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## SECTION 1: Identification

### 1.1 GHS Product identifier

Product name Cyanogen chloride

### 1.2 Other means of identification

Product number -

Other names 7-Chlor-indan-4-ol; CHLORINDANOL; carbonitridic chloride

### 1.3 Recommended use of the chemical and restrictions on use

Identified uses Systemic Agent

Uses advised against no data available

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## SECTION 2: Hazard identification

### 2.1 Classification of the substance or mixture

Gases under pressure: Compressed gas

Acute toxicity - Category 1, Oral

Acute toxicity - Category 1, Dermal

Eye irritation, Category 2

Acute toxicity - Category 1, Inhalation

Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

### 2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H280 Contains gas under pressure; may explode if heated  
H300+H310+H330 Fatal if swallowed, in contact with skin or if inhaled  
H314 Causes severe skin burns and eye damage  
H319 Causes serious eye irritation  
H400 Very toxic to aquatic life

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P262 Do not get in eyes, on skin, or on clothing.  
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...  
P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P271 Use only outdoors or in a well-ventilated area.  
P284 [In case of inadequate ventilation] wear respiratory protection.  
P273 Avoid release to the environment.  
P301+P316 IF SWALLOWED: Get emergency medical help immediately.  
P321 Specific treatment (see ... on this label).  
P330 Rinse mouth.  
P302+P352 IF ON SKIN: Wash with plenty of water/...  
P316 Get emergency medical help immediately.  
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P320 Specific treatment is urgent (see ... on this label).  
P391 Collect spillage.

Response

Storage

P410+P403 Protect from sunlight. Store in a well-ventilated place.  
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.

### 2.3 Other hazards which do not result in classification

no data available

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## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Cyanogen chloride	Cyanogen chloride	506-77-4	208-052-8	100%

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## SECTION 4: First-aid measures

### 4.1 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

ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. 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 with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

### 4.2 Most important symptoms/effects, acute and delayed

VAPOR: POISONOUS IF INHALED OR IF SKIN IS EXPOSED. Irritating to eyes. LIQUID: POISONOUS IF SWALLOWED. Will burn skin and eyes. (USCG, 1999)

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

PREHOSPITAL/ Triage procedures and medical management guidelines. (See ATSDR Toxicology Profile on cyanide and ATSDR medical management guidelines on hydrogen cyanide.) If inhaled: Fresh air, rest. Half-upright position. Artificial respiration if indicated. Seek medical attention immediately. If skin contact: Frostbite: rinse with plenty of water, do NOT remove clothes. Seek medical attention immediately. If eye contact: First rinse with plenty of water for several minutes. Seek medical attention immediately.

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## SECTION 5: Fire-fighting measures

### 5.1 Suitable extinguishing media

For small fires, use dry chemical or carbon dioxide.

### 5.2 Specific hazards arising from the chemical

Not flammable. POISONOUS GASES ARE PRODUCED WHEN HEATED IN FIRE. Overheated containers can explode. (USCG, 1999)

### 5.3 Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep cylinder cool by spraying with water. NO direct contact with water.

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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Ventilation. NEVER direct water jet on liquid. Remove vapour cloud with fine water spray. Do NOT wash away into sewer. Personal protection: chemical protection suit including self-contained breathing apparatus.

### 6.2 Environmental precautions

Evacuate danger area! Consult an expert! Ventilation. NEVER direct water jet on liquid. Remove vapour cloud with fine water spray. Do NOT wash away into sewer. Personal protection: chemical protection suit including self-contained breathing apparatus.

### 6.3 Methods and materials for containment and cleaning up

Environmental considerations - Land spill: Dig a pit, pond, lagoon, or holding area to contain liquid or solid material. /SRP: If time permits, pits, ponds, lagoons, soak holes, or holding areas should be sealed with an impermeable flexible membrane liner./ Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash or cement powder. Cyanogen chloride, inhibited

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

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.

### 7.2 Conditions for safe storage, including any incompatibilities

Fireproof if in building. Provision to contain effluent from fire extinguishing. Cool. Store in an area having corrosion resistant concrete floor. Fireproof if in building. Provision to contain effluent from fire extinguishing. Cool. ... A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

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## SECTION 8: Exposure controls/personal protection

## 8.1 Control parameters

### Occupational Exposure limit values

TLV: 0.3 ppm as STEL

### Biological limit values

no data available

## 8.2 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.

## 8.3 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

Cold-insulating gloves. Protective clothing.

### Respiratory protection

Use local exhaust or breathing protection.

### Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties and safety characteristics

<b>Physical state</b>	Cyanogen chloride, stabilized is a colorless gas or liquid with a strong acrid/pungent odor. Boils at 60Â°F. Liquid density 10.0 lb / gal. Shipped as a liquid confined under its own vapor pressure. A highly toxic lachrymator. Has been used as a tear gas. Vapor is heavier than air. Prolonged exposure of the container to fire or intense heat may cause violent rupturing and rocketing.
<b>Colour</b>	Colorless volatile liquid or gas
<b>Odour</b>	Acrid, choking odor
<b>Melting point/freezing point</b>	6.5Â°C
<b>Boiling point or initial boiling point and boiling range</b>	13.8Â°C at 760 mmHg
<b>Flammability</b>	Not combustible. Heating will cause rise in pressure with risk of bursting. Gives off irritating or toxic fumes (or gases) in a fire.
<b>Lower and upper explosion limit/flammability limit</b>	no data available
<b>Flash point</b>	Not Applicable. Not flammable. (USCG, 1999)
<b>Auto-ignition temperature</b>	Not Applicable. Not flammable. (USCG, 1999)
<b>Decomposition temperature</b>	no data available
<b>pH</b>	no data available
<b>Kinematic viscosity</b>	no data available
<b>Solubility</b>	7 % (NIOSH, 2016)
<b>Partition coefficient n-octanol/water</b>	no data available
<b>Vapour pressure</b>	704.36 mm Hg at 50Â° F (USCG, 1999)
<b>Density and/or relative density</b>	1.234 g/cm3
<b>Relative vapour density</b>	2.1 (USCG, 1999) (Relative to Air)
<b>Particle characteristics</b>	no data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Decomposes on heating. This produces toxic and corrosive fumes of hydrogen cyanide, hydrochloric acid and nitrogen oxides. Reacts slowly with water and water vapour. This produces hydrogen chloride.

Cyanogen chloride (CK) decomposes on heating, producing toxic and corrosive fumes (hydrogen cyanide, hydrochloric acid, and nitrogen oxides). See the emergency response cards for hydrogen cyanide and hydrochloric acid. Cyanogen chloride (CK) reacts slowly with water or water vapor to form toxic hydrogen cyanide and hydrogen chloride. See the emergency response cards for hydrogen cyanide and hydrogen chloride. Cyanogen chloride (CK) is incompatible with or may react with most basic and acidic solvents including water. Cyanogen chloride (CK) is unstable; it may be stabilized (inhibited) to prevent polymerization.

### 10.2 Chemical stability

Tends to form polymers on storage.

### 10.3 Possibility of hazardous reactions

Not combustible. Heating will cause rise in pressure with risk of bursting. Gives off irritating or toxic gases including cyanide gas in a fire. The gas is heavier than air., Vapors may be heavier than air. They will spread along the ground and collect and stay in poorly-

ventilated, low-lying, or confined areas (e.g., sewers, basements, and tanks). Hazardous concentrations may develop quickly in enclosed, poorly-ventilated, or low-lying areas. Keep out of these areas. Stay upwind. CYANOGEN CHLORIDE may trimerize violently to form cyanuric chloride, catalyzed by hydrogen chloride or ammonium chloride. Reacts exothermically with alkenes and alkynes. Benzene and cyanogen halides yield HCl as a byproduct (Hagedorn, F. H. Gelbke, and Federal Republic of Germany. 2002. Nitriles. In Ullmann's Encyclopedia of Industrial Chemistry. Wiley-VCH Verlag GmbH & Co. KGaA.).

#### 10.4 Conditions to avoid

no data available

#### 10.5 Incompatible materials

Contact with alcohols, acids, acid salts, amines, strong alkalis, olefins, strong oxidizers may cause fire and explosion.

#### 10.6 Hazardous decomposition products

When heated to decomposition ... it will ... produce highly toxic and corrosive fumes such as /hydrogen chloride, hydrogen cyanide and nitrogen oxides/.

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### SECTION 11: Toxicological information

#### Acute toxicity

- Oral: LD50 Cat oral 6 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

no data available

#### Reproductive toxicity

no data available

#### STOT-single exposure

Lachrymation. The substance is severely irritating to the eyes, skin and respiratory tract. The substance may cause effects on the cellular respiration. This may result in convulsions and unconsciousness. Exposure could cause death. Medical observation is indicated. Inhalation may cause lung oedema. See Notes. The effects may be delayed. Rapid evaporation of the liquid may cause frostbite.

#### STOT-repeated exposure

no data available

#### Aspiration hazard

A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

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### SECTION 12: Ecological information

#### 12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: LC50; Species: Daphnia magna (Water flea) age 24 hr; Conditions: static bioassay; Concentration: 0.04 mg/L for 24 hr
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

#### 12.2 Persistence and degradability

Cyanogen chloride is extremely volatile and hydrolyzes rapidly(1), suggesting that biodegradation will not be an important environmental fate process(SRC).[(1) Munro NB et al; Environ Health Perspect 107: 933-74 (1999)] Full text: PMC1566810

#### 12.3 Bioaccumulative potential

Cyanogen chloride is extremely volatile and hydrolyzes rapidly(1), suggesting that bioconcentration will not be an important environmental fate process(SRC).[(1) Munro NB et al; Environ Health Perspect 107: 933-74 (1999)] Full text: PMC1566810

#### 12.4 Mobility in soil

The high volatility and rapid hydrolysis of cyanogen chloride(1) would suggest that adsorption to soil and sediment is not an important environmental fate process(SRC).[(1) Munro NB et al; Environ Health Perspect 107: 933-74 (1999)] Full text: PMC1566810

## 12.5 Other adverse effects

no data available

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## SECTION 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.

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## SECTION 14: Transport information

### 14.1 UN Number

ADR/RID: UN1589 (For reference only, please check.) IMDG: UN1589 (For reference only, please check.) IATA: UN1589 (For reference only, please check.)

### 14.2 UN Proper Shipping Name

ADR/RID: CYANOGEN CHLORIDE, STABILIZED (For reference only, please check.) IMDG: CYANOGEN CHLORIDE, STABILIZED (For reference only, please check.) IATA: CYANOGEN CHLORIDE, STABILIZED (For reference only, please check.)

### 14.3 Transport hazard class(es)

ADR/RID: 2.3 (For reference only, please check.) IMDG: 2.3 (For reference only, please check.) IATA: 2.3 (For reference only, please check.)

### 14.4 Packing group, if applicable

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

### 14.5 Environmental hazards

ADR/RID: Yes IMDG: Yes IATA: Yes

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to IMO instruments

no data available

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## SECTION 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
Cyanogen chloride	Cyanogen chloride	506-77-4	208-052-8
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			Not Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Not Listed.
Korea Existing Chemicals List (KECL)			Listed.

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## SECTION 16: Other information

#### Information on revision

Creation Date July 15, 2019

Revision Date July 15, 2019

#### 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](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

The occupational exposure limit value should not be exceeded during any part of the working exposure. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential. Immediate administration of an appropriate spray, by a doctor or a person authorized by him/her, should be considered. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. Do NOT spray water on leaking cylinder (to prevent corrosion of cylinder). Turn leaking cylinder with the leak up to prevent escape of gas in liquid state.