

Chemical Safety Data Sheet MSDS / SDS

Methylphenidate hydrochloride

Revision Date:2025-06-14 Revision Number:1

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

Product name : Methylphenidate hydrochloride
CBnumber : CB0188559
CAS : 298-59-9
EINECS Number : 206-065-3
Synonyms : methylphenidate hydrochloride,methylphenidate HCl

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 : 010-86108875

SECTION 2: Hazards identification**Classification of the substance or mixture**

Acute toxicity - Category 4, Oral
Respiratory sensitization, Category 1

Label elements**Pictogram(s)**

Signal word : Danger

Hazard statement(s)

H225 Highly Flammable liquid and vapour
H302 Harmful if swallowed
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H370 Causes damage to organs

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.

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

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

P311 Call a POISON CENTER or doctor/physician.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P342+P311 IF experiencing respiratory symptoms: call a POISON CENTER or doctor/physician.

Prevention

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

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

P284 [In case of inadequate ventilation] wear respiratory protection.

Response

P301+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

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

P342+P316 If experiencing respiratory symptoms: Get emergency medical help immediately.

Storage

none

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	: Methylphenidate hydrochloride
Synonyms	: methylphenidate hydrochloride,methylphenidate HCl
CAS	: 298-59-9
EC number	: 206-065-3
MF	: C14H20ClNO2
MW	: 269.77

SECTION 4: First aid measures

Description of first aid measures

If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately.

Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

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.

Most important symptoms and effects, both acute and delayed

SYMPTOMS: Symptoms of exposure to this chemical may include nausea, vomiting, nervousness, insomnia, dizziness, headache, blood pressure and pulse changes, anorexia, palpitations, dyskinesia, drowsiness, tachycardia, angina, cardiac arrhythmia, abdominal pain and weight loss. It may also cause hypersensitivity, including skin rash, urticaria, fever, arthralgia, exfoliative dermatitis, erythema multiforme with histopathological findings of necrotizing vasculitis and thrombocytopenia purpura. Exposure to this compound may cause multiple small retinal emboli and a rise in ocular pressure in glaucomatous patients. Other symptoms include difficulties with accommodation and blurring of vision, Tourette's syndrome, toxic psychosis, leukopenia, anemia, scalp hair loss, agitation, tremors, hyperreflexia, muscle twitching, convulsions which may be followed by coma, euphoria, confusion, hallucinations, delirium, sweating, flushing, hyperpyrexia, hypertension, mydriasis and dryness of mucous membranes. It also causes dryness of the mouth, constipation or diarrhea, difficulty in micturition, restlessness, changes in libido, talkativeness, disorientation, aggressive behavior, fatigue, mental depression which may be followed by convulsions and coma, aplastic anemia, acute conjunctivitis, pancytopenia, hypotension, angioneurotic edema, paranoid psychosis, lethargy, sleepiness and akathisia.

ACUTE/CHRONIC HAZARDS: When heated to decomposition this compound emits very toxic fumes of hydrogen chloride and NO_x. (NTP, 1992)

Indication of any immediate medical attention and special treatment needed

Emergency and supportive measures. 1. Maintain an open airway and assist ventilation if necessary. 2. Treat agitation, seizures, coma, and hyperthermia if they occur. 3. Continuously monitor the temperature, other vital signs, and the ECG for a minimum of 6 hours. Amphetamines

SECTION 5: Firefighting measures

Extinguishing media

Advice for firefighters: Wear self contained breathing apparatus for fire fighting if necessary.

Specific Hazards Arising from the Chemical

Flash point data for this chemical are not available; however, it is probably combustible. (NTP, 1992)

Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES. 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.; Environmental precautions: Do not let product enter drains.; 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

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

Conditions for safe storage, including any incompatibilities: Keep container tightly closed in a dry and well-ventilated place.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

no data available

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 tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flammable resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. 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

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Physical state	PHYSICAL DESCRIPTION: Odorless white crystalline powder. Metallic taste. Solutions are acid to litmus. Absence of general acid/base catalysis. (NTP, 1992)
Colour	Crystals from ethanol (aqueous)
Odour	no data available
Melting point/freezing point	224 - 226°C
Boiling point or initial boiling point and boiling range	327.6°C at 760 mmHg
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	152°C
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	Freely soluble in water, soluble in ethanol (96 per cent), slightly soluble in methylene chloride.
Partition coefficient n-octanol/water	log Kow = 0.20 at pH 7.2
Vapour pressure	0.000199mmHg at 25°C
Density and/or relative density	no data available
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

no data available

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

METHYLPHENIDATE HYDROCHLORIDE is incompatible with alkalis and solutions of barbiturates (NTP, 1992). Undergoes typical ester hydrolysis in aqueous solutions at 176°F.

Conditions to avoid

no data available

Incompatible materials

Incompatible materials: Strong oxidizing agents

Hazardous decomposition products

When heated to decomposition it emits toxic fumes of nitroxides.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Mouse oral 190 mg/kg Methylphenidate hydrochloride
- 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

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

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

An estimated BCF of 3 was calculated in fish for methylphenidate(SRC), using a log Kow of 0.20(1) and a regression-derived equation(2). According to a classification scheme(2), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of methylphenidate can be estimated to be 1700(SRC). According to a classification scheme(2), this estimated Koc value suggests that methylphenidate is expected to have low mobility in soil. The pKa of methylphenidate is 8.9(3), indicating that this compound will exist partially in the cation form in the environment and cations generally adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(4).

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: UN3249 (For reference only, please check.)

IMDG: UN3249 (For reference only, please check.)

IATA: UN3249 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: MEDICINE, SOLID, TOXIC, N.O.S. (For reference only, please check.)

IMDG: MEDICINE, SOLID, TOXIC, N.O.S. (For reference only, please check.)

IATA: MEDICINE, SOLID, TOXIC, N.O.S. (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: 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

Not Listed.

China Catalog of Hazardous chemicals 2015

Not Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

PICCS

Not Listed.

Vietnam National Chemical Inventory

Listed.

IECSC

Not Listed.

Korea Existing Chemicals List (KECL)

Not 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?pagelD=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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