

## MATERIAL SAFETY DATA SHEET

Date Printed: 01/22/2004

Date Updated: 09/02/2002

Version 1.3

## Section 1 - Product and Company Information

Product Name ACETIC ANHYDRIDE, 99+%  
Product Number 110043  
Brand ALDRICH

Company Sigma-Aldrich  
Street Address 3050 Spruce Street  
City, State, Zip, Country SAINT LOUIS MO 63103 US  
Technical Phone: 314 771 5765  
Emergency Phone: 414 273 3850 Ext. 5996  
Fax: 800 325 5052

## Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313 No
ACETIC ANHYDRIDE	108-24-7	

Formula C4H6O3  
Synonyms Acetanhydride \* Acetic acid, anhydride (9CI) \*  
Acetic anhydride (ACGIH:OSHA) \* Acetic oxide \*  
Acetyl anhydride \* Acetyl ether \* Acetyl oxide \*  
Anhydride acetique (French) \* Anhydrid kyseliny  
octove (Czech) \* Anidride acetica (Italian) \*  
Azijnzuuranhydride (Dutch) \* Essigsaeureanhydrid  
(German) \* Ethanoic anhydrate \* Octowy bezwodnik  
(Polish)  
RTECS Number: AK1925000

## Section 3 - Hazards Identification

## EMERGENCY OVERVIEW

Combustible (USA) Flammable (EU). Corrosive.  
Reacts violently with water. Harmful by inhalation and if  
swallowed. Causes burns.  
Lachrymator.

## HMIS RATING

HEALTH: 3  
FLAMMABILITY: 2  
REACTIVITY: 2  
SPECIAL HAZARD(S): Water reactive

## NFPA RATING

HEALTH: 3  
FLAMMABILITY: 2  
REACTIVITY: 2  
SPECIAL HAZARD(S): Water reactive

For additional information on toxicity, please refer to Section 11.

## Section 4 - First Aid Measures

#### ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician. Do not induce vomiting.

#### INHALATION EXPOSURE

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

#### DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

#### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

---

#### Section 5 - Fire Fighting Measures

---

##### FLASH POINT

120.2 °F    49 °C    Method: closed cup

##### EXPLOSION LIMITS

Lower: 2.7 %    Upper: 10.3 %

##### AUTOIGNITION TEMP

332 °C

##### FLAMMABILITY

N/A

##### EXTINGUISHING MEDIA

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

Unsuitable: Do not use water.

##### FIREFIGHTING

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

Specific Hazard(s): Combustible liquid. Emits toxic fumes under fire conditions.

---

#### Section 6 - Accidental Release Measures

---

##### PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

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

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

##### METHODS FOR CLEANING UP

Cover with an activated carbon adsorbent, take up and place in closed containers. Transport outdoors. Ventilate area and wash spill site after material pickup is complete.

---

#### Section 7 - Handling and Storage

---

##### HANDLING

User Exposure: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed. Keep away from heat and open flame. Store in a cool dry place.

SPECIAL REQUIREMENTS

Reacts violently with water.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator.  
Hand: Compatible chemical-resistant gloves.  
Eye: Chemical safety goggles.  
Other: Faceshield (8-inch minimum).

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	5 PPM
USA	MSHA Standard	Ceiling	co5 PPM (20 MG/M3)
USA	OSHA.	PEL	8H TWA 5 PPM (20 MG/M3)
USA	NIOSH	Ceiling	co5 PPM

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	10 MG/M3
Poland		NDSch	-
Poland		NDSP	20 MG/M3

Section 9 - Physical/Chemical Properties

Appearance Physical State: Liquid  
Color: Colorless  
Odor: Pungent Acrid

Property	Value	At Temperature or Pressure
Molecular Weight	102.09 AMU	
pH	N/A	
BP/BP Range	138 - 140 °C	760 mmHg
MP/MP Range	-73 °C	
Freezing Point	N/A	
Vapor Pressure	4 mmHg	20 °C
Vapor Density	3.5 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.08 g/cm3	
Bulk Density	N/A	
Odor Threshold	0.117 ppm	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	0.91 Pas	20 °C
Surface Tension	32.7 mN/m	20 °C

Partition Coefficient	N/A	
Decomposition Temp.	136 °C	
Flash Point	120.2 °F 49 °C	Method: closed cup
Explosion Limits	Lower: 2.7 % Upper: 10.3 %	
Flammability	N/A	
Autoignition Temp	332 °C	
Refractive Index	1.39	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:Slightly. Other Solvents: BENZENE, CHLOROFORM MISCIBLE WITH ALCOHOL, ETHER AC	

N/A = not available

---

## Section 10 - Stability and Reactivity

---

### STABILITY

Stable: Stable.

Conditions to Avoid: Do not allow water to enter container because of violent reaction.

Materials to Avoid: Alcohols, Acids, Oxidizing agents, Bases, Reducing agents, Finely powdered metals.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

---

## Section 11 - Toxicological Information

---

### ROUTE OF EXPOSURE

Skin Contact: Causes burns.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes burns. Lachrymator.

Inhalation: Harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion: Harmful if swallowed.

### SIGNS AND SYMPTOMS OF EXPOSURE

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema.

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

### TOXICITY DATA

Oral

Rat

1780 mg/kg

LD50

Inhalation

Rat

1,000 ppm

LC50

Skin  
Rabbit  
4 ML/KG  
LD50

#### IRRITATION DATA

Skin  
Rabbit  
Remarks: Mild irritation effect  
Eyes  
Rabbit  
Remarks: Severe irritation effect

Skin  
Rabbit  
540 mg  
Remarks: Open irritation test

---

#### Section 12 - Ecological Information

---

#### ACUTE ECOTOXICITY TESTS

Test Type: EC50 Algae  
Time: 24 h  
Value: 200 mg/l

Test Type: EC50 Daphnia  
Species: Daphnia  
Time: 96 h  
Value: 55 mg/l

Test Type: LC50 Fish  
Species: other fish  
Time: 48 h  
Value: 265 - 279 mg/l

---

#### Section 13 - Disposal Considerations

---

#### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

---

#### Section 14 - Transport Information

---

#### DOT

Proper Shipping Name: Acetic anhydride  
UN#: 1715  
Class: 8  
Packing Group: Packing Group II  
Hazard Label: Corrosive  
Hazard Label: Flammable liquid  
PIH: Not PIH

#### IATA

Proper Shipping Name: Acetic anhydride  
IATA UN Number: 1715  
Hazard Class: 8  
Packing Group: II

---

## Section 15 - Regulatory Information

---

### EU DIRECTIVES CLASSIFICATION

Symbol of Danger: C

Indication of Danger: Corrosive.

R: 10 20/22 34

Risk Statements: Flammable. Harmful by inhalation and if swallowed. Causes burns.

S: 26 36/37/39 45

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

### US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Combustible (USA) Flammable (EU).

Corrosive.

Risk Statements: Reacts violently with water. Harmful by inhalation and if swallowed. Causes burns.

Safety Statements: Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

US Statements: Lachrymator.

### UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TSCA INVENTORY ITEM: Yes

### CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

---

## Section 16 - Other Information

---

### DISCLAIMER

For R&D use only. Not for drug, household or other uses.

### 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. 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 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.