Chemical Safety Data Sheet MSDS / SDS

Potassium cyanide 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: Potassium cyanide

CAS: 151-50-8

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

Corrosive to metals, Category 1
Acute toxicity - Category 1, Oral

Acute toxicity - Category 1, Dermal
Acute toxicity - Category 1, Inhalation
Specific target organ toxicity – repeated exposure, Category 1
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H290 May be corrosive to metals
H300 Fatal if swallowed
H310 Fatal in contact with skin
H330 Fatal if inhaled
H372 Causes damage to organs through prolonged or repeated exposure
H400 Very toxic to aquatic life
H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P234 Keep only in original packaging.
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.

Response

P390 Absorb spillage to prevent material damage.
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.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P320 Specific treatment is urgent (see ... on this label).
P319 Get medical help if you feel unwell.
P391 Collect spillage.

Storage

P406 Store in a corrosion resistant/...container with a resistant inner liner.
P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

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:	Potassium cyanide
Common names and synonyms:	Potassium cyanide
CAS number:	151-50-8
EC number:	205-792-3
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. No mouth-to-mouth artificial respiration. Administration of oxygen 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

Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Wear protective gloves when inducing vomiting. NO mouth-to-mouth artificial respiration. Administration of oxygen may be needed. Refer for medical attention .

Most important symptoms/effects, acute and delayed

It is classified as super toxic. Probable oral lethal dose in humans is less than 5 mg/kg or less than a taste (7 drops) for a 150 lb. person. It is an eye and skin irritant. Poisonous in very small quantities; a taste is lethal. (EPA, 1998)
Excerpt from ERG Guide 157 [Substances - Toxic and/or Corrosive (Non-Combustible / Water-Sensitive)]: TOXIC; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death. Reaction with water or moist air may release toxic, corrosive or flammable gases. Reaction with water may generate much heat that will increase the concentration of fumes in the air. Fire will produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. (ERG, 2016)

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

Due to the apparent low binding capacity of activated charcoal for potassium cyanide (KCN) in vitro, the use of oral activated charcoal therapy for oral exposure to cyanide compounds is controversial. In our study, rats were given a lethal oral dose of ground granular KCN (35 or 40 mg/kg) in a gelatin capsule followed immediately by either 4 g/kg of superactivated charcoal in a 20% suspension or a similar volume of deionized water. Signs of cyanide toxicosis occurred rapidly, with a mean time to signs of 3.3 and 2.7 min in control animals receiving 35 or 40 mg/kg KCN, respectively. All 26 of the control rats showed signs, and all but one in the 35 mg/kg group died within 19 min. Only 12 of 26 rats treated with superactivated charcoal showed signs of KCN toxicosis and eight of those animals died.

SECTION 5: Firefighting measures

Suitable extinguishing media

Do not use carbon dioxide extinguisher. Extinguish fire using agent suitable for surrounding fire. Water may be used on nearby fires

not involving potassium cyanide. Use water spray to keep fire-exposed containers cool. Use alkali dry chemical.

Specific hazards arising from the chemical

Contact with acid releases highly flammable hydrogen cyanide gas. Moisture may cause this material to volatilize as hydrogen cyanide. When heated to decomposition, it emits very toxic fumes of cyanide and nitrogen oxides. Reacts with acids to produce hydrogen cyanide gas. Reacts with strong oxidizers such as nitrates and chlorates, nitrogen trichloride; perchloryl fluoride; sodium nitrate; acids; alkaloids; chloral hydrate; iodine. Avoid contact with acids. (EPA, 1998)
Excerpt from ERG Guide 157 [Substances - Toxic and/or Corrosive (Non-Combustible / Water-Sensitive)]: Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. For UN1796, UN1826, UN2031 at high concentrations and for UN2032, these may act as oxidizers, also consult ERG Guide 140. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.). Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff. Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated or if contaminated with water. (ERG, 2016)

Special protective actions for fire-fighters

NO hydrous agents. NO water. NO carbon dioxide. In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Ventilation. Sweep spilled substance into covered dry, sealable, labelled containers. Cautiously neutralize remainder with sodium hypochlorite solution.

Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Ventilation. Sweep spilled substance into covered dry, sealable, labelled containers. Cautiously neutralize remainder with sodium hypochlorite solution. Then wash away with plenty of water.

Methods and materials for containment and cleaning up

Spills of cyanide salts should be immediately and carefully cleaned up by shoveling the material into a proper container. Care must be exercised to minimize any dispersal of cyanide dust into the air. Cyanide salts

SECTION 7: Handling and storage

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.

Conditions for safe storage, including any incompatibilities

Separated from strong oxidants, acids, food and feedstuffs, carbon dioxide and products containing water. Dry. Well closed. Keep in a well-ventilated room. Store in an area without drain or sewer access.PROTECT FROM LIGHT.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: (ceiling value): 5 mg/m3 as STEL; (skin).EU-OEL: 1 mg/m3 as TWA; 5 mg/m3 as STEL; (skin)

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 local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Potassium cyanide is a white amorphous lumps or a crystalline mass with a faint odor of bitter almonds. Density 1.52 g / cm3 Toxic by skin absorption through open wounds, by ingestion. Heating to decomposition produces toxic fumes. Used for gold and silver extraction, in chemical analysis, to make other chemicals, and as an insecticide.
Colour:	White, granular powder or fused pieces
Odour:	Faint odor of bitter almonds
Melting point/freezing point:	634?°C(lit.)
Boiling point or initial boiling point and boiling range:	1625 °C
Flammability:	Not combustible but forms flammable gas on contact with water or damp air. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	1625°C
Auto-ignition temperature:	Not flammable (USCG, 1999)
Decomposition temperature:	no data available
pH:	11.0 (0.1 N aq soln)
Kinematic viscosity:	no data available
Solubility:	72 % at 77° F (NIOSH, 2016)

Partition coefficient n-octanol/water:	no data available
Vapour pressure:	0 mm Hg (approx) (NIOSH, 2016)
Density and/or relative density:	1.00?g/mL?at 20?°C
Relative vapour density:	no data available
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes rapidly on contact with acids. Decomposes slowly on contact with water, moisture or carbon dioxide. This produces hydrogen cyanide (see ICSC 0492). The solution in water is a medium strong base.
Potassium cyanide is water-reactive.Potassium cyanide decomposes on contact with water, humidity, carbon dioxide, and acids, producing very toxic and highly flammable hydrogen cyanide gas.Potassium cyanide solution in water is a strong base; it reacts violently with acid and is corrosive.Potassium cyanide undergoes violent chemical reactions with chlorates and nitrites.

Chemical stability

In air, it is gradually decomp on exposure to carbon dioxide and moisture.

Possibility of hazardous reactions

Vapors may collect and stay in 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.Hydrogen cyanide gas produced from potassium cyanide mixes well with air; explosive mixtures are easily formed.POTASSIUM CYANIDE is a basic salt and a reducing agent. Reacts with acids of all kinds to generate poisonous hydrogen cyanide gas. Can react violently with oxidizing agents: fusion with metal chlorates, perchlorates, nitrates, or nitrites can cause explosions [Bretherick 1979. p. 101]. A mixture with perchloryl fluoride may explode above 100°C. A mixture with nitrite salts may cause an explosion [Pieters 1957. p. 30]. Incompatible with iodine. Initiates the explosive decomposition of nitrogen trichloride.

Conditions to avoid

no data available

Incompatible materials

Reacts with water or any acid releasing hydrogen cyanide.

Hazardous decomposition products

Potassium ... cyanide solutions give off hydrogen cyanide when heated above 176 deg F. Potassium cyanide soln

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Rat oral 5 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

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. See Notes.

STOT-repeated exposure

The substance may have effects on the thyroid.

Aspiration hazard

A harmful concentration of airborne particles can be reached quickly when dispersed.

SECTION 12: Ecological information

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

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

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: UN3413 (For reference only, please check.)
IMDG: UN3413 (For reference only, please check.)
IATA: UN3413 (For reference only, please check.)

UN Proper Shipping Name

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

Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.)
IMDG: 6.1 (For reference only, please check.)
IATA: 6.1 (For reference only, please check.)

Packing group, if applicable

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

IMDG: I (For reference only, please check.)
IATA: I (For reference only, please check.)

Environmental hazards

ADR/RID: Yes
IMDG: Yes
IATA: Yes

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

The occupational exposure limit value should not be exceeded during any part of the working exposure.Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available.Isolate contaminated clothing by sealing in a bag or other container.Do NOT take working clothes home.Never work alone in an area if hydrogen cyanide exposure is possible.Depending on the degree of exposure, periodic medical examination is suggested.