



MSDS of Tungsten Hexachloride

Chinatungsten Online (Xiamen) Manu. & Sales Corp.

SECTION I – SUBSTANCE AND COMPANY IDENTIFICATION

Product/Material: Tungsten Hexachloride

Synonyms: Tungsten Chloride; TUNGSTEN (VI) CHLORIDE

Application: Semiconductor manufacturer

Chemical Formula: WCl_6

Company Identification

Company Name: Chinatungsten Online (Xiamen) Manu. & Sales Corp.

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Poison Center

Phone Number: +0086 120

Opening Hours: 24/7

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

C.A.S. Number: 13283-01-7

Component Name: Tungsten Chloride

Percent: 99.9%

SECTION III – HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Skin Corrosion/Irritation - Category 1

Serious Eye Damage/Eye Irritation - Category 1

Specific target organ toxicity - Single exposure - Category 3 (respiratory system)

GHS Label Elements

Symbol(s)



Signal Word

Danger

Hazard Statement(s)

Causes severe skin burns and eye damage.

May cause respiratory irritation.



Precautionary Statement(s)

Prevention

Do not breathe dust.

Wash thoroughly after handling.

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

Use only outdoors or in a well-ventilated area.

Response

Immediately call a POISON CENTER or doctor/physician.

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

Specific treatment may be needed, see first aid section of Safety Data Sheet.

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

Wash contaminated clothing before reuse.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage

Store in a well-ventilated place.

Keep container tightly closed.

Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazards

Hydrolyzes on contact with water to form hydrogen chloride.

SECTION IV – FIRST AID MEASURES

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.

Eyes

Immediately flush eyes with plenty of water for at least 60 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

Ingestion

If swallowed, do NOT induce vomiting. Rinse mouth. Get immediate medical attention.

Most Important Symptoms/Effects



Acute

respiratory tract burns, skin burns, eye burns, mucous membrane burns

Delayed

No information on significant adverse effects.

Note to Physicians

For inhalation, consider oxygen. Avoid gastric lavage or emesis.

SECTION V – FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

regular dry chemical, carbon dioxide, water spray. Large fires: Use dry chemical, carbon dioxide, alcohol-resistant foam or water spray.

Unsuitable Extinguishing Media

Do not scatter spilled material with high-pressure water streams.

Special Hazards Arising from the Chemical

Negligible fire hazard.

Advice for firefighters

Negligible fire hazard.

Fire Fighting Measures

Move container from fire area if it can be done without risk. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside container. Cool containers with water spray until well after the fire is out. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Stay away from the ends of tanks. Use extinguishing agents appropriate for surrounding fire. Large fires: Flood with fine water spray. Reduce vapors with water spray.

Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion

by-products. Stay upwind and keep out of low areas. Dike for later disposal.

Special Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment.

Methods and Materials for Containment and Cleaning Up

Do not touch spilled material. Stop leak if possible without personal risk. If sweeping of a contaminated area is necessary, use a dust suppressant agent. Collect spill using a vacuum cleaner with a HEPA filter or wet and scoop up dry spills. Avoid sweeping spilled dry material. Small spills: Absorb with earth, sand or other non-combustible material and transfer to container. Move containers away from spill to a safe area. Do not get water inside container. Large spills: Keep unnecessary people away, isolate hazard area and deny entry.



Dike for later disposal.

Environmental Precautions

Avoid release to the environment.

SECTION VII – HANDLING AND STORAGE

Precautions for Safe Handling

Do not breathe dust. Wash thoroughly after handling. Wear protective gloves/clothing and eye/face protection. Use only outdoors or in a well-ventilated area.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place.

Keep container tightly closed.

Store locked up.

Store in accordance with all current regulations and standards. Avoid contact with water or moisture. Keep separated from incompatible substances.

Incompatible Materials

acids, metals, water

SECTION VIII – EXPOSURE CONTROL/PERSONAL PROTECTION

Component Exposure Limits

ACGIH: 3 mg/m³ TWA (in the absence of cobalt) as W respirable particulate matter (related to Tungsten compounds)

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

Wear appropriate chemical resistant clothing.

Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. Any chemical cartridge respirator with acid gas cartridge(s). Any chemical cartridge respirator with a full facepiece and acid gas cartridge(s). Any air-purifying respirator with a full facepiece and an acid gas canister. For Unknown Concentrations or Immediately Dangerous to Life or Health - Any supplied-air respirator with a full facepiece that is operated



in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Glove Recommendations

Wear appropriate chemical resistant gloves.

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: blue or purple crystals

Physical State: solid

Odor: pungent odor

Color: blue or purple

Odor Threshold: Not available

pH: (acidic)

Melting Point:275 °C

Boiling Point:347 °C

Boiling Point Range: Not available

Freezing point: Not available

Evaporation Rate: Not available

Flammability (solid, gas): Not Flammable

Autoignition Temperature: Not available

Flash Point: (Not flammable)

Lower Explosive Limit: Not available

Decomposition temperature: Not available

Upper Explosive Limit: Not available

Vapor Pressure:43 mmHg @215 °C

Vapor Density(air=1): Not available

Specific Gravity (water=1): Not available

Water Solubility:(Reacts)

Partition coefficient: n-octanol/water: Not available

Viscosity:Not available

Kinematic viscosity: Not available

Solubility (Other): Not available

Density 3.52 g/cm³

Physical Form: crystals

Molecular Formula Cl₆-W

Molecular Weight:396.57

Solvent Solubility

Soluble

alcohol, ether, benzene, carbon tetrachloride, ligroin, organic solvents, carbon disulfide, phosphorus yxchloride

SECTION X – STABILITY AND REACTIVITY

Reactivity



May decompose on contact with air, light, moisture, heat or storage and use above room temperature.

Releases toxic and/or corrosive gases.

Chemical Stability

May decompose on contact with air, light, moisture, heat or storage and use above room temperature.

Releases toxic and/or corrosive gases.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to Avoid

Avoid accumulation of airborne dusts. Avoid contact with water or moisture.

Incompatible Materials

acids, metals, water

Hazardous decomposition products

hydrogen chloride, metal oxychloride

Water or Moisture

hydrogen chloride

SECTION XI – TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation

burns

Skin Contact

burns

Eye Contact

burns

Ingestion

burns

Acute and Chronic Toxicity

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and no selected endpoints have been identified.

Product Toxicity Data

Acute Toxicity Estimate

No data available.

Immediate Effects

respiratory tract burns, skin burns, eye burns, mucous membrane burns

Delayed Effects

No information on significant adverse effects.

Irritation/Corrosivity Data

respiratory tract burns, skin burns, eye burns, mucous membrane burns

Respiratory Sensitization

No data available.



Dermal Sensitization

No data available.

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA.

Germ Cell Mutagenicity

No data available.

Tumorigenic Data

No data available.

Reproductive Toxicity

No data available.

Specific Target Organ Toxicity - Single Exposure

respiratory system

Specific Target Organ Toxicity - Repeated Exposure

No data available.

Aspiration hazard

No data available.

Medical Conditions Aggravated by Exposure

respiratory disorders

SECTION XII – ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

No LOEL ecotoxicity data are available for this product's components.

Persistence and Degradability

Hydrolyzes on contact with water to form hydrogen chloride.

Bioaccumulative Potential

No data available.

Mobility

No data available.

Other Toxicity

No data available.

SECTION XIII – DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: Hazardous Waste
Number(s): D003.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

SECTION XIV – TRANSPORT INFORMATION

US DOT Information:

Shipping Name: CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. , (Contains: Tungsten (VI) chloride.)



Hazard Class: 8

UN/NA #: UN3260

Packing Group: II

Required Label(s): 8

IATA Information:

Shipping Name: CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. , (Contains:
Tungsten (VI) chloride)

Hazard Class: 8

UN#: UN3260

Packing Group: II

Required Label(s): 8

IMDG Information:

Shipping Name: CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. , (Contains:
Tungsten (VI) chloride)

Hazard Class: 8

UN#: UN3260

Packing Group: II

Required Label(s): 8

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

SECTION XV – REGULATORY INFORMATION

No Special regulations. Not regulated (Observe national regulations)

(European Union: No Labeling is required in accordance with the EEC directives.

TRGS 900 Atmospheric Threshold Value: Insoluble Tungsten Compounds: 5 mg/m³

Handling restrictions: None

Major accident regulations: Not listed in the appendices.

Technical Instruction for Air Pollution Control: Figure 5.2.1 Total dust

Water Pollution class (WGK): Not harmful to water)

SECTION XVI – OTHER INFORMATION

“Although the information and recommendations set forth herein (hereinafter “Information”) are presented in good faith and believed to be correct as of the date hereof, TTT makes no representations as to the completeness or accuracy thereof.

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