

## Material Safety Data Sheet

Date Printed: 31/MAY/2005  
Date Updated: 12/MAR/2004  
Version 1.2  
According to 91/155/EEC

Classified as Hazardous according to the criteria of EU Annex 1 and NOHSC.

## 1 - Product and Company Information

|                   |   |
|-------------------|---|
| Product Name      | TETRAHYDROFURAN-D8, 99.5 ATOM % D<br>(1PK=10 X 0.75ML)                                  |
| Product Number    | 441406  |
| Company           | Sigma-Aldrich Pty, Ltd<br>Unit 2, 14 Anella Avenue<br>Castle Hill NSW 1765<br>Australia |
| Technical Phone # | +61 2 9841 0555   |
| Fax               | +61 2 9841 0500   |
| Emergency Phone # | +61 2 9841 0566   |

## 2 - Composition/Information on Ingredients

| Product Name                                    | CAS #   | EC no     | Annex I<br>Index Number |
|---|---|-----------|-------------------------|
| OCTADEUTEROTETRAHYDROFURAN, >99.5<br>(ATOM % D) | 1693-74-9   | 216-898-4 | 603-025-00-0            |
| Formula   | C4D8O   |           |                         |
| Molecular Weight                                | 80.17 AMU   |           |                         |
| Synonyms  | Agrisynth THF * Butane, 1,4-epoxy- * Butane, alpha,delta-oxide * Cyclotetramethylene oxide * Diethylene oxide * 1,4-Epoxybutane * Furanidine * NCI-C60560 * Oxacyclopentane * Oxolane * RCRA waste number U213 * Tetrahydrofuraan (Dutch) * Tetrahydrofuran (ACGIH:OSHA) * Tetrahydrofuranne (French) * Tetraidrofuran (Italian) * Tetramethylene oxide |           |                         |

### 3 – Hazards Identification

## SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Highly flammable. May form explosive peroxides. Irritating to eyes and respiratory system.

## 4 - First Aid Measures

## AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

## AFTER SKIN CONTACT

In case of contact, immediately wash skin with soap and copious amounts of water.

## AFTER EYE CONTACT

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

#### AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

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### 5 - Fire Fighting Measures

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#### EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

#### SPECIAL RISKS

Specific Hazard(s): Vapor may travel considerable distance to source of ignition and flash back. Flammable liquid. Emits toxic fumes under fire conditions.

Explosion Hazards: Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions.

#### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

#### SPECIFIC METHOD(S) OF FIRE FIGHTING

Use water spray to cool fire-exposed containers.

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### 6 - Accidental Release Measures

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#### PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area. Shut off all sources of ignition.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

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### 7 - Handling and Storage

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#### HANDLING

Directions for Safe Handling: Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

#### STORAGE

Conditions of Storage: Keep container closed. Keep away from heat, sparks, and open flame.

SPECIAL REQUIREMENTS: Store under inert gas. Hygroscopic. Do not distill to dryness.

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### 8 - Exposure Controls / Personal Protection

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#### ENGINEERING CONTROLS

Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

## GENERAL HYGIENE MEASURES

Wash thoroughly after handling. Wash contaminated clothing before reuse.

## PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

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## 9 - Physical and Chemical Properties

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|                       |  |                            |
|-----------------------|--|----------------------------|
| Appearance            | Color: Colorless<br>Form: Clear liquid |                            |
| Property              | Value                                  | At Temperature or Pressure |
| pH                    | N/A                                    |                            |
| BP/BP Range           | 65 - 66 °C                             | 760 mmHg                   |
| MP/MP Range           | -106 °C                                |                            |
| Flash Point           | -17 °C                                 | Method: closed cup         |
| Flammability          | N/A                                    |                            |
| Autoignition Temp     | N/A                                    |                            |
| Oxidizing Properties  | N/A                                    |                            |
| Explosive Properties  | N/A                                    |                            |
| Explosion Limits      | N/A                                    |                            |
| Vapor Pressure        | N/A                                    |                            |
| SG/Density            | 0.989 g/cm <sup>3</sup>                |                            |
| Partition Coefficient | N/A                                    |                            |
| Viscosity             | N/A                                    |                            |
| Vapor Density         | N/A                                    |                            |
| Saturated Vapor Conc. | N/A                                    |                            |
| Evaporation Rate      | N/A                                    |                            |
| Bulk Density          | N/A                                    |                            |
| Decomposition Temp.   | N/A                                    |                            |
| Solvent Content       | N/A                                    |                            |
| Water Content         | N/A                                    |                            |
| Surface Tension       | N/A                                    |                            |
| Conductivity          | N/A                                    |                            |
| Miscellaneous Data    | N/A                                    |                            |
| Solubility            | N/A                                    |                            |

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## 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Conditions to Avoid: Moisture.

Materials to Avoid: Oxidizing agents, Oxygen.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## 11 - Toxicological Information

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RTECS NUMBER: LU5950000

### ACUTE TOXICITY

LD50

Oral  
Rat  
1650 mg/kg

LC50  
Inhalation  
Rat  
21,000 ppm  
3H

Remarks: Behavioral:Sleep. Lungs, Thorax, or  
Respiration:Respiratory stimulation. Gastrointestinal:Nausea or  
vomiting.

LD50  
Intraperitoneal  
Rat  
2900 MG/KG

LD50  
Intraperitoneal  
Mouse  
1900 MG/KG

LD50  
Oral  
Guinea pig  
2300 mg/kg

#### SIGNS AND SYMPTOMS OF EXPOSURE

Can cause CNS depression. Exposure can cause: Coughing, chest  
pains, difficulty in breathing. Exposure to high airborne  
concentrations can cause anesthetic effects.

#### ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.  
Skin Absorption: May be harmful if absorbed through the skin.  
Eye Contact: Causes eye irritation.  
Inhalation: May be harmful if inhaled. Material is irritating to  
mucous membranes and upper respiratory tract.  
Ingestion: Harmful if swallowed.

#### TARGET ORGAN INFORMATION

Central nervous system. Liver. Kidneys.

#### CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that has been  
reported to be possibly carcinogenic based on its IARC, ACGIH,  
NTP, or EPA classification.

Rat  
Route of Application: Inhalation  
Exposure Time: 6H/2Y  
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS  
criteria. Kidney, Ureter, Bladder:Tumors.

Mouse  
Route of Application: Inhalation  
Exposure Time: 6H/2Y  
Result: Tumorigenic:Carcinogenic by RTECS criteria. Liver:Tumors.

#### CHRONIC EXPOSURE - TERATOGEN

Species: Rat  
Dose: 5000 PPM/6H  
Route of Application: Inhalation  
Exposure Time: (6-19D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Mouse  
Dose: 1800 PPM/6H  
Route of Application: Inhalation  
Exposure Time: (6-17D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

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#### 12 - Ecological Information

No data available.

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#### 13 - Disposal Considerations

##### SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

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#### 14 - Transport Information

##### RID/ADR

UN#: 2056  
Class: 3  
PG: II  
Proper Shipping Name: Tetrahydrofuran

##### IMDG

UN#: 2056  
Class: 3  
PG: II  
Proper Shipping Name: Tetrahydrofuran  
Marine Pollutant: No  
Severe Marine Pollutant: No

##### IATA

UN#: 2056  
Class: 3  
PG: II  
Proper Shipping Name: Tetrahydrofuran  
Inhalation Packing Group I: No

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#### 15 - Regulatory Information

##### CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 603-025-00-0

INDICATION OF DANGER: F Xi

Highly Flammable. Irritant.

R-PHRASES: 11 19 36/37

Highly flammable. May form explosive peroxides. Irritating to eyes and respiratory system.

S-PHRASES: 16 29 33

Keep away from sources of ignition - no smoking. Do not empty into drains. Take precautionary measures against static discharges.

**SWITZERLAND**

SWISS POISON CLASS: 3

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**16 - Other Information**

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**WARRANTY**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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