenous from 10°C -40°C
90% Min., light transmission
100 Platinum-Cobalt, Max.
Mild
Substantially free

Applications

Fountain Solutions

NIAPROOF Surfactant 08 is a unique ingredient in the formulation of offset printing fountain solutions. Its novel properties preserve the delicate emulsification balance between a fast breaking system and a rapid re-emulsification which is necessary for high speed printing operations. It is the only surfactant avoiding these problems because of the absence of foam at a neutral and acid pH in addition to its negligible effect on emulsification.

Lye Washing and Lye Peeling of Fruits and Vegetables

In the commercial process of lye washing and lye peeling of fruits and vegetables, NIAPROOF Anionic Surfactant 08 assists the lye solutions in two important ways:

- In washing fresh produce to remove field soil, microorganisms, insect particles and chemical residues.
- In speeding the peeling of fruits and vegetables thus increasing productivity and reducing product losses.

NIAPROOF Anionic Surfactant 08 works best in washing baths 5 to 20 percent alkali. FDA guidelines stipulate the concentration must not exceed 0.2 percent in the alkali bath on a contained basis (0.5 percent as is). The application must be followed by a potable water rinse.

Textile Processing Bleaching

NIAPROOF Anionic Surfactant 08 is stable in the presence of concentrated bleaching powder solutions and is particularly recommended for use with calcium hypochlorite.

Mercerizing

NIAPROOF Anionic Surfactant 08 not only promotes extremely rapid mercerization of gray cotton goods, but also withstands the rigorous treatment encountered in concentrated mercerizing liquors.

This product is effective where the concentration of caustic is 15 to 20 percent (20 to 26 Baume). Mill experience indicates that a mixture of approximately 90 percent anionic 08 and 10 percent 2-ethylhexanol (added to reduce foaming) is an excellent mercerizing agent.

Household & Industrial Cleaners Wallpaper Penetrant

NIAPROOF Anionic Surfactant 08 has been used successfully in formulations that eliminate much of the work involved in removing old wall- paper. To use the formulation shown below, dilute it with 6 or 7 parts water, apply it with a sponge or brush, and allow it to remain on the paper for several minutes. If it does not immediately penetrate and loosen the paper, application of more solution and the allowance of adequate time will produce the desired ease of removal.

COMPONENTS/PARTS BY WEIGHT

NIAPROOF Anionic 08.....	12.5
Butyl Carbitol.....	12.5
<u>Water.....</u>	<u>75.0</u>
	100.0

Agricultural Uses

NIAPROOF Anionic Surfactant 08 is an excellent coupling agent for inorganic salts that are incorporated in organic solvent-water mixtures. This product has FDA approval for use in solutions for washing or to assist in the lye peeling of fruits and vegetables.

Metal Processing Metal Cleaning Alkaline Cleaning

The addition of NIAPROOF Surfactant 08 to alkaline degreasing baths reduces the cleaning time and the concentration of alkali required. In addition, a thoroughly clean surface suitable for plating and spraying is produced, and scumming effects are avoided by the thorough dispersal of grease and lime soaps.

Electrolytic Cleaning

The addition of 0.1 to 0.25 percent of NIAPROOF Anionic Surfactant 08 to the electrolytic solution decreases the surface tension of the solution and facilitates the release of hydrogen gas bubbles from the surface of the metal.

Plating

Added to a bright copper plating bath, 0.2 percent of NIAPROOF Anionic Surfactant 08 effectively eliminates much of the pitting caused by impurities. A penetrant made of one part Anionic 4 and 2 parts of Anionic 08 dissolves without haze in commercial nickel plating baths. At 0.1 percent concentration it lowers the surface tension to 30 dynes per centimeter at 30° centigrade.

Pickling

NIAPROOF Anionic Surfactant 08 may be used in acid pickling baths to reduce the pickling time, decrease the amount of acid required, obtain a more uniform pickle, minimize the formation of films of fatty acid on the metal , and facilitate removal of hydrogen gas bubbles. If the concentration of acid is greater than 10 percent, as is the case in pickling with hydrochloric acid, 0.1 to 0.25 percent of Anionic 08 will accelerate by 5 to 10

Applications (cont)

percent the pickling of stainless steel sheet in a bath containing 20 percent nitric acid and 5 percent hydrofluoric acid.

Molding

Addition of about 2 ounces of NIAPROOF 08 per 1000 pounds of sand decreases the mulling time and results in sand of more uniform size for use in making casting molds and cores

Pharmaceuticals

NIAPROOF Anionic Surfactants have great value in the pharmaceutical industry. They enhance the bactericidal properties of common antiseptics, particularly those that are acidic. Their surface activity and wetting power are useful in such applications as rapid fixing of histological specimens, increasing the efficiency of tuberculosis antiseptic solutions, and enhancing the activity of penicillin when it is used as a topical remedy. NIAPROOF Anionic Surfactant 08 is important in penicillin manufacture for breaking undesired emulsions

Specialty Products White Wall Tire Cleaner

COMPONENTS / PARTS BY WEIGHT

Butyl Cellosolve.....	3.0
NIAPROOF Anionic 08.....	4.0
Water.....	90.0
Sodium Metasilicate.....	3.0
	100.0

PREPARATION: Dissolve the sodium metasilicate in the water. Add Butyl Cellosolve and finally NIAPROOF 08. These formulations may be used as is or made into pastes by the addition of inorganic filler and white pigment

Performance Data

EMULSIFICATION OF SOLVENTS											
Separation of Emulsion, ml. lower layer											
Xylene			Kerosene			Perchlorethylene			Stoddard Solvent		
Observation Time (minutes)											
5	30	60	5	30	60	5	30	60	5	30	60
56ml	58	58	38	56	56	50 _a	60 _a	64 _a	22	46	54

FOOTNOTE: (a) Upper Layer

TEST

CONDITIONS

Surfactant 5% by volume
Solvent 40% by volume
Sufficient water to make 100-ml volume

250-ml
glass-stoppered
graduate

Invert graduate containing mixture 30 times with a 30-second time period. Allow mixture to stand at room temperature.

SURFACE TENSION

Surface Tension _(a) at 25°C, dynes per cm			
Concentration, % by wt. _(b)			
0.0001	0.005	0.010	0.100
63	56	51	50

FOOTNOTES

(a) ASTM Method D 1331-56
(b) As supplied

ROSS-MILES POUR FOAM TEST

Foam Height _(a) in Millimeters	
Initial	10
After 5 Minutes	0

FOOTNOTE

(a) ASTM Method D 1173-53	
Temperature	50°C
Surfactant	0.2% by weight
Water Hardness	Distilled water

Toxicological Properties

NIAPROOF Anionic Surfactant 08 is regarded as a material of moderate oral and skin penetration toxicity. In comparing oral toxicity, for example, isopropanol has an LD50 of 5.84 grams per kilogram body weight. The data for skin penetration suggests that a toxic effect would be expected only after massive and prolonged exposure to the undiluted chemical. *NIAPROOF Surfactants* in the undiluted state are capable of causing significant eye injury.

When *NIAPROOF Surfactants* are mixed with other materials, their toxicity may be increased or decreased. Therefore, the toxicity of a mixture must be determined independently.

It has been the usual experience that dilution of *NIAPROOF Surfactants* lessens the irritant action. Thus, each of the materials in the table caused no irritant response when tested as a one percent solution in water.

Toxicity is only one indication of the existence of hazard in handling a chemical. Physical properties are equally important in determining the hazard.

The tabular data below indicates the relative degree of toxicity to animals as measured by single doses or contacts. The results of animal experiments may be indicative of the effects to be expected on human subjects, but they cannot be directly applied to humans without the use of suitable safety factors

ANIMAL EXPOSURE

Single Oral LD50 in Rats, ml/kg
7.27

Single Skin Penetration LD50 in Rabbits, ml/kg
6.54

Injury in the Rabbit Eye
Moderate

Primary Skin Irritation in Rabbits
Severe

SKIN RESPONSE OF HUMANS^(a)

Number tested
12

Irritation, % responding
59

Sensitization, % responding
0

Footnote: (a) tested on "as sold" basis)

Definitions

The term LD50 refers to that quantity of chemical that kills 50 percent of dosed animals within 14 days. For uniformity, dosage is expressed in grams or milliliters per kilogram of animal body weight.

Single skin penetration refers to a 24-hour covered skin contact with the liquid chemical or a solid in an acceptable vehicle.

Single inhalation refers to the continuous breathing of a certain concentration of chemical for the stated period of time.

Primary irritation refers to the skin response 24 hours following application of 0.01 ml. amounts to uncovered skin.

Eye injury refers to surface damage produced by the liquid or solid chemical or appropriate concentrations thereof.

Legal responsibility is assumed only for the fact that all studies reported here and all opinions are those of qualified experts.

Shipping Data

Weight per Gallon, lb		Δ Pounds per Gallon, per °C	Coefficient of Expansion, per °C	Flashpoint, °F
At 20°C	At 15.56°C		At 55°C	Cleveland Open Cup
9.23	9.25	0.00516	0.00067	None

NIAPROOF Anionic Surfactant 08 is packaged in 55-gallon polyethylene drums and 5-gallon polyethylene pails, or bulk tank truck. DOT Shipping Label and shipping name not required. *NIAPROOF Anionic Surfactant 08* is not regulated for DOT hazard classification. NOTE: Maximum number of months *NIAPROOF Anionic Surfactant 08* may be stored in closed drums without re-sampling is estimated at 18 months

Storage & Handling

NIAPROOF Anionic Surfactants are stable, have no flash points, and are comparatively safe to store and handle. They do, however, de-fat the skin and can damage the eyes. When handling *NIAPROOF Surfactants*, gloves and goggles should be used. Necessary precautions to prevent contact with the skin and eyes should also be taken.

NIAPROOF Anionic Surfactant 08 is sold as an aqueous solution and should be stored in fiberglass-reinforced plastic or stainless steel tanks. Certain types of lined steel tanks are also acceptable.

Outside tanks and piping for *NIAPROOF Surfactants* must be heated and insulated to prevent phase separation. Inside facilities may also require heating; this product may separate if stored below 60°F but can be re-dissolved with agitation above 90°F.

Standard centrifugal process pumps are commonly used for transfer service.

Precautionary Labeling

NIAPROOF ANIONIC SURFACTANT 08 **DANGER! CAUSES BURNS.**

Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling below 60°F but can be re-dissolved with agitation above

FIRST AID

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before re-use. Not for use as a drug or cosmetic unless clearly established as safe for that purpose.

FOR INDUSTRY USE ONLY

Regulatory Status

F&DA § 173.315	Washing or assisting the lye peeling of fruits and vegetables, followed by a water rinse (maximum concentration 0.2% on a contained basis, 0.5%, as is).
F&DA § 175.105	Component of adhesives used in articles intended for packaging, transporting, or holding food.
F&DA § 176.170	Component of paper and paperboard in contact with fatty and aqueous foods provided that surfaces comply with extractive limitations.
EPA § 180.100 1-c	Inert (or Occasionally Active) Ingredients For Use in Formulations Applied to Growing Crops or to Raw Agricultural Commodities After Harvest.
EPA § 180.100-e	Inert (or Occasionally Active) Ingredients For Use in Formulations Applied to Animals.

NIAPROOF Anionic Surfactant 08 has been accepted by Consumer and Marketing Service of the USDA as a wetting agent for poultry scald vats (maximum concentration 0.5%, as is) and for washing or to assist the lye peeling of fruits and vegetables (maximum concentration 0.5%, as is) used in processed meat or poultry products. It is listed in USDA regulations by its chemical name, sodium 2-ethylexyl sulfate

NIAPROOF Anionic Surfactant 08 Chemical Abstract Service Number 126-92-1

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