

Chemical Safety Data Sheet MSDS / SDS

Heptadecafluorooctane-1-sulphonic acid SDS

Revision Date:2024-04-25 Revision Number:1

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

Product name: Heptadecafluorooctane-1-sulphonic acid

CAS: 1763-23-1

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

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

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

Acute toxicity - Category 4, Oral

Acute toxicity - Category 4, Inhalation

Carcinogenicity, Category 2
Reproductive toxicity, Additional category for effects on or via lactation
Specific target organ toxicity - repeated exposure, Category 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2
Reproductive toxicity, Category 1B

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H302 Harmful if swallowed
H332 Harmful if inhaled
H351 Suspected of causing cancer
H362 May cause harm to breast-fed children
H372 Causes damage to organs through prolonged or repeated exposure
H411 Toxic to aquatic life with long lasting effects

Precautionary statement(s)

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.
P271 Use only outdoors or in a well-ventilated area.
P203 Obtain, read and follow all safety instructions before use.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P263 Avoid contact during pregnancy and while nursing.
P273 Avoid release to the environment.

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.
P317 Get medical help.

P318 IF exposed or concerned, get medical advice.
P319 Get medical help if you feel unwell.
P391 Collect spillage.

Storage

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 which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Heptadecafluorooctane-1-sulphonic acid
Common names and synonyms:	Heptadecafluorooctane-1-sulphonic acid
CAS number:	1763-23-1
EC number:	217-179-8
Concentration:	100%

SECTION 4: First aid measures

Description of necessary 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/effects, acute and delayed

no data available

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

Immediate first aid: 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 the 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. Poisons A and B

SECTION 5: Firefighting measures**Suitable extinguishing media**

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

Specific hazards arising from the chemical

no data available

Special protective actions for fire-fighters

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 breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas; 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: Soak up with inert absorbent material and dispose of as hazardous waste. 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

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	Heptadecafluorooctane-1-sulphonic acid			
CAS No.	1763-23-1			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³

Germany (AGS)	?	0,01 inhalable aerosol	?	0,08 inhalable aerosol (1)
Germany (DFG)	?	0,01 inhalable aerosol	?	0,08 inhalable aerosol (1)
Sweden	200	900	300 (1)	1400 (1)
Switzerland	?	0,01 inhalable aerosol	?	0,08 inhalable aerosol
Remarks				
Germany (AGS)	(1) 15 minutes average value			
Germany (DFG)	(1) 15 minutes average value			
Sweden	(1) Short-term value, 15 minutes average value			

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

Skin protection

Wear fire/flare 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 and safety characteristics

Physical state: Solid

Colour: Liquid

Odour:	no data available
Melting point/freezing point:	90°C
Boiling point or initial boiling point and boiling range:	260°C
Flammability:	no data available
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 6% by volume; Upper flammable limit: 36% by volume
Flash point:	11°C
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	In water, 3.2×10^{-3} mg/L at 25 deg C (est)
Partition coefficient n-octanol/water:	$\log K_{ow} = 4.49$ (est)
Vapour pressure:	2.0×10^{-3} mm Hg at 25 deg C /estimated by extrapolation of the boiling pt and two reduced pressure boiling pts (6 mm Hg at 133 deg C and 10 mm Hg at 145 deg C) via Antoine method fit/
Density and/or relative density:	1.837 g/cm ³
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

no data available

Conditions to avoid

no data available

Incompatible materials

Incompatible materials: Strong oxidizing agents

Hazardous decomposition products

When heated to decomposition it emits toxic vapors of /sulfur oxides/ and /fluorine/.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Rat oral 251 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

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information**Toxicity**

Toxicity to fish: LC50; Species: Pimephales promelas (Fathead minnow); Conditions: static; Concentration: 9.5 mg/L for 96 hr /Perfluorooctane sulfonate, potassium salt

Toxicity to daphnia and other aquatic invertebrates: LC50; Species: *Daphnia magna* (Water Flea) age <24 hr neonate; Conditions: freshwater, renewal, 25 deg C; Concentration: 76820 ug/L for 24 hr (95% confidence interval: 62090-91560 ug/L) /formulation

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: Perfluorooctane sulfonic acid is resistant to biodegradation(1) and does not biodegrade under typical environmental conditions(2). Perfluorooctane sulfonic acid, 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(3). Using an activated sludge inoculum and the manometric respirometry test, perfluorooctane sulfonic acid, present at 100 mg/L in 250 mL of inoculated medium as nominal source of organic carbon and stirred in a closed flask at 22 deg C for up to 28 days, obtained 0% of its theoretical BOD in four weeks(4). Perfluorooctane sulfonic acid was not degraded from an initial concentration of 5 mg/L in aerobic sewage sludge in a laboratory reactor over a 20-week period(1,5).

Bioaccumulative potential

A BCF range of 200-1500 was measured in fish for the potassium salt of perfluorooctane sulfonic acid using carp (*Cyprinus carpio*) which were exposed over a 58-day period at concentrations of 2 and 20 ug/L(1). Using bluegill sunfish (*Lepomis macrochirus*) exposed to 86 ug/L of the potassium salt of perfluorooctane sulfonic acid for a 62-day period in a flow-through test, BCF values of 484 and 856 were determined for the edible and whole tissue respectively(2). According to a classification scheme(3), these BCF values suggest the potential for bioconcentration in aquatic organisms is high to very high(SRC). Blackrock fish (*Sebastes schlegeli*) exposed to the potassium salt of perfluorooctane sulfonic acid for 28 days had serum and liver BCF values of 4714-6687 and 950-1475 respectively(4). Field-based BCF values of 830-26000 (whole body) were derived for catfish and largemouth bass collected from the Tennessee River in Alabama, whereas laboratory whole-body BCF values ranged from 700-3000 depending on species and concentration(2). A field-based geometric mean BCF of 10,964 for serum perfluorooctane sulfonate was determined for wild turtles (*Trachemys scripta elegans* and *Chinemys reevesii*) collected in Japan(5).

Mobility in soil

A literature review of Koc values derived from laboratory sorption experiments using a variety of soils and sediments found the average and median log Koc values for perfluorooctane sulfonic acid to be 3.0 and 2.8(1), respectively, which correspond to Koc values of 1000 and 630(SRC); the log Koc range was 2.4 to 4.7 (Koc of 250 to 50,100)(1). Partitioning experiments using three sediments taken from the Tokyo Bay, Bay determined mean log Koc values 3.4 to 3.7 for perfluorooctane sulfonic acid (Koc values of 2510 to 5010)(2). A laboratory-derived mean log Koc of 2.57 for perfluorooctanoic acid on sediments has been reported(3) corresponding to a Koc of 370(SRC). A log Koc of 3.34 (Koc of 2190) was measured for an agricultural soil from an area where municipal biosolids had been applied(4). According to a classification scheme(5), the average and mean Koc values derived in laboratory tests suggest that perfluorooctane sulfonic acid is expected to have low mobility in soil. The range of Koc values (log 2.4-4.7) suggest that perfluorooctane sulfonic acid may have moderate mobility to immobility in soil. The pKa of perfluorooctane

sulfonic acid is $<1.0(6)$, indicating that this compound will exist almost entirely in anion form in the environment and anions generally do not adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(7). The strength of perfluorooctane sulfonic acid sorption to sediment and suspended material in water can vary depending on the nature of the sediment material with respect to pH, organic content, mineral content, salinity and other factors(1,2). Sorption in sediment was found to increase with increasing $\text{Ca}(2+)$ and decreasing pH and be affected more by organic carbon than iron oxide content(3). In marine environments where suspended solid concentrations are low, perfluorooctane sulfonic acid may be transported in dissolved phase rather than being adsorbed to suspended solids(2). Perfluorooctane sulfonic acid is thought to adsorb strongly to soil and sediment, based on reported K_d and Freundlich adsorption coefficient values of 18.3 and 25.1, respectively, in clay; 9.72 and 14.0, respectively, in clay loam; 35.3 and 28.2, respectively, in sandy loam; and 7.42 and 8.70, respectively, in river sediment(8). A K_{oc} of 710 was calculated for perfluorooctane sulfonic acid based on K_d values for six soils(9).

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: UN2923 (For reference only, please check.)

IMDG: UN2923 (For reference only, please check.)

IATA: UN2923 (For reference only, please check.)

UN Proper Shipping Name

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

Transport hazard class(es)

ADR/RID: 8 (For reference only, please check.)
IMDG: 8 (For reference only, please check.)
IATA: 8 (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)

Not Listed.

(PICCS)

Not 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/>

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any