ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

Captan

Revision Date:2024-12-21 Revision Number:1

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

Product identifier

Product name	: Captan
CBnumber	: CB4367608
CAS	: 133-06-2
EINECS Number	: 205-087-0
Synonyms	: CAPTAN,CAPTAIN

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
Address	: Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing
Telephone	: 400-158-6606

SECTION 2: Hazards identification

Classification of the substance or mixture

Serious eye damage, Category 1

Skin sensitization, Category 1

Acute toxicity - Category 3, Inhalation

Carcinogenicity, Category 2

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

Label elements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H225 Highly Flammable liquid and vapour

H317 May cause an allergic skin reaction

H318 Causes serious eye damage

H319 Causes serious eye irritation

H331 Toxic if inhaled

H351 Suspected of causing cancer

H400 Very toxic to aquatic life

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P370+P378 In case of fire: Use … for extinction.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Prevention

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P272 Contaminated work clothing should not be allowed out of the workplace.

P271 Use only outdoors or in a well-ventilated area.

P203 Obtain, read and follow all safety instructions before use.

P273 Avoid release to the environment.

Response

P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P317 Get medical help.

P302+P352 IF ON SKIN: Wash with plenty of water/...

P333+P317 If skin irritation or rash occurs: Get medical help.

P321 Specific treatment (see ... on this label).

P362+P364 Take off contaminated clothing and wash it before reuse.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P316 Get emergency medical help immediately.

P318 IF exposed or concerned, get medical advice.

P391 Collect spillage.

Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

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

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name	: Captan
Synonyms	: CAPTAN,CAPTAIN
CAS	: 133-06-2
EC number	: 205-087-0
MF	: C9H8Cl3NO2S
MW	: 300.59

SECTION 4: First aid measures

Description of first aid measures

If inhaled

Fresh air, rest. Seek medical attention if you feel unwell.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention .

Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible). Refer for medical attention.

Following ingestion

Rinse mouth. Seek medical attention if you feel unwell.

Most important symptoms and effects, both acute and delayed

Vapor irritates eyes. Ingestion causes depression, lachrymation, labored respiration, diarrhea. (USCG, 1999)

Indication of any immediate medical attention and special treatment needed

Immediate first aid: Remove patient from contact with the material. Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR if necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Dithiocarbamates and Related Compounds

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

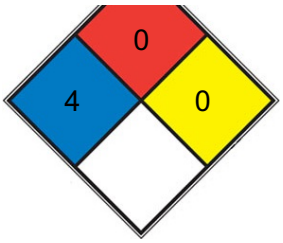
Specific Hazards Arising from the Chemical

Special Hazards of Combustion Products: Irritating and toxic gases are produced in a fire; they may include sulfur dioxide, hydrogen chloride, phosgene, and oxides of nitrogen. (USCG, 1999)

Advice for firefighters

Use water spray, foam, powder, carbon dioxide.

NFPA 704



■	HEALTH	4	Very short exposure could cause death or major residual injury (e.g. hydrogen cyanide, phosgene, methyl isocyanate, hydrofluoric acid)
■	FIRE	0	Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)
■	REACT	0	Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,N2)
□	SPEC. HAZ.		

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. Methods and materials for containment and cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames. 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

Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. Store in an area without drain or sewer access.Keep container tightly closed in a dry and well-ventilated place. Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 5 mg/m3, as TWA; (SEN); A3 (confirmed animal carcinogen with unknown relevance to humans)

Biological limit values

no data available

Exposure 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

Eye/face protection

Wear safety spectacles or face shield.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation (not if powder).

Thermal hazards

no data available

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Physical state	Amorphous Powder
Colour	White, beige
Odour	Odorless [Note: Commercial product has a pungent odor]
Melting point/freezing point	178°C
Boiling point or initial boiling point and boiling range	314.2°Cat 760 mmHg
Flammability	Combustible Solid; may be dissolved in flammable liquids.
Lower and upper explosion limit/flammability limit	no data available
Flash point	143.8°C
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available

Kinematic viscosity	no data available
Solubility	less than 1 mg/mL at 68° F (NTP, 1992)
Partition coefficient n-octanol/water	log Kow = 2.80
Vapour pressure	1.0×10^{-5} Pa (25 °C)
Density and/or relative density	1.74
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

NIOSH considers captan to be a potential occupational carcinogen.

Decomposes on heating. This produces toxic fumes including sulfur oxides, nitrogen oxides, hydrogen chloride and phosgene.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Captan may burn, but does not ignite readily.CAPTAN decomposes at or near the melting point. This chemical is incompatible with strong alkaline and oxidizing materials, sulfur and (sulfur + moisture). (NTP, 1992)

Conditions to avoid

no data available

Incompatible materials

Incompatible materials: Strong bases

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions - Carbon oxides, nitrogen oxides (NOx), sulfur oxides, hydrogen chloride gas.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 9000 mg/kg
- Inhalation: LC50 Swiss-Webster mouse (male) inhalation 4.5 mg/L/2 hr
- 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 of carcinogenicity: 1) evidence in humans: no adequate data; 2) evidence in animals: limited evidence. Overall summary evaluation of carcinogenic risk to humans is Group 3: The agent is not classifiable as to its carcinogenicity to humans. From table

Reproductive toxicity

No information is available on the reproductive or developmental effects of captan in humans. Evidence on the reproductive and developmental effects of captan in animals is conflicting. In one study where animals were orally exposed, captan was fetotoxic in high-dosed rabbits, a slight reduction in fetal weight was observed in high-dosed rats, and increased resorptions were observed in high-dosed hamsters. Some abnormalities were observed in another study. Other studies have reported no effects.

STOT-single exposure

The substance is irritating to the eyes and skin.

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis. Repeated or prolonged contact may cause skin sensitization.

Aspiration hazard

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

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: Oncorhynchus mykiss (Rainbow Trout) weight 1 g; Conditions: freshwater, static, 12 deg C, pH 7.4, hardness 44 mg/L CaCO3; Concentration: 76.4 ug/L for 24 hr (95% confidence interval: 69.5-83.9 ug/L) /90% purity technical material
Toxicity to daphnia and other aquatic invertebrates: LC50; Species: Daphnia magna (Water flea); Concentration: 7.06-9.96 ppm for 48 hr /Conditions of bioassay not specified in source examined
Toxicity to algae: EC50; Species: Anabaena flosaquae (Blue-Green Algae); Conditions: freshwater, static; Concentration: 1200 ug/L for 96 hr (95% confidence limit: 830-1600 ug/L); Effect: population, abundance /99.8% purity
Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: (14)C-Labeled captan, present at 50 ppm, was degraded 25% in 8 weeks using a Mexico-Putnam silt loam representative of claypan soils in north Missouri. Crop residues slightly increased degradation(1). A half-life of 2.5 days in soil has been reported in an Italian study, details were not provided(2). Carbonyl-radio-labeled captan, applied to a sandy loam, was degraded 99% after 7 days, 95% of the radio-label was found as CO2 after 322 days(3). Trichloromethyl-radio-labeled captan had a half-life in sandy loam soil of <1 day; 46% of the radio-label was present as CO2 after 1 day and 19.4% was found as parent compound(3). Half-lives of less than one day were reported for captan in two separate aerobic water/sediment systems(3). Captan was degraded 100% in 3 hours from an initial concentration of 50 ug/L in an activated sludge test(4). However, captan, present at 100 mg/L, reached 0% of its theoretical BOD in 4 weeks using an activated sludge

inoculum at 30 mg/L in the Japanese MITI test(5) which may be due to toxicity to microorganisms(SRC).

Bioaccumulative potential

A measured BCF of 126 was reported for captan in bluegill sunfish (Lepomis macrochirus) in a 28 day study(1). A BAF of 113 (wholefish) was determined for captan in a 28-day study using bluegill sunfish(2). After a 14-day depuration period, concentrations declined by 95%(2). According to a classification scheme(3), these BCF values suggest that bioconcentration in aquatic organisms is moderate(SRC).

Mobility in soil

Koc values of 33, 67, 115, 100-600(1), and 200(2) have been reported for captan. According to a classification scheme(3), these Koc values suggest that captan is expected to generally have high to moderate mobility in soil(SRC). A measured organic matter partition coefficient for captan in soil with 3.53% organic matter is 115(4). In field studies at six different sites, however, captan was shown to have slight to no mobility(5). One study predicted that captan would leach <10 cm in a loam soil at 25 deg C under annual rainfall of 150 cm(6). Turf thatch has been shown to increase sorption by a factor of 10(7).

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: UN3077 (For reference only, please check.)

IMDG: UN3077 (For reference only, please check.)

IATA: UN3077 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 9 (For reference only, please check.)

IMDG: 9 (For reference only, please check.)

IATA: 9 (For reference only, please check.)

Packing group, if applicable

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

IMDG: III (For reference only, please check.)

IATA: III (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

Not 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

Carrier solvents used in commercial formulations may change physical and toxicological properties.Do NOT take working clothes home.