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SAFETY DATA SHEETS

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Sixth revised edition

Version: 1.0

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1. Identification

1.1 GHS Product identifier

Product name	acetyl chloride

1.2 Other means of identification

Product number	-
Other names	acetylchloride313

1.3 Recommended use of the chemical and restrictions on use

Identified uses	For industry use only.
Uses advised against	no data available

2. Hazard identification

2.1 Classification of the substance or mixture

Flammable liquids, Category 2

Skin corrosion, Category 1B

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word

Danger

Hazard statement(s)	H225 Highly flammable liquid and vapour
	H314 Causes severe skin burns and eye damage
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.
	P260 Do not breathe dust/fume/gas/mist/vapours/spray.
	P264 Wash ... thoroughly after handling.
Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
	P370+P378 In case of fire: Use ... to extinguish.
	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.
	P310 Immediately call a POISON CENTER/doctor/⋯
	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.
Storage	P403+P235 Store in a well-ventilated place. Keep cool.
	P405 Store locked up.
Disposal	P501 Dispose of contents/container to ...

2.3 Other hazards which do not result in classification

none

3. Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
acetyl chloride	acetyl chloride	75-36-5	none	100%

4. First-aid measures

4.1 Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

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

In case of skin contact

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

In case of eye contact

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

If swallowed

Rinse mouth. Do NOT induce vomiting. Give nothing to drink. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Vapor irritates mucous membranes. Ingestion of liquid or contact with eyes or skin causes severe irritation. (USCG, 1999)

4.3 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/

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5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Evacuate surrounding area.

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: When heated to decomposition, hydrogen chloride and phosgene, extremely poisonous gases, are evolved. Behavior in Fire: Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back. (USCG, 1999)

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

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6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT wash away into sewer. 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.

6.3 Methods and materials for containment and cleaning up

Cover any spills with sufficient amt of sodium bicarbonate. Remove the mixture in a container such as a fiber drum, plastic bag or carton box for easy disposal in an incinerator, and dispose by burning in a furnace. Wash the spilled spot thoroughly with water.

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7. Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use.Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Fireproof. Separated from incompatible materials. See Chemical Dangers. Dry. Well closed.Separate from alcohols, alkalies, amines, and strong oxidizing materials. Store in a cool, dry well-ventilated location. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage warehouse, room, or cabinet.

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8. Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique(without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

Wear dust mask when handling large quantities.

Thermal hazards

no data available

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9. Physical and chemical properties

Physical state	colourless to light yellow liquid with a pungent
Colour	Colorless fuming liquid
Odour	Pungent odor
Melting point/ freezing point	-112°C(lit.)
Boiling point or initial boiling point and	52°C(lit.)

boiling range	
Flammability	Highly flammable. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit / flammability limit	no data available
Flash point	5°C(lit.)
Auto-ignition temperature	390°C (USCG, 1999)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	Reaction
Partition coefficient n-octanol/water (log value)	no data available
Vapour pressure	11.69 psi (20 °C)
Density and/or relative density	1.104
Relative vapour density	2.7 (vs air)
Particle characteristics	no data available

10. Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

READILY HYDROLYZES TO FORM HYDROGEN CHLORIDE & ACETIC ACID

10.3 Possibility of hazardous reactions

DANGEROUS, WHEN EXPOSED TO HEAT OR FLAME. ...The vapour is heavier than air and may travel along the ground; distant ignition possible.ACETYL CHLORIDE reacts violently with water, steam, methanol or ethanol to form hydrogen chloride and acetic acid. Reacts vigorously with bases, both organic and inorganic. Incompatible with oxidizing agents and alcohols. Produces highly toxic fumes of phosgene gas and chlorine when heated to decomposition [Sax, 9th ed., 1996, p. 35]. Reaction in a confined space with even a small amount of

water may cause a violent eruption of gases [Bretherick, 5th ed., 1995, p. 281]. Vapor forms an explosive mixture with air [Kirk-Othmer, 3rd ed., Vol. 1, 1978, p. 162]. Polymerization reaction with dimethyl sulfoxide is particularly violent [Buckley, A., J. Chem. Ed., 1965, 42, p. 674]. May react vigorously or explosively if mixed with diisopropyl ether or other ethers in the presence of trace amounts of metal salts [J. Haz. Mat., 1981, 4, 291].

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Water reactive. Violent exothermic decomposition with water produces corrosive hydrochloric and acetic acids. Reacts violently with alcohols, alkalies, amines, and strong oxidizing materials.

10.6 Hazardous decomposition products

MAY DECOMPOSE DURING PREPARATION. ... WHEN HEATED TO DECOMPOSITION, EMITS HIGHLY TOXIC FUMES OF PHOSGENE AND HYDROGEN CHLORIDE (CL-).

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11. Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 910 mg/kg
- Inhalation: no data available
- 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

CLASSIFICATION: D; not classifiable as to human carcinogenicity. BASIS FOR CLASSIFICATION: No human data or animal data. HUMAN CARCINOGENICITY DATA: None. ANIMAL CARCINOGENICITY DATA: None.

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

12. Ecological information

12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

Acetyl chloride will decompose violently in water(1) forming acetic acid and hydrochloric acid(2). Because of its short half-life in water, bioconcentration of acetyl chloride in aquatic organisms is very unlikely(SRC).

12.4 Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc for acetyl chloride can be estimated to be 2(SRC). According to a classification scheme(2), this estimated Koc value suggests that acetyl

chloride is expected to have very high mobility in soil. However, in view of its violent decomposition in the presence of water(3) and the high reactivity of this compound towards molecules with active hydrogen groups such as natural products containing amine, phenol, and alcohol functional groups that occur in soil(4), it is unlikely that acetyl chloride would persist for long in moist soils(SRC).

12.5 Other adverse effects

no data available

13. Disposal considerations

13.1 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.

14. Transport information

14.1 UN Number

ADR/RID: UN1717 IMDG: UN1717 IATA: UN1717

14.2 UN Proper Shipping Name

ADR/RID: ACETYL CHLORIDE
IMDG: ACETYL CHLORIDE
IATA: ACETYL CHLORIDE

14.3 Transport hazard class(es)

ADR/RID: 3 IMDG: 3 IATA: 3

14.4 Packing group, if applicable

ADR/RID: II IMDG: II IATA: II

14.5 Environmental hazards

ADR/RID: no IMDG: no IATA: no

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

15. Regulatory information

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

Chemical name	Common names and synonyms	CAS number	EC number
acetyl chloride	acetyl chloride	75-36-5	none
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.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.

16. Other information

Information on revision

Creation Date	Aug 12, 2017
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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/

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