Acetaldehyde diethyl acetal



Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

Acetaldehyde diethyl acetal

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.



SUPPLIER

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SYNONYMS

C6-H14-O2, CH3CH(OC2H5)2, "acetaldehyde diethyl acetal", diethylacetyl, "diethyl acetal", "ethane, 1, 1-diethoxy-", "1, 1-diethoxyethane", "ethylidene diethyl ether", "USAF DO-45"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS



CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW RISK

May form explosive peroxides. Irritating to eyes and skin. Highly flammable. Vapours may cause drowsiness and dizziness.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be damaging to the health of the individual.

• Central nervous system (CNS) depression may include general discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness.

Serious poisonings may result in respiratory depression and may be fatal.

EYE

• Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals. Prolonged eye contact may cause inflammation characterized by a temporary redness of the conjunctiva (similar to windburn).

SKIN

• The material may cause mild but significant inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterized by redness, swelling and blistering.

- Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
- Open cuts, abraded or irritated skin should not be exposed to this material.
- Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.

Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

■ The material is not thought to produce respiratory irritation (as classified using animal models).

Nevertheless inhalation of vapors, fumes or aerosols, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.

Inhalation of vapours may cause drowsiness and dizziness.

This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.

■ Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.

Inhalation of acetals may produce a transitory ether-like anesthesia.

■ If exposure to highly concentrated vapor atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and unless resuscitated - death.

CHRONIC HEALTH EFFECTS

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS				
NAME		CAS RN	%	
acetal		105-57-7	>98	

Section 4 - FIRST AID MEASURES

SWALLOWED

· If swallowed do NOT induce vomiting. · If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

EYE

■ If this product comes in contact with the eyes: · Wash out immediately with fresh running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN

■ If skin contact occurs: · Immediately remove all contaminated clothing, including footwear · Flush skin and hair with running water (and soap if available).

INHALED

· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES					
Vapor Pressure (mmHg):	19.952 @ 20 C				
Upper Explosive Limit (%):	10.4				
Specific Gravity (water=1):	0.831				
Lower Explosive Limit (%):	1.65				

EXTINGUISHING MEDIA

· Foam.

· Dry chemical powder.

FIRE FIGHTING

· Alert Emergency Responders and tell them location and nature of hazard.

· May be violently or explosively reactive.

When any large container (including road and rail tankers) is involved in a fire,

consider evacuation by 500 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

· Liquid and vapor are highly flammable.

· Severe fire hazard when exposed to heat, flame and/or oxidizers.

Combustion products include: carbon dioxide (CO2), other pyrolysis products typical of burning organic material.

FIRE INCOMPATIBILITY

Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

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Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

· Remove all ignition sources.

· Clean up all spills immediately.

MAJOR SPILLS

· Clear area of personnel and move upwind.

· Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

 \cdot Containers, even those that have been emptied, may contain explosive vapours.

Do NOT cut, drill, grind, weld or perform similar operations on or near containers.

 \cdot DO NOT allow clothing wet with material to stay in contact with skin.

The substance accumulates peroxides which may become hazardous only if it evaporates or is distilled or otherwise treated to concentrate the peroxides. The substance may concentrate around the container opening for example.

Purchases of peroxidisable chemicals should be restricted to ensure that the chemical is used completely before it can become peroxidised.

• A responsible person should maintain an inventory of peroxidisable chemicals or annotate the general chemical inventory to indicate which chemicals are subject to peroxidation. An expiration date should be determined. The chemical should either be treated to remove

peroxides or disposed of before this date.

• The person or laboratory receiving the chemical should record a receipt date on the bottle. The individual opening the container should add an opening date.

· Unopened containers received from the supplier should be safe to store for 18 months.

· Opened containers should not be stored for more than 12 months.

· Avoid all personal contact, including inhalation.

 \cdot Wear protective clothing when risk of exposure occurs.

RECOMMENDED STORAGE METHODS

Packing as supplied by manufacturer. Plastic containers may only be used if approved for flammable liquid.

• For low viscosity materials (i): Drums and jerricans must be of the non-removable head type. (ii): Where a can is to be used as an inner package, the can must have a screwed enclosure.

· For materials with a viscosity of at least 2680 cSt. (23 deg. C).

STORAGE REQUIREMENTS

| Easily peroxidizable. Products formed as a result of peroxidation are not only safety hazards but may chemically alter the chemical behavior of the parent compound.

· Store in original containers in approved flame-proof area.

· No smoking, naked lights, heat or ignition sources.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records • acetal: CAS:105-57-7

PERSONAL PROTECTION







RESPIRATOR

•Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent) EYE

· Safety glasses with side shields.

· Chemical goggles.

HANDS/FEET

Wear chemical protective gloves, eg. PVC.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:

· frequency and duration of contact,

· chemical resistance of glove material,

· glove thickness and

· dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).

When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.

When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.

· Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

OTHER

· Overalls.

· PVC Apron.

· Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.

· For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets), non sparking safety footwear.

ENGINEERING CONTROLS

For flammable liquids and flammable gases, local exhaust ventilation or a process enclosure ventilation system may be required. Ventilation equipment should be explosion-resistant.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Liquid. Mixes with water.			
State	Liquid	Molecular Weight	118.17
Melting Range (°F)	Not available	Viscosity	Not Available
Boiling Range (°F)	217	Solubility in water (g/L)	Miscible
Flash Point (°F)	-6	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	446	Vapor Pressure (mmHg)	19.952 @ 20 C
Upper Explosive Limit (%)	10.4	Specific Gravity (water=1)	0.831
Lower Explosive Limit (%)	1.65	Relative Vapor Density (air=1)	4.1
Volatile Component (%vol)	100	Evaporation Rate	Not available

APPEARANCE

Volatile liquid; mixes with water (1;20). Soluble in heptane, methylcyclohexane, propyl-, isopropyl-, butyl-, isobutyl alcohol. Polymerises on standing.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- · Presence of incompatible materials.
- · Product is considered stable.

STORAGE INCOMPATIBILITY

Acetals and ketals:

- · slowly form peroxides on reaction with air.
- · are generally stable and lack reactivity in neutral to strongly basic environments.

• exhibit all the lack of reactivity associated with ethers in general so long as they are not treated with acids, especially aqueous acids. Avoid reaction with oxidizing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

acetal

TOXICITY AND IRRITATION ACETAL:

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION				
Oral (rat) LD50: 4600 mg/kg	Skin (rabbit): 10mg/24h(open)Mild				
Intraperitoneal (rat) LD50: 900 mg/kg	Skin (rabbit): 500 mg/24h - Mild				
Oral (mouse) LD50: 3500 mg/kg	Eye (rabbit): 500 mg (open)				
Oral (rabbit) LD50: 3545 mg/kg	Eye (rabbit): 500 mg/24h - Mild				
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin reduces, swelling, the					

• The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

Section 12 - ECOLOGICAL INFORMATION

This material and its container must be disposed of as hazardous waste.

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

A. General Product Information

Ignitability characteristic: use EPA hazardous waste number D001 (waste code I)

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

| Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- · Reduction
- · Reuse
- · Recycling
- · Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

· Recycle wherever possible.

 \cdot Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

Section 14 - TRANSPORTATION INFORMATION

DOT:

Symbols: None Hazard class or Division: 3 Identification Numbers: UN1088 PG: II Label Codes: 3 Special provisions: IB2, T4, TP1 Packaging: Exceptions: 150 Packaging: Non- bulk: 202 Packaging: Exceptions: 150 Quantity limitations: 5 L Passenger aircraft/rail: Quantity Limitations: Cargo 60 L Vessel stowage: Location: E aircraft only: Vessel stowage: Other: None Hazardous materials descriptions and proper shipping names: Acetal Air Transport IATA: UN/ID Number: 1088 Packing Group: II Special provisions: None Cargo Only Packing Instructions: 364 Maximum Qty/Pack: 60 L Passenger and Cargo Passenger and Cargo Packing Instructions: Y341 Maximum Qty/Pack: 5 L Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity Packing Instructions: 353 Maximum Qty/Pack: 1 L Shipping Name: ACETAL Maritime Transport IMDG: IMDG Class: 3 IMDG Subrisk: None UN Number: 1088 Packing Group: II

Section 15 - REGULATORY INFORMATION

acetal (CAS: 105-57-7) is found on the following regulatory lists;

"Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","International Fragrance Association (IFRA) Survey: Transparency List","US - Massachusetts Oil & Hazardous Material List","US - New Jersey Right to Know Hazardous Substances","US - Pennsylvania - Hazardous Substance List","US Food Additive Database","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE

Limited Quantities: 1 L Shipping Name: ACETAL

Inhalation, skin contact and/or ingestion may produce health damage*.

Cumulative effects may result following exposure*.

EMS Number: F-E,S-D Special provisions: None

* (limited evidence).

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Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references. A list of reference resources used to assist the committee may be found at: www.chemwatch.net/references.

• The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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