



SIGMA-ALDRICH

Material Safety Data Sheet

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Version 1.70

Section 1 - Product and Company Information

Product Name: Acetic anhydride, 99.5%
Product Number: 539996
Brand: Sigma-Aldrich
Company: Sigma-Aldrich
Address: 3050 Spruce Street, SAINT LOUIS, MO 63103 US
Technical Phone: 800-325-5832
Fax: 800-325-5052
Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

Table with 5 columns: Substance Name, CAS #, SARA 313, EC no, Annex I Index Number. Row: ACETIC ANHYDRIDE, 108-24-7, No, 203-564-8, 607-008-00-9

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)

Section 3 - Hazards Identification

Emergency Overview: Combustible (USA) Flammable (EU), Corrosive, Reacts violently with water, Toxic by inhalation, Lachrymator, Combustible liquid.

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

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
Explosion Limits: Lower: 2.7 %, Upper: 10.3 %
Autoignition Temp: 332 °C

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

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air 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

Country	Type	Value
Poland	NDS	10 MG/M3
Poland	NDSCh	+
Poland	NDSP	20 MG/M3

Exposure Limits, RTECS

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

Section 9 - Physical/Chemical Properties**Appearance**

Physical State	Color	Odor
Liquid	Colorless	Pungent

Molecular Weight: 102.09 AMU

Property **Value** **At Temperature or Pressure**

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 °F	120.2 °F	Method: closed cup
Flash Point °C	49 °C	Method: closed cup

Explosion Limits Lower: 2.7 %
Upper: 10.3 %Flammability N/A
Autoignition Temp 332 °C
Refractive Index 1.39**Solubility****Solubility in Water:** Slightly.**Other Solvents:** BENZENE, CHLOROFORM, MISCIBLE WITH ALCOHOL, ETHER, ACETIC ACID, ETHYL ACETATE.

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

Acids, 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.

RTECS Number: AK1925000

Toxicity Data

Inhalation - Rat: 4,200 mg/m3(LC50)

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: 24.0 h Value: 200 mg/l

Test Type

EC50 Daphnia

Species: Daphnia
Time: 96.0 h Value: 55 mg/l

Test Type

LC50 Fish

Species: other fish
Time: 48.0 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.

Risk Statements R: 10 20/22 34

Flammable. Harmful by inhalation and if swallowed. Causes burns.

Safety Statements S: 26 36/37/39 45

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. Toxic by inhalation.

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 Statements

Lachrymator, Combustible liquid.

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. 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 2007 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

