

# Chemical Safety Data Sheet MSDS / SDS

## **FERBAM**

Revision Date:2025-09-13 Revision Number:1

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

#### **Product identifier**

Product name : FERBAM  
CBnumber : CB0474797  
CAS : 14484-64-1  
EINECS Number : 238-484-2  
Synonyms : Ferbam,FERBAN

#### **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

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### **SECTION 2: Hazards identification**

#### **Classification of the substance or mixture**

Skin irritation, Category 2  
Eye irritation, Category 2  
Specific target organ toxicity – single exposure, Category 3  
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1  
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

#### **Label elements**

##### **Pictogram(s)**

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Signal word : Warning

##### **Hazard statement(s)**

H302 Harmful if swallowed

H315 Causes skin irritation

H319 Causes serious eye irritation

H330 Fatal if inhaled

H335 May cause respiratory irritation

H361 Suspected of damaging fertility or the unborn child

H373 May cause damage to organs through prolonged or repeated exposure

H410 Very toxic to aquatic life with long lasting effects

#### **Precautionary statement(s)**

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

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

P264 Wash hands thoroughly after handling.

P264 Wash skin thoroughly after handling.

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

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

P273 Avoid release to the environment.

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

P284 Wear respiratory protection.

P391 Collect spillage. Hazardous to the aquatic environment

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

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P308+P313 IF exposed or concerned: Get medical advice/attention.

P405 Store locked up.

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

P501 Dispose of contents/container to.....

#### **Prevention**

P264 Wash ... thoroughly after handling.

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

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

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

P273 Avoid release to the environment.

#### **Response**

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

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

P332+P317 If skin irritation occurs: Get medical help.

P362+P364 Take off 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.

P319 Get medical help if you feel unwell.

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

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## **SECTION 3: Composition/information on ingredients**

### **Substance**

Product name	: FERBAM
Synonyms	: Ferbam, FERBAN
CAS	: 14484-64-1
EC number	: 238-484-2
MF	: C9H18FeN3S6
MW	: 416.49

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## **SECTION 4: First aid measures**

### **Description of first aid measures**

#### **If inhaled**

Fresh air, rest. Refer for medical attention.

#### **Following skin contact**

Remove contaminated clothes. Rinse and then wash skin with water and soap.

#### **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!). Refer for medical attention .

### **Most important symptoms and effects, both acute and delayed**

Exposure Routes: inhalation, ingestion, skin and/or eye contact Symptoms: Irritation eyes, respiratory tract; dermatitis; gastrointestinal

disturbance Target Organs: Eyes, skin, respiratory system, gastrointestinal tract (NIOSH, 2016)

### **Indication of any immediate medical attention and special treatment needed**

Wash contaminating chemical from skin and hair with soap and water. Persons sensitive to thiram (rubber-sensitive) should be permanently removed from contact with compounds of this nature. Flush contaminant from eyes with fresh water for 10-15 minutes. If thiram or metallo dithiocarbamate compounds have been ingested: a) if vigorous emesis has not already occurred and victim is fully alert, give syrup of ipecac, followed by 1-2 glasses of water to induce vomiting (adults, 12 yr and older: 30 mL; children under 12: 15 mL). If consciousness level declines or vomiting has not occurred in 15 minutes, empty the stomach by intubation, aspiration, and lavage. Dithiocarbamates and Thiocarbamates

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## **SECTION 5: Firefighting measures**

### **Extinguishing media**

Use/ water spray, powder.

### Specific Hazards Arising from the Chemical

Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]: Some may burn but none ignite readily. Containers may explode when heated. Some may be transported hot. For UN3508, be aware of possible short circuiting as this product is transported in a charged state. (ERG, 2016)

### Advice for firefighters

Use water spray, powder.

### NFPA 704

0

2            0

<input checked="" type="checkbox"/> HEALTH	2	Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g. <a href="#">diethyl ether</a> , ammonium phosphate, iodine)
<input type="checkbox"/> 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)
<input checked="" type="checkbox"/> REACT	0	Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium, <a href="#">N<sub>2</sub></a> )
<input type="checkbox"/> SPEC.		
<input type="checkbox"/> 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 sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

### Environmental precautions

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

### Methods and materials for containment and cleaning up

Ventilate area of spill. Collect spilled material in the most convenient and safe manner and deposit in sealed containers for reclamation, or for disposal in a secured sanitary landfill. Liquid containing ferbam should be absorbed in vermiculite, dry sand, earth, or a similar material.

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## 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**

Separated from strong oxidants, copper compounds, mercury compounds, alkaline materials and food and feedstuffs. Dry. Well closed. Store in cool, dry, well-ventilated, secure area out of reach of children and animals.

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## SECTION 8: Exposure controls/personal protection

### **Control parameters**

#### **Occupational Exposure limit values**

TLV: (inhalable fraction): 5 mg/m<sup>3</sup>, as TWA; A4 (not classifiable as a human carcinogen)

#### **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.

#### **Skin protection**

Protective 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

### **Information on basic physicochemical properties**

Physical state	solid
Colour	Black or dark-colored fluffy powder
Odour	Odorless
Melting point/freezing point	66°C(lit.)
Boiling point or initial boiling point and	98°C/19mmHg(lit.)

boiling range	
Flammability	Combustible Solid
Lower and upper explosion	no data available
limit/flammability limit	
Flash point	9°C(lit.)
Auto-ignition temperature	no data available
Decomposition temperature	180°C
pH	pH = 5.0
Kinematic viscosity	no data available
Solubility	0.01 % (NIOSH, 2016)
Partition coefficient n-octanol/water	log Kow = -1.60
Vapour pressure	2 x 10 <sup>-11</sup> Pa (est.)
Density and/or relative density	approx 0.6 kg/L
Relative vapour density	no data available
Particle characteristics	no data available

## SECTION 10: Stability and reactivity

### Reactivity

Decomposes on heating and on contact with moisture. This produces toxic and flammable gases. Reacts with strong oxidants.

### Chemical stability

Tends to decompose on prolonged storage or exposure to heat and moisture.

### Possibility of hazardous reactions

It should be kept away from ignition sources because the decomp products are flammable. FERBAM is a dithiocarbamate. Flammable gases are generated by the combination of thiocarbamates and dithiocarbamates with aldehydes, nitriles, and hydrides. Thiocarbamates and dithiocarbamates are incompatible with acids, peroxides, and acid halides.

### Conditions to avoid

no data available

### Incompatible materials

Strong oxidizers, moisture.

### Hazardous decomposition products

When heated to decomposition it emits very toxic fumes of nitrogen and sulfur oxides.

## SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 Rat oral 1130 mg/kg

- Inhalation: LC50 Rat inhalation 0.4 mg/L/4 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: Inadequate data. 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 data available

### **STOT-single exposure**

The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the central nervous system.

### **STOT-repeated exposure**

Repeated or prolonged contact with skin may cause dermatitis. Repeated or prolonged contact may cause skin sensitization. The substance may have effects on the nervous system and thyroid.

### **Aspiration hazard**

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

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## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: LC50 *Salmo gairdneri* (Rainbow trout, early life stages from the fertilized egg to the early fry stage) 2.9 ug/L/60 day (95% confidence interval: 2.7-3.2 ug/L); renewal

Toxicity to daphnia and other aquatic invertebrates: LC50 *Daphnia magna* 0.09 mg/L/48 hr /Conditions of bioassay not specified in source examined

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

### **Persistence and degradability**

AEROBIC: In pH 3.4 sandy soil, ferbam was largely decomposed after 4 to 5 weeks, while in pH 7.0 soil ferbam was decomposed after 14 to 15 weeks(1). Ferbam took longer than 8 weeks to reach the half-decay point in humus sandy soils as determined by activity to *Rhizoctonia solani*.

If the humus content was 1.2% or below, an initial lag in the start of decomposition was observed(2). Ferbam releases carbon disulfide when it decomposes in soil(3).

### **Bioaccumulative potential**

An estimated BCF of 3 was calculated for ferbam(SRC), using a log Kow of -1.60(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC), provided the compound is not altered physically or chemically once released into the environment.

### **Mobility in soil**

The Koc of ferbam is estimated as 300(SRC), using a water solubility of 130 mg/L(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that ferbam is expected to have moderate mobility in soil. Using a soil TLC system (Hagerstown silty clay loam, 2.5% organic matter, 39.5% clay, pH 6.8) visualized by bioautography with 10 soil fungi and one alga, mean Rf values for analytical grade ferbam were 0.93, 0.64, 0.36, and 0.0(4).

### **Other adverse effects**

no data available

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## **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.

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## **SECTION 14: Transport information**

### **UN Number**

ADR/RID: UN2811 (For reference only, please check.)

IMDG: UN2811 (For reference only, please check.)

IATA: UN2811 (For reference only, please check.)

### **UN Proper Shipping Name**

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

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

IATA: TOXIC SOLID, ORGANIC, 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: 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

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## **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**

Not Listed.

#### **Vietnam National Chemical Inventory**

Listed.

#### **IECSC**

Listed.

#### **Korea Existing Chemicals List (KECL)**

Listed.

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## **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](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 substance is combustible but no flash point is available in literature. Exposure to Ferbam may cause alcohol intolerance. Depending on the degree of exposure, periodic medical examination is suggested. Carrier solvents used in commercial formulations may change physical and toxicological properties. Ferbam is often used in combinations with dithiocarbamates.

### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.