

Safety Data Sheet

Version 2.0

Revision Date 12/30/2014

SDS Number 300000021309

Print Date 12/31/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TOMAMINE[®] AO-14-2 SURFACTANT

Product Use Description : Surfactant

Manufacturer/Importer/Distributor : Air Products and Chemicals, Inc
7201 Hamilton Blvd.
Allentown, PA 18195-1501
GST No. 123600835 RT0001
QST No. 102753981 TQ0001

Telephone : 1-610-481-4911 Corporate
1-800-345-3148 Chemicals Cust Serv
1-800-752-1597 Gases/Electronics Cust Serv

Emergency telephone number (24h) : 800-523-9374 USA
+1 610 481 7711 International

2. HAZARDS IDENTIFICATION

GHS classification

Flammable liquids - Category 3
Eye irritation - Category 2A
Specific target organ toxicity - single exposure - Category 3

GHS label elements

Hazard pictograms/symbols



Signal Word: Warning

Hazard Statements:

H226: Flammable liquid and vapour.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness.

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Precautionary Statements:

- Prevention** : P210:Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261:Avoid breathing dust/fume/gas/mist/vapours/spray.
P280a:Wear protective gloves and eye/face protection.
- Response** : P303+P361+P353 :IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 :IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 :Call a POISON CENTRE/doctor/physician if you feel unwell.
P337+P313 :If eye irritation persists: Get medical advice/attention.
P370+P378 :In case of fire, use recommended extinguishing media for extinction.
- Storage** : P403+P233:Store in a well-ventilated place. Keep container tightly closed.
P403+P235:Store in a well-ventilated place. Keep cool.

Hazards not otherwise classified

Keep away from heat and sources of ignition.
Components of the product may affect the nervous system.
Flammable.
Irritating to eyes.
Mild respiratory tract irritant.
Mild skin irritant.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Concentration (Weight)
Propanol, 2-	67-63-0	20 %
Ethanol, 2,2'-iminobis-, N-[3-(branched decyloxy)propyl] derivs., N-oxides	68478-65-9	50 %
Water	7732-18-5	30 %
Hydrogen Peroxide	7722-84-1	0.2 %

CHEMICAL FAMILY: Amine Oxide

4. FIRST AID MEASURES

- General advice** : Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.
- Eye contact** : Rinse immediately with plenty of water also under the eyelids for at least 20

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- minutes. Remove contact lenses.
- Skin contact** : Wash off immediately with plenty of water for at least 20 minutes. Wash off with soap and water. Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay.
- Ingestion** : Never give anything by mouth to an unconscious person. If a person vomits when lying on his back, place him in the recovery position. Prevent aspiration of vomit. Turn victim's head to the side.
- Inhalation** : If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Move to fresh air.
- Most important symptoms/effects - acute and delayed** : Repeated and/or prolonged exposure to low concentrations of vapors and/or aerosols may cause: Sore throat. Neurological disorders Eye disease.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media** : Alcohol-resistant foam.
Carbon dioxide (CO2).
Dry chemical.
Dry sand.
Limestone powder.
- Specific hazards** : Incomplete combustion may form carbon monoxide. May generate ammonia gas. May generate toxic nitrogen oxide gases. Burning produces noxious and toxic fumes. In the event of fire, cool tanks with water spray. Downwind personnel must be evacuated. Fire or intense heat may cause violent rupture of packages. May form explosive mixtures in air.
- Special protective equipment for fire-fighters** : Use personal protective equipment. Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

- Personal Precautions, Protective Equipment, and Emergency Procedures** : Wear suitable protective clothing, gloves and eye/face protection. Use self-contained breathing apparatus and chemically protective clothing. Remove all sources of ignition. Evacuate personnel to safe areas.
- Environmental precautions** : Construct a dike to prevent spreading. Shut off or remove all ignition sources. Construct a dike to prevent spreading.
- Methods for cleaning up** : Contact Air Products' Emergency Response Center for advice. Approach suspected leak areas with caution. Absorb with inert absorbent materials such as: Dry sand. Vermiculite. Activated charcoal. Place in appropriate chemical waste container.

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Additional advice : Open enclosed spaces to outside atmosphere. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. If possible, stop flow of product.

7. HANDLING AND STORAGE

Handling

See "Flammable and Combustible Liquid Code" NFPA No. 30, National Fire Protection Association, Boston, MA. Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed. Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations. Use only in well-ventilated areas. Avoid contact with eyes. Avoid breathing vapors and/or aerosols. Use personal protective equipment. When using, do not eat, drink or smoke.

Storage

Do not store near acids. Keep containers tightly closed in a dry, cool and well-ventilated place. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from heat and sources of ignition. Keep in a dry, cool place. Keep away from oxidizers.

Technical measures/Precautions

Keep away from open flames, hot surfaces and sources of ignition.

Storage Temperature : < 120 °F (< 48.88 °C)

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures

Use explosion-proof equipment.

Apply process controls to ensure safe operating conditions. Assess potential flammability hazards based on flashpoint and potential ignition sources.

Provide readily accessible eye wash stations and safety showers.

Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

Personal protective equipment

Respiratory protection : Wear appropriate respirator when ventilation is inadequate.

Hand protection : Butyl-rubber
Nitrile rubber.
Neoprene gloves.
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Chemical resistant goggles must be worn.

Skin and body protection : Long sleeve shirts and trousers without cuffs.

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Environmental exposure controls : Construct a dike to prevent spreading. Shut off or remove all ignition sources.

Special instructions for protection and hygiene : Discard contaminated leather articles. Provide readily accessible eye wash stations and safety showers. Wash hands at the end of each workshift and before eating, smoking or using the toilet. Provide readily accessible eye wash stations and safety showers.

Exposure limit(s)

Propanol, 2-	Recommended exposure limit (REL): NIOSH	400 ppm	980 mg/m3
Propanol, 2-	Short Term Exposure Limit (STEL): NIOSH	500 ppm	1,225 mg/m3
Propanol, 2-	Permissible exposure limit: OSHA Z1	400 ppm	980 mg/m3
Propanol, 2-	Time Weighted Average (TWA): OSHA Z1A	400 ppm	980 mg/m3
Propanol, 2-	Short Term Exposure Limit (STEL): OSHA Z1A	500 ppm	1,225 mg/m3
Propanol, 2-	Time Weighted Average (TWA) Permissible Exposure Limit (PEL): US CA OEL	400 ppm	980 mg/m3
Propanol, 2-	Short Term Exposure Limit (STEL): US CA OEL	500 ppm	1,225 mg/m3
Propanol, 2-	Time Weighted Average (TWA): ACGIH	200 ppm	-
Propanol, 2-	Short Term Exposure Limit (STEL): ACGIH	400 ppm	-
Propanol, 2-	Time Weighted Average (TWA): TN OEL	400 ppm	980 mg/m3
Propanol, 2-	Short Term Exposure Limit (STEL): TN OEL	500 ppm	1,225 mg/m3
Hydrogen Peroxide	Time Weighted Average (TWA): ACGIH	1 ppm	-
Hydrogen Peroxide	Recommended exposure limit (REL): NIOSH	1 ppm	1.4 mg/m3
Hydrogen Peroxide	Permissible exposure limit: OSHA Z1	1 ppm	1.4 mg/m3
Hydrogen Peroxide	Time Weighted Average (TWA): OSHA Z1A	1 ppm	1.4 mg/m3
Hydrogen Peroxide	Time Weighted Average (TWA) Permissible Exposure Limit (PEL): US CA OEL	1 ppm	1.4 mg/m3
Hydrogen Peroxide	Time Weighted Average (TWA): TN OEL	1 ppm	1.4 mg/m3

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid. Colorless - Light yellow

Odor : Irritating.

Odor threshold : No data available.

pH : No data available.

Melting point/range : 30 °F (-1.11 °C)

Boiling point/range : No data available.

Flash point : 79 °F (26.11 °C)

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Evaporation rate	: No data available.
Flammability (solid, gas)	: Not applicable.
Upper/lower explosion/flammability limit	: Not applicable.
Vapor pressure	: 90.22 mmHg at 70 °F (21 °C)
Water solubility	: Completely soluble.
Relative vapor density	: Not applicable.
Relative density	: 0.95
Partition coefficient (n-octanol/water)	: No data available.
Auto-ignition temperature	: No data available.
Decomposition temperature	: No data available.
Viscosity	: 160 mPa.s at 68 °F (20 °C)
Molecular Weight	: No data available.

10. STABILITY AND REACTIVITY

Chemical Stability	: Stable under normal conditions.
Conditions to avoid	: Heat, flames and sparks.
Materials to avoid	: Reactive metals (e.g. sodium, calcium, zinc etc.). Materials reactive with hydroxyl compounds. CAUTION! N-Nitrosamines, many of which are known to be potent carcinogens, may be formed when the product comes in contact with nitrous acid, nitrites or atmospheres with high nitrous oxide concentrations. Nitrous acid and other nitrosating agents. Organic acids (i.e. acetic acid, citric acid etc.). Mineral acids. Sodium hypochlorite. Incompatible with bases. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. Oxidizing agents. Acids. Alkalies.
Hazardous decomposition	: Nitric acid.

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products

Ammonia
Nitrogen oxides (NOx).
Nitrogen oxide can react with water vapors to form corrosive nitric acid.
Carbon monoxide.
Carbon dioxide (CO2).
Aldehydes
Flammable hydrocarbon fragments.
Nitrosamine.

Possibility of hazardous Reactions/Reactivity : No data available.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Likely routes of exposure

- Effects on Eye : Contact with eyes may cause irritation.
- Effects on Skin : If absorbed through the skin, may cause central nervous system effects, such as headache, nausea, dizziness, confusion, breathing difficulties. Mild skin irritation.
- Inhalation Effects : Harmful if inhaled and may cause delayed lung injury. May cause central nervous system effects, such as headache, nausea, dizziness, confusion, breathing difficulties. Severe cases of overexposure can result in respiratory failure. May cause nose, throat, and lung irritation. Inhalation of vapors and/or aerosols in high concentration may cause irritation of respiratory system. May cause headache and dizziness.
- Ingestion Effects : No data available.
- Symptoms : Repeated and/or prolonged exposure to low concentrations of vapors and/or aerosols may cause: Sore throat. Neurological disorders, Eye disease.

Acute toxicity

- Acute Oral Toxicity : LD50 : 7,000 mg/kg Species : Rat.
- Inhalation : No data is available on the product itself.
- Inhalation - Components
Propanol, 2- LC50 (8 h) : 12000 - 19000 ppm Species : Rat. Female
Hydrogen Peroxide LC50 (4 h) : 2 mg/l Species : Rat.
- Acute Dermal Toxicity : No data is available on the product itself.
- Acute Dermal Toxicity - Components
Propanol, 2- LD50 : 6,290 mg/kg Species : Rabbit.

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Hydrogen Peroxide

LD50 : 4,060 mg/kg

Species : Rat.

Skin corrosion/irritation : Mild skin irritation.

Serious eye damage/eye irritation : Eye irritation.

Sensitization. : No data available.

Chronic toxicity or effects from long term exposures

Carcinogenicity : No data available.

Reproductive toxicity : No data is available on the product itself.

Germ cell mutagenicity : No data is available on the product itself.

Specific target organ systemic toxicity (single exposure) : No data available.

Specific target organ systemic toxicity (repeated exposure) : No data available.

Aspiration hazard : No data available.

Delayed and Immediate Effects and Chronic Effects from Short and Long Term Exposure

Hydrogen Peroxide ACGIH : Group A3 - Confirmed animal carcinogen with unknown relevance to humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

This product contains listed carcinogen(s) according to IARC, ACGIH, NTP and/or OSHA in concentrations of 0.1 percent or greater. Neurological disorders, Eye disease.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity : : 33 mg/l Species : Fathead minnow (Pimephales promelas).

Toxicity to fish - Components
Propanol, 2-

EC50 (48 h) : 10,000 mg/l

Species : Fathead
minnow (Pimephales
promelas).

Propanol, 2-

LC50 (96 h) : > 1,400 mg/l

Species : Bluegill
sunfish (Lepomis)

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Propanol, 2-	LC50 (96 h) : 6,550 mg/l	macrochirus). Species : Fathead minnow (Pimephales promelas).
Hydrogen Peroxide	LC50 (96 h) : 22 mg/l	Species : Rainbow trout (Oncorhynchus mykiss).
Hydrogen Peroxide	LC50 (96 h) : 26.7 mg/l	Species : Bluegill sunfish (Lepomis macrochirus).
Toxicity to daphnia - Components Hydrogen Peroxide	EC50 (48 h) : 24 mg/l	Species : Daphnia
Toxicity to other organisms	: No data available.	

Persistence and degradability

Biodegradability	: Not readily biodegradable. Inherently biodegradable.
Mobility	: No data available.
Bioaccumulation	: No data is available on the product itself.
Bioaccumulation - Components Hydrogen Peroxide	Negligible bioaccumulation potential.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products	: Contact supplier if guidance is required.
Contaminated packaging	: Dispose of container and unused contents in accordance with federal, state, and local requirements.

14. TRANSPORT INFORMATION

DOT

UN/ID No.	: UN1987
Proper shipping name	: Alcohols, n.o.s., (2-Propanol)
Class or Division	: 3
Packing group	: III
Label(s)	: 3
Marine Pollutant	: No

IATA

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UN/ID No. : UN1987
Proper shipping name : Alcohols, n.o.s., (2-Propanol)
Class or Division : 3
Packing group : III
Label(s) : 3
Marine Pollutant : No

IMDG

UN/ID No. : UN1987
Proper shipping name : ALCOHOLS, N.O.S., (2-Propanol)
Class or Division : 3
Packing group : III
Label(s) : 3
Marine Pollutant : No

TDG

UN/ID No. : UN1987
Proper shipping name : ALCOHOLS, N.O.S., (2-Propanol)
Class or Division : 3
Packing group : III
Label(s) : 3
Marine Pollutant : No

Further Information

The transportation information is not intended to convey all specific regulatory data relating to this material. For complete transportation information, contact an Air Products customer service representative.

15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA) 12(b) Component(s):

None.

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
Japan	ENCS	Not on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.

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EPA SARA Title III Section 313 (40 CFR 372) Component(s) above 'de minimus' level
Propanol, 2-

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm.

16. OTHER INFORMATION

HMIS Rating

Health : 2
Flammability : 3
Physical hazard : 0

Prepared by : Air Products and Chemicals, Inc. Global EH&S Product Safety Department

Telephone : 1-610-481-4911 Corporate
1-800-345-3148 Chemicals Cust Serv
1-800-752-1597 Gases/Electronics Cust Serv

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For additional information, please visit our Product Stewardship web site at
<http://www.airproducts.com/productstewardship/>
