Chemical Safety Data Sheet MSDS / SDS

Acetic anhydride SDS

Revision Date:2024-04-25 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Acetic anhydride

CAS: 108-24-7

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

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SECTION 2: Hazards identification

Classification of the substance or mixture

Flammable liquids, Category 3
Acute toxicity - Category 4, Oral

Skin corrosion, Sub-category 1B
Acute toxicity - Category 4, Inhalation

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H226 Flammable liquid and vapour
H302 Harmful if swallowed
H314 Causes severe skin burns and eye damage
H332 Harmful if inhaled

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment.
P242 Use non-sparking tools.
P243 Take action to prevent static discharges.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.

Response

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].
P370+P378 In case of fire: Use ... to extinguish.
P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316 Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P317 Get medical help.

Storage

P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Acetic anhydride
Common names and synonyms:	Acetic anhydride
CAS number:	108-24-7
EC number:	203-564-8
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Give one or two glasses of water to drink. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Liquid is volatile and causes little irritation on uncovered skin. However, causes severe burns when clothing is wet with the chemical or if it enters gloves or shoes. Causes skin and eye burns and irritation of respiratory tract. Nausea and vomiting may develop after exposure. (USCG, 1999)

Indication of immediate medical attention and special treatment needed, if necessary

Basic treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist respirations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Monitor for shock and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Activated charcoal is not effective . Do not attempt to neutralize because of exothermic reaction. Cover skin burns with dry, sterile dressings after decontamination . Organic acids and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

If material on fire or involved in fire: Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use "alcohol" foam, dry chemical or carbon dioxide. Use water spray to knock-down vapors.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Irritating vapors are generated when heated. Behavior in Fire: Dangerous when exposed to heat or fire. (USCG, 1999)

Special protective actions for fire-fighters

Use alcohol-resistant foam, powder, carbon dioxide. See Notes. In case of fire: keep drums, etc., cool by spraying with water. NO direct contact with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Consult an expert! Personal protection: chemical protection suit, face shield and filter respirator for acid gases and vapours adapted to the airborne concentration of the substance. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Environmental precautions

Consult an expert! Personal protection: chemical protection suit, face shield and filter respirator for acid gases and vapours adapted to the airborne concentration of the substance. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT absorb in saw-dust or other combustible absorbents

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. Above 49°C use a closed system, ventilation and explosion-proof electrical equipment. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Fireproof. Separated from food and feedstuffs and incompatible materials. See Chemical Dangers. Dry.Store in cool, dry, well-ventilated location. Outside or detached storage is preferred. Store away from heat, oxidizers, and sunlight. Exclude moisture from vapor space in storage tanks.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

MAK: 0.42 mg/m3, 0.1 ppm; peak limitation category: I(2); pregnancy risk group: C.TLV: 1 ppm as TWA; 3 ppm as STEL; A4 (not classifiable as a human carcinogen)

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Liquid.
Colour:	No data reported.
Odour:	Strong acetic odor

Melting point/freezing point:	-73 °C. Remarks:At standard temperature and pressure.
Boiling point or initial boiling point and boiling range:	139.5 °C. Atm. press.:101.3 kPa. Remarks:Pressure assumed.
Flammability:	Class II Combustible Liquid: Fl.P. at or above 100°F and below 140°F.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 2.7% by volume; Upper flammable limit: 10.3% by volume
Flash point:	49 °C.
Auto-ignition temperature:	316 °C.
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	dynamic viscosity (in mPa s) = 0.843. Temperature:25.0°C. Remarks:No further information provided.
Solubility:	Soluble in cold (greater than or equal to 10mg/ml); Decomposes in hot (NTP, 1992)
Partition coefficient n-octanol/water:	log Pow = -0.577. Temperature:25 °C.
Vapour pressure:	10 kPa. Temperature:75.1 °C. Remarks:Measured.;1 kPa. Temperature:31 °C. Remarks:Extrapolated beyond the region where measured data exists.;0.68 kPa. Temperature:25 °C. Remarks:Extrapolated beyond the region where measured data exists.
Density and/or relative density:	1.08 g/cm3. Temperature:20 °C.
Relative vapour density:	3.5 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on burning. This produces toxic gases and toxic fumes including acetic acid fumes. Reacts violently with alcohols, amines, oxidants, strong bases and water. Attacks many metals in the presence of water or when dry.

Chemical stability

Volatile

Possibility of hazardous reactions

Moderate, when exposed to heat or flameACETIC ANHYDRIDE reacts violently on contact with water, steam, methanol, ethanol, glycerol and boric acid. Reaction with water is particularly dangerous in presence with mineral acids (e.g., nitric, perchloric, chromic, sulfuric acid) [Chem. Eng. News 25, 3458]. Potentially explosive reactions with oxidizing reagents such as barium peroxide, chromium trioxide, chromic acid, hypochlorous acid, nitric acid, perchloric acid, peroxyacetic acid, potassium permanganate, hydrogen peroxide. [Sax, 9th ed., 1996, p. 15]. Reacts violently with metal nitrates used as nitrating agents [Davey W. et al., Chem. & Ind., 1948, p. 814].

Conditions to avoid

no data available

Incompatible materials

Mixing acetic anhydride with /each of the following chemicals individually/ in a closed container caused the temperature and pressure to increase: 2-aminoethanol; aniline; chlorosulfonic acid; and ethylene diamine, ethyleneimine; 36% hydrochloric acid; 48.7% hydrofluoric acid; 70% nitric acid; oleum and sodium hydroxide

Hazardous decomposition products

When heated to decomposition it emits toxic fumes.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 - rat (male/female) - 630 mg/kg bw.

Inhalation: LC100 - rat (male) - 1 670 mg/m3 air.

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

TLV-A4

Reproductive toxicity

no data available

STOT-single exposure

Lachrymation. The substance is corrosive to the eyes, skin and respiratory tract. Corrosive on ingestion. Inhalation may cause asthma-like reactions.

STOT-repeated exposure

Inhalation may cause asthma-like reactions (RADS).

Aspiration hazard

A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 - Oncorhynchus mykiss (previous name: Salmo gairdneri) - > 1 000 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - > 1 000 mg/L - 48 h.

Toxicity to algae: EC50 - Skeletonema costatum - > 1 000 mg/L - 72 h.

Toxicity to microorganisms: NOEC - Pseudomonas putida - 1 150 mg/L - 16 h.

Persistence and degradability

no data available

Bioaccumulative potential

The half-life for the hydrolysis of acetic anhydride is 4.4 minutes(SRC), based on a rate constant of 0.002625 1/sec at 25 deg C(1). Bioconcentration of acetic anhydride in aquatic organisms is unlikely due its rapid hydrolysis(SRC).

Mobility in soil

The half-life for the hydrolysis of acetic anhydride is 4.4 minutes(SRC), based on a rate constant of 0.002625 1/sec at 25 deg C(1). Hydrolysis is expected to be the predominate fate of acetic anhydride in soil(SRC).

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be

punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN1715 (For reference only, please check.)
IMDG: UN1715 (For reference only, please check.)
IATA: UN1715 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ACETIC ANHYDRIDE (For reference only, please check.)
IMDG: ACETIC ANHYDRIDE (For reference only, please check.)
IATA: ACETIC ANHYDRIDE (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 8 (For reference only, please check.)
IMDG: 8 (For reference only, please check.)
IATA: 8 (For reference only, please check.)

Packing group, if applicable

ADR/RID: II (For reference only, please check.)
IMDG: II (For reference only, please check.)
IATA: II (For reference only, please check.)

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Forms acetic acid when mixed with water.Major fires must be extinguished with large amounts of water from a distance.

Disclaimer: 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. We as supplier shall not be held liable for any