

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 01/08/2008

Reviewed on 03/16/2007

**1 Identification of substance:****Product details:****Product name:** 2,2-Dichloro-1,1-difluoroethyl methyl ether**Stock number:** L17285**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company  
 Johnson Matthey Catalog Company, Inc.  
 30 Bond Street  
 Ward Hill, MA 01835-8099  
 Emergency Phone: (978) 521-6300  
 CHEMTREC: (800) 424-9300  
 Web Site: www.alfa.com

**Information Department:** Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department.  
 After normal hours call Chemtrec at (800) 424-9300.

**2 Composition/Data on components:****Chemical characterization:****Description: (CAS#)**

2,2-Dichloro-1,1-difluoroethyl methyl ether  
 (CAS# 76-38-0): 100%

**Identification number(s):****EINECS Number:** 200-956-0**3 Hazards identification****Hazard description:**

Xn Harmful

**Information pertaining to particular dangers for man and environment**

R 10 Flammable.

R 36 Irritating to eyes.

R 68 Possible risk of irreversible effects.

**Classification system****HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	1
FIRE	3
REACTIVITY	1

Health (acute effects) = 1

Flammability = 3

Reactivity = 1

**4 First aid measures****After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

(Contd. on page 2)

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 01/08/2008

Reviewed on 03/16/2007

**Product name: 2,2-Dichloro-1,1-difluoroethyl methyl ether**

(Contd. of page 1)

**After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Seek immediate medical advice.**5 Fire fighting measures****Suitable extinguishing agents**

Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards caused by the material, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

Hydrogen chloride (HCl)

Hydrogen fluoride (HF)

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures****Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Keep away from ignition sources.

**Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**7 Handling and storage****Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Prevent formation of aerosols.

**Information about protection against explosions and fires:**

Keep ignition sources away.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

**Storage****Requirements to be met by storerooms and receptacles:**

No special requirements.

(Contd. on page 3)

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 01/08/2008

Reviewed on 03/16/2007

**Product name: 2,2-Dichloro-1,1-difluoroethyl methyl ether**

(Contd. of page 2)

**Information about storage in one common storage facility:**

Store away from oxidizing agents.

**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**8 Exposure controls and personal protection****Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Components with limit values that require monitoring at the workplace:**

Not required.

**Additional information:** No data**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

**Breathing equipment:**

Use suitable respirator when high concentrations are present.

**Protection of hands:**

Impervious gloves

Check protective gloves prior to each use for their proper condition.

**Material of gloves**

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Eye protection:** Safety glasses**Body protection:** Protective work clothing.**9 Physical and chemical properties:****General Information**

<b>Form:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Not determined

**Change in condition**

<b>Melting point/Melting range:</b>	-36°C (-33°F)
<b>Boiling point/Boiling range:</b>	105°C (221°F)
<b>Sublimation temperature / start:</b>	Not determined

**Flash point:** 37°C (99°F)**Ignition temperature:** Not determined**Decomposition temperature:** Not determined**Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures is possible.

(Contd. on page 4)

USA

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 01/08/2008

Reviewed on 03/16/2007

**Product name: 2,2-Dichloro-1,1-difluoroethyl methyl ether**

(Contd. of page 3)

**Explosion limits:****Lower:** Not determined**Upper:** Not determined**Vapor pressure:** Not determined**Density at 20°C (68°F):** 1.44 g/cm<sup>3</sup>**Solubility in / Miscibility with Water:** Not miscible or difficult to mix**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:** Oxidizing agents**Dangerous reactions** No dangerous reactions known**Dangerous products of decomposition:**

Carbon monoxide and carbon dioxide

Hydrogen chloride (HCl)

Hydrogen fluoride

**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**

Oral	LD50	3600 mg/kg (rat)
Inhalative	LC50	21500 mg/m <sup>3</sup> (mus)
	LC50/4H	122600 mg/m <sup>3</sup> /4H (mus)
Irritation of eyes	moderate	100 mg (rbt)

**Primary irritant effect:****on the skin:** Irritant to skin and mucous membranes.**on the eye:** Irritating effect.**Sensitization:** No sensitizing effects known.**Other information (about experimental toxicology):**

Reproductive effects have been observed on tests with laboratory animals.

Mutagenic effects have been observed on tests with human lymphocytes.

Mutagenic effects have been observed on tests with laboratory animals.

**Subacute to chronic toxicity:****Subacute to chronic toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Kidney, Ureter, Bladder - renal function tests depressed.

Kidney, Ureter, Bladder - other changes in urine composition.

Behavioral - general anesthetic.

Behavioral - somnolence (general depressed activity).

Behavioral - excitement.

Behavioral - antipsychotic.

Behavioral - food intake (animal).

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - dehydrogenases.

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - hepatic microsomal mixed oxidase.

Lungs, Thorax, or Respiration - other changes.

(Contd. on page 5)

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 01/08/2008

Reviewed on 03/16/2007

**Product name: 2,2-Dichloro-1,1-difluoroethyl methyl ether**

(Contd. of page 4)

Liver - fatty liver degeneration.  
 Liver - changes in liver weight.  
 Liver - other changes.  
 Endocrine - hyperglycemia.  
 Endocrine - adrenal cortex tumors.  
 Brain and Coverings - other degenerative changes.  
 Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).  
 Reproductive - Specific Developmental Abnormalities - musculoskeletal system.  
 Reproductive - Specific Developmental Abnormalities - urogenital system.  
**Additional toxicological information:**  
 To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.  
 No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

## 12 Ecological information:

### General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.  
 Do not allow material to be released to the environment without proper governmental permits.

## 13 Disposal considerations

### Product:

### Recommendation

Consult state, local or national regulations to ensure proper disposal.

### Uncleaned packagings:

**Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

### DOT regulations:



**Hazard class:** 3  
**Identification number:** UN3271  
**Packing group:** III  
**Proper shipping name (technical name):** ETHERS, N.O.S. (2,2-Dichloro-1,1-difluoroethyl methyl ether)  
**Label** 3

### Land transport ADR/RID (cross-border)



**ADR/RID class:** 3 (F1) Flammable liquids

(Contd. on page 6)

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 01/08/2008

Reviewed on 03/16/2007

**Product name: 2,2-Dichloro-1,1-difluoroethyl methyl ether**

(Contd. of page 5)

<b>Danger code (Kemler):</b>	30
<b>UN-Number:</b>	3271
<b>Packaging group:</b>	III
<b>Description of goods:</b>	3271 ETHERS, N.O.S. (2,2-Dichloro-1,1-difluoroethyl methyl ether)

**Maritime transport IMDG:**

<b>IMDG Class:</b>	3
<b>UN Number:</b>	3271
<b>Label</b>	3
<b>Packaging group:</b>	III
<b>Proper shipping name:</b>	ETHERS, N.O.S. (2,2-Dichloro-1,1-difluoroethyl methyl ether)

**Air transport ICAO-TI and IATA-DGR:**

<b>ICAO/IATA Class:</b>	3
<b>UN/ID Number:</b>	3271
<b>Label</b>	3
<b>Packaging group:</b>	III
<b>Proper shipping name:</b>	ETHERS, N.O.S. (2,2-Dichloro-1,1-difluoroethyl methyl ether)

## 15 Regulations

**Product related hazard informations:****Hazard symbols:**

Xn Harmful

**Risk phrases:**

10 Flammable.  
 36 Irritating to eyes.  
 68 Possible risk of irreversible effects.

**Safety phrases:**

23 Do not breathe gas/fumes/vapour/spray.  
 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
 36/37 Wear suitable protective clothing and gloves.

**National regulations**

This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only.

Some or all of the components of this product are not listed on the Canadian Domestic Substances List (DSL) or the Canadian Non-Domestic Substances List (NDSL).

(Contd. on page 7)

USA

**Material Safety Data Sheet**  
acc. to OSHA and ANSI

Printing date 01/08/2008

Reviewed on 03/16/2007

**Product name: 2,2-Dichloro-1,1-difluoroethyl methyl ether**

(Contd. of page 6)

**Information about limitation of use:**

For use only by technically qualified individuals.

**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.

**Contact:** Paul V. Connolly

USA