



Materials Safety Data Sheet

Niobium(V) chloride

1. Product and Company Identification

Product Name: Niobium(V) chloride
Formula: NbCl_5
CAS: 10026-12-7
EC No.: 233-059-8
Synonyms: Niobium pentachloride, Niobium Chloride

Recommended Use: Laboratory chemicals, Scientific research
Uses advised against: N/A

Supplier: UltraPurMat Group Co., Ltd
Address: Room307, Building2, Tengfei Innovation Center, No38Gaoxin 6th Road, High-tech Zone, Xi'an Shaanxi China
Tel: +86-29-88993870
Email: sales@ulpmat.com
Website: www.ulpmat.com

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2. Hazards Identification

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Acute toxicity (Oral) Category 4 (H302);

Skin corrosion Category 1B (H314);

Serious eye damage Category 1 (H318);

Specific target organ toxicity - single exposure Category 3 (H335).

GHS Label elements, including precautionary statements

Pictogram:



Signal Word: Danger

Hazard statement(s):

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

Precautionary Statement(s):

P260 Do not breathe dust.

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.

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

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340+P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.

P305+P351+P338+P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

P363 Wash contaminated clothing before reuse.

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

P501 Dispose of contents/container to an approved waste disposal plant.

Other hazards: Reacts with moisture and water, releasing corrosive hydrogen chloride gas. Moisture exposure may cause decomposition and release corrosive fumes.

3. Composition

Components	CAS	Classification (H)	Concentration
Niobium(V) chloride (NbCl ₅)	10026-12-7	H302 H314 H318 H335	≤100%

4. First Aid Procedures

Description of first aid measures

General Treatment: Seek medical attention if symptoms persist.

Inhalation: Seek immediate medical attention if respiratory irritation persists.

Ingestion: Rinse mouth. Do not induce vomiting. Seek immediate medical attention.

Skin: Remove contaminated clothing immediately. Rinse skin with plenty of water for at least 15 minutes. Seek immediate medical attention.

Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek immediate medical attention.

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Indication of any immediate medical attention and special treatment needed

No data available

5. Firefighting Measures

Extinguishing media

Use dry powder, sand, or appropriate extinguishing media suitable for the surrounding fire.

Unsuitable extinguishing media: Water and water-based extinguishing media (reacts violently with water, releasing toxic hydrogen chloride gas).

Special hazards arising from the substance or mixture

Hazardous decomposition products may include niobium oxides and hydrogen chloride gas. The substance reacts with water, releasing corrosive hydrogen chloride fumes.

Advice for firefighters

Use full-face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. See section 10 for decomposition products.

Further information

No data available

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Avoid generating dust. Wear appropriate personal protective equipment. Avoid contact with eyes and skin during handling. Ensure adequate ventilation. For personal protection see section 8.

Environmental precautions

Prevent large quantities of material from entering drains or the environment.

Methods and materials for containment and cleaning up

Avoid generating dust. Avoid contact with moisture or water. Wear appropriate PPE. Collect spilled material under dry conditions and place into sealed containers.

Reference to other sections

For disposal see section 13.

7. Handling and Storage

Precautions for safe handling

Ensure adequate ventilation. Avoid ingestion, inhalation and formation of dust. Do not get in eyes, on skin, or on clothing. Avoid contact with water. Handle under dry conditions in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs.

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture.

Store under an inert atmosphere.

Storage class: Class 8B

Store apart from materials and conditions listed in section 10.

Specific end use(s)

Apart from the uses mentioned in section 1 no other specific uses are stipulated

8. Exposure Controls/Personal Protection

Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Use eye protection equipment tested and approved according to appropriate standards such as ANSI Z87.1 (US) or EN 166 (EU).

Skin protection

Wear protective gloves compliant with Regulation (EU) 2016/425 and EN ISO 374.

Body Protection

Protective work clothing. Wear close-toed shoes and long sleeves/pants.

Respiratory protection

Use a respirator with type N95 (USA) or P1/P2/P3 cartridges as a backup to engineering controls.

Risk assessment should be performed to determine if purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards

Control of environmental exposure

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

9. Physical and Chemical Characteristics

Information on basic physical and chemical properties

Appearance

Form: Powder

Colour: Yellow

Odor: Pungent, acidic odor

pH: No data available

Melting point/range: 204.7-209.5 °C

Boiling point/range: 254 °C

Flash point: No data available

Evaporation rate: Not applicable (solid)

Flammability (solid, gas): No data available

Upper/lower flammability or explosive limits: No data available

Vapor pressure: No data available

Relative density: 2.75 g/cm³

Water solubility: Reacts with water

Partition coefficient: n-octanol/water: not relevant (inorganic)

Auto-ignition temperature: No data available
Decomposition temperature: No data available
Viscosity: Not applicable (solid)

Other information

Molecular formula: NbCl₅
Molecular weight: 270.16 g/mol

10. Stability and reactivity

Reactivity

Reacts violently with water.

Chemical stability

Sensitive to moisture.

Possibility of hazardous reactions

Violent reactions possible with: Metals, Water.
Possible formation of: Hydrogen chloride gas.

Conditions to avoid

Exposure to moist air or water.

Incompatible materials

Violent reaction possible with water, moisture and reactive organic compounds.

Hazardous decomposition products

Hydrogen chloride gas.

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Oral: LD50 (Rat) 1,400 mg/kg.

Skin corrosion/irritation

Causes severe skin damage.

Serious eye damage/eye irritation

Causes severe eye damage.

Respiratory or skin sensitisation

Respiratory: No data available.

Skin: No data available

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: Not listed.

OSHA: Not listed.

Reproductive toxicity

No data available

Specific target organ toxicity -single exposure

Category 3 (H335).

Specific target organ toxicity -repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

No data available

12. Ecological Information

Toxicity

No data available

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Other adverse effects

This product does not contain any known or suspected endocrine disruptors.

13. Disposal Considerations

Waste treatment methods

Dispose of contents and containers according to local regulations. Handle contaminated packaging as hazardous material due to possible residues. Labels should not be removed from containers until they have been cleaned. Avoid contact with water during disposal. Contaminated containers must not be treated as household waste.

14. Transportation Information

ADR

UN number: UN 3260

UN Proper shipping name: Corrosive solid, acidic, inorganic, n.o.s. (Niobium(V) chloride).

Transport hazard class(es): 8

Packing group: II

IMDG

UN number: UN 3260

UN Proper shipping name: Corrosive solid, acidic, inorganic, n.o.s. (Niobium(V) chloride).

Transport hazard class(es): 8

Packing group: II

IATA

UN number: UN 3260

UN Proper shipping name: Corrosive solid, acidic, inorganic, n.o.s. (Niobium(V) chloride).

Transport hazard class(es): 8

Packing group: II

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation (EC) 1907/2006, REACH, Annex XIV list of substances subject to authorisation: Not applicable

Regulation (EC) 1907/2006, REACH, Annex XVII restrictions on the manufacture, placing on the market and use of certain dangerous substances: Not applicable

Regulation (EC) 1005/2009 on substances that deplete the ozone layer: Not applicable

Regulation (EC) 850/2004 on persistent organic pollutants, amended by (EU) No 2019/1021: Not applicable

Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance

16. Other information

Revision Date:

2026-09-14

Version:

1.0

Disclaimer

The information of this safety data sheet is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.