

SAFETY DATA SHEET

Version 1.1
Revision Date 26.01.2006MSDS Number 300000006570
Print Date 26.01.2006

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Identification of the substance/preparation : 50% Deoxo-Fluor™ in Toluene

Company : Air Products and Chemicals, Inc
7201 Hamilton Blvd.
Allentown
Postcode 18195-1501

Telephone :

Emergency telephone number : 800-523-9374 USA
01-610-481-7711 International

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	EINECS / ELINCS	CAS Number	Concentration (Weight)	Classification
Toluene	203-625-9	108-88-3	50 %	F ; Xn R11 ; R38 ; R48/20 ; R63 ; R65 ; R67 ; Repr.Cat.3
SULFUR, TRIFLUOR [2-METHOXY-N-(2-METHOXYETHYL) ETHANAMINATO-k N]-,(T-4)		202289-38-1	50 %	T ; E R35 ; R25 ; R 2 ; R14

Refer to section 16 for full text of each relevant R-phrase.

3. HAZARDS IDENTIFICATION

Classification

R11 Highly flammable.
R14 Reacts violently with water.
R20 Harmful by inhalation.
R25 Toxic if swallowed.
R35 Causes severe burns.
R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R63 Possible risk of harm to the unborn child.
R65 Harmful: may cause lung damage if swallowed.
R67 Vapors may cause drowsiness and dizziness.

Emergency Overview

Corrosive.
Keep away from heat and sources of ignition.
Components of the product may affect the nervous system.
Reproductive toxin.
Flammable.
Severe respiratory irritant.
Severe skin irritant.
Severe eye irritant.

SAFETY DATA SHEET

Version 1.1
Revision Date 26.01.2006

MSDS Number 300000006570
Print Date 26.01.2006

Reacts violently with water.
Toxic if swallowed.

Potential Health Effects

- Inhalation : Inhalation of aerosol may cause irritation to the upper respiratory tract. Risk of serious damage to the lungs (by inhalation). May cause nose, throat, and lung irritation. Can cause severe eye, skin and respiratory tract burns. May cause central nervous system effects, such as headache, nausea, dizziness, confusion, breathing difficulties. Severe cases of overexposure can result in respiratory failure. Inhalation of vapors and/or aerosols in high concentration may cause irritation of respiratory system.
- Eye contact : Causes eye burns. May cause blindness. Severe eye irritation.
- Skin contact : Causes skin burns. If absorbed through the skin, may cause central nervous system effects, such as headache, nausea, dizziness, confusion, breathing difficulties.
- Ingestion : If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach. May cause central nervous system effects, such as headache, nausea, vomiting, abdominal pain, dizziness, confusion, breathing difficulties. Severe cases of overexposure can result in respiratory failure. May be fatal if swallowed. Toxic if swallowed.
- Chronic Health Hazard : This product contains no listed carcinogens according to Directive 67/548/EEC, IARC, ACGIH and/or NTP in concentrations of 0.1 percent or greater. Reproductive toxin. Prolonged contact may result in chemical burns and permanent damage.
- Aggravated Medical Condition : Asthma.
Eye disease
Skin disorders and Allergies.
Neurological disorders
Liver disorders
Kidney disorders
- Target Organs : Respiratory system.
Skin.
Eyes.
Kidney.
Liver.
Central nervous system.
Bladder
Reproductive hazard.
- Symptoms : Repeated and/or prolonged exposure to low concentrations of vapors and/or aerosols may cause: Sore throat. Irritating to eyes and respiratory system. Breathing difficulties. Symptoms may be delayed.

4. FIRST AID MEASURES

- General advice : Prompt medical attention is required in all cases of overexposure. The potential for hydrogen fluoride formation exists with every exposure, therefore its toxicity must also be considered. 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

SAFETY DATA SHEET

Version 1.1
Revision Date 26.01.2006

MSDS Number 300000006570
Print Date 26.01.2006

- resuscitation immediately.
- Eye contact : Hold eyelids apart, initiate and maintain gentle and continuous irrigation until the patient receives medical care. If medical care is not promptly available, continue to irrigate for one hour. Seek medical treatment immediately. Trained personnel should administer 1% calcium gluconate solution by continuous drip.
- Skin contact : Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay. Initiate and maintain gentle and continuous irrigation until the patient receives medical care. If medical care is not promptly available, continue to irrigate for one hour. Cover wound with sterile dressing. With gloved hand apply 2.5% calcium gluconate gel to the burn area. Alternative treatment is to soak the affected areas in an iced 0.13% water solution (1:750) of Zephiran® chloride (benzalkonium chloride solution, NF). Use ice cubes, not shaved ice, to prevent frostbite. If soaking is impractical, soaks or compresses may be used. (Do not use Zephiran® for burns of the eye.) If immersion is impractical, soaked compresses of the same solution should be applied to the area. Immersion or compresses must be used continuously for two hours. Burns covering an area greater than fifty-two square centimeters (8 square inches) require immediate treatment by a medical doctor.
- Ingestion : If a person vomits when lying on his back, place him in the recovery position. Never give anything by mouth to an unconscious person. Do not induce vomiting. 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. A physician should be consulted for all exposures. Mouth to mouth resuscitation is not recommended. In case of shortness of breath, give oxygen. As soon as possible give 2.5% to 3% calcium gluconate solution by nebulizer. Move to fresh air.
- Notes to physician
- Treatment : If pain persists after above topical treatments, it may be necessary to inject 5% aqueous calcium gluconate beneath, around and into the burn area. This will more likely be necessary in the treatment of extensive burns or small burns where treatment has been delayed. Do not use local anesthetics. Resolution of pain is means to determine effective medical treatment. The patient should be observed for clinical symptoms of hypocalcemia following ingestion or inhalation or following extensive burns. Serum calcium, potassium and magnesium determinations must be performed immediately and periodically to monitor for hypocalcemia and electrolyte imbalance. EKGs should be done immediately and periodically to monitor for arrhythmias, hypocalcemia and hyperkalemia. If additional information is needed call the Air Products' Emergency Number (Section 1) or consult the Air Products' Safetygram 29 "Treatment Protocol for Hydrofluoric Acid Burns."

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : For smaller fires, use dry chemical or carbon dioxide, do not use water. For large fires, flood fire area with water from as far as possible, using a protective barrier and appropriate personal protective equipment.
Carbon dioxide (CO₂).
Dry chemical.
Dry sand.
Limestone powder.

SAFETY DATA SHEET

Version 1.1
Revision Date 26.01.2006

MSDS Number 30000006570
Print Date 26.01.2006

- Extinguishing media which must not be used for safety reasons : Water.
Alcohol-resistant foam.
- Specific hazards : Incomplete combustion may form carbon monoxide. Fire or intense heat may cause violent rupture of packages. Flash back possible over considerable distance. May form explosive mixtures in air. Burning produces obnoxious and toxic fumes. Reacts violently with water.
- Special protective equipment for fire-fighters : Use personal protective equipment. Wear self contained breathing apparatus for fire fighting if necessary.
- Further information : Do not allow run-off from fire fighting to enter drains or water courses.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Use self-contained breathing apparatus and chemically protective clothing. Remove all sources of ignition. Evacuate personnel to safe areas.
- Environmental precautions : Shut off or remove all ignition sources. Construct a dike to prevent spreading. Prevent spilled product from entering streams or drinking water supplies. Local authorities should be advised if significant spillages cannot be contained.
- Methods for cleaning up : Approach suspected leak areas with caution. Contact Air Products' Emergency Response Center for advice. Absorb with inert absorbent materials such as: Dry sand. Vermiculite. Activated charcoal. Polypropylene. Place in appropriate chemical waste container.
- Additional advice : Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Protect from water. If possible, stop flow of product.

7. HANDLING AND STORAGE

Handling

Avoid contact with skin and eyes. Use only in well-ventilated areas. Avoid breathing vapors and/or aerosols. Avoid contact with eyes. Use personal protective equipment. When using, do not eat, drink or smoke.

Storage

To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Keep in a dry, cool place. Keep away from Oxidizers. Store in an area suitable for water reactive materials. Minimize exposure to air. Exposure may cause material to degrade. Store under a nitrogen atmosphere.

Technical measures/Precautions

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

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures

Use explosion-proof equipment.
Provide readily accessible eye wash stations and safety showers.
Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

SAFETY DATA SHEET

Version 1.1
Revision Date 26.01.2006

MSDS Number 300000006570
Print Date 26.01.2006

Personal protective equipment

- Respiratory protection : Wear appropriate respirator when ventilation is inadequate. Use Air Purifying Respirator with organic vapor cartridges when exposure is likely.
- Hand protection : Polyvinyl Alcohol Gloves (PVA).
Nitrile rubber.
Impervious gloves.
The breakthrough time of the selected glove(s) must be greater than the intended use period.
- Eye protection : Full face shield with goggles underneath.
Chemical resistant goggles must be worn.
- Skin and body protection : Impervious clothing.
Full rubber suit (rain gear).
Rubber or plastic boots.
Long sleeve shirts and trousers without cuffs.
- Environmental exposure controls : Shut off or remove all ignition sources. Construct a dike to prevent spreading.
Prevent spilled product from entering streams or drinking water supplies. Local authorities should be advised if significant spillages cannot be contained.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Color : Yellow.
- Molecular Weight : 130 g/mol
- Relative density : 1.01 (water = 1)
- Vapor pressure : 18.80 mmHg
- Flash point : -4 °C
- Autoignition temperature : 321 °C
- Upper flammability limit : 7.1 %(V)
- Lower flammability limit : 1.1 %(V)
- Water solubility : Reacts violently with water.
Reacts violently with water.

10. STABILITY AND REACTIVITY

- Stability : Stable under normal conditions.
- Conditions to avoid : Heat, flames and sparks. Exposure to moisture.
- Materials to avoid : Oxidizing agents.
Humid air.
Water.

SAFETY DATA SHEET

Version 1.1
Revision Date 26.01.2006

MSDS Number 300000006570
Print Date 26.01.2006

Alcohols.
Reacts energetically with water.
Reaction with water or contaminants or excessive heat may result in sufficient pressure to burst container.

Hazardous decomposition products : Carbon monoxide.
Carbon dioxide (CO₂).

Hazardous reactions : Reacts violently with water.

11. TOXICOLOGICAL INFORMATION

Acute Health Hazard

Ingestion : No data is available on the product itself.

Ingestion - Components

Toluene	LD50 : 636 mg/kg	Species : Rat.
SULFUR, TRIFLUOR [2-METHOXY-N-(2-METHOXYETHYL) ETHANAMINATO-k N]-,(T-4)	LD50 : > 50 - < 200 mg/kg	Species : Rat.

Inhalation : No data is available on the product itself.

Inhalation - Components

Toluene	LC50 (4 h) : 49 mg/l	Species : Rat.
---------	----------------------	----------------

Skin. : No data is available on the product itself.

Skin. - Components

Toluene	LD50 : 12,200 mg/kg	Species : Rabbit.
---------	---------------------	-------------------

Eye irritation/corrosion : Severe eye irritation.

Acute dermal irritation/corrosion : Severe skin irritation.

Chronic Health Hazard

Exposure to toluene has been shown to cause adverse effects in the liver, central nervous system, kidney, bladder and reproductive system.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

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

Toxicity to fish - Components

Toluene	EC50 (48 h) : 6.78 mg/l	Species : Rainbow trout (Oncorhynchus mykiss).
---------	-------------------------	--

Toxicity to daphnia - Components

Toluene	EC50 (48 h) : 6 mg/l	Species : Daphnia
Toluene	EC50 (48 h) : 6.56 mg/l	Species : Daphnia

Toxicity to other organisms : No data available.

SAFETY DATA SHEET

Version 1.1
Revision Date 26.01.2006

MSDS Number 300000006570
Print Date 26.01.2006

Persistence and degradability

Mobility : No data available.

Bioaccumulation : No data is available on the product itself.

Bioaccumulation - Components
Toluene : Low 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

ADR

Proper shipping name : FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S. (Bis(2-Methoxyethyl) Aminosulfur Trifluoride, Toluene)

Class : 3 (6.1, 8)

UN/ID No. : UN3286

Packing group : II

ADR/RID Hazard ID no. : 368

IATA

Proper shipping name : Flammable liquid, toxic, corrosive, n.o.s. (Bis(2-Methoxyethyl) Aminosulfur Trifluoride, Toluene)

Class : 3 (6.1, 8)

UN/ID No. : UN3286

Packing group : II

IMDG

Proper shipping name : FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S. (Bis(2-Methoxyethyl) Aminosulfur Trifluoride, Toluene)

Class : 3 (6.1, 8)

UN/ID No. : UN3286

Packing group : II

RID

Proper shipping name : FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S. (Bis(2-Methoxyethyl) Aminosulfur Trifluoride, Toluene)

Class : 3 (6.1, 8)

UN/ID No. : UN3286

Packing group : II

15. REGULATORY INFORMATION

Labelling according to EEC Directive

SAFETY DATA SHEET

Version 1.1
Revision Date 26.01.2006

MSDS Number 300000006570
Print Date 26.01.2006

- Hazard symbol : T Toxic
F Highly flammable
C Corrosive.
- R-phrase(s) : R11 Highly flammable.
R14 Reacts violently with water.
R20 Harmful by inhalation.
R25 Toxic if swallowed.
R35 Causes severe burns.
R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R63 Possible risk of harm to the unborn child.
R65 Harmful: may cause lung damage if swallowed.
R67 Vapors may cause drowsiness and dizziness.
- S-phrase(s) : S16 Keep away from sources of ignition. - No smoking.
S24/25 Avoid contact with skin and eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Not on Inventory.
Canada	DSL	Not on Inventory.
Australia	AICS	Not on Inventory.
Japan	ENCS	Not on Inventory.
South Korea	ECL	Not on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Not on Inventory.

16. OTHER INFORMATION

Ensure all national/local regulations are observed.

R-phrase(s) - Components

- R11 Highly flammable.
R38 Irritating to skin.
R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R63 Possible risk of harm to the unborn child.
R65 Harmful: may cause lung damage if swallowed.
R67 Vapors may cause drowsiness and dizziness.
R35 Causes severe burns.
R25 Toxic if swallowed.
R 2 Risk of explosion by shock, friction, fire or other sources of ignition.
R14 Reacts violently with water.
Repr.Cat.3 Toxic to Reproduction Category 3

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

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

SAFETY DATA SHEET

Version 1.1

Revision Date 26.01.2006

MSDS Number 300000006570

Print Date 26.01.2006

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.
