# MATERIAL SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>MATHESON TRI-GAS, INC.</th>
<th>Emergency Contact:</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 Allen Road Suite 302</td>
<td>CHEMTREC 1-800-424-9300</td>
</tr>
<tr>
<td>Basking Ridge, New Jersey 07920</td>
<td>Calls Originating Outside the US:</td>
</tr>
<tr>
<td>Information: 1-800-416-2505</td>
<td>703-527-3887 (Collect Calls Accepted)</td>
</tr>
</tbody>
</table>

**SUBSTANCE:** TUNGSTEN HEXAFLUORIDE

**TRADE NAMES/SYNONYMS:**
- MTG MSDS 85;
- TUNGSTEN FLUORIDE (WF6), (OC-6-11);
- TUNGSTEN FLUORIDE (WF6);
- WOLFRAM HEXAFLUORIDE;
- HEXAFLUOROTUNGSTEN;
- TUNGSTEN(6+) FLUORIDE;
- TUNGSTEN HEXAFLUORIDE (WF6);
- TUNGSTEN VI FLUORIDE;
- TUNGSTEN FLUORIDE;
- UN 2196;
- F6W;
- MAT24560;
- RTECS YO7720000

**CHEMICAL FAMILY:** fluoride, inorganic, metal

**PRODUCT USE:** industrial

**CREATION DATE:** Jan 24 1989

**REVISION DATE:** Dec 11 2008

## 2. COMPOSITION, INFORMATION ON INGREDIENTS

| COMPONENT: TUNGSTEN HEXAFLUORIDE |
| CAS NUMBER: 7783-82-6 |
| PERCENTAGE: 100.0 |

## 3. HAZARDS IDENTIFICATION

**NFPA RATINGS (SCALE 0-4):** HEALTH=3  FIRE=0  REACTIVITY=2

**EMERGENCY OVERVIEW:**

**CHANGE IN APPEARANCE:** deliquescent, hygroscopic

**COLOR:** colorless or yellow

**PHYSICAL FORM:** gas, liquid

**ODOR:** odorless

**MAJOR HEALTH HAZARDS:** respiratory tract burns, skin burns, eye burns, mucous membrane burns, tears
PHYSICAL HAZARDS: Containers may rupture or explode if exposed to heat. May ignite combustibles. Reacts violently with water to generate toxic and/or flammable gases.

POTENTIAL HEALTH EFFECTS:

INHALATION:
SHORT TERM EXPOSURE: same as effects reported in short term ingestion, asthma, dizziness, lung congestion
LONG TERM EXPOSURE: same as effects reported in long term ingestion

SKIN CONTACT:
SHORT TERM EXPOSURE: absorption may occur, same as effects reported in short term ingestion
LONG TERM EXPOSURE: same as effects reported in short term exposure

EYE CONTACT:
SHORT TERM EXPOSURE: burns, tearing
LONG TERM EXPOSURE: same as effects reported in short term exposure

INGESTION:
SHORT TERM EXPOSURE: burns, rash, nausea, diarrhea, stomach pain, difficulty breathing, irregular heartbeat, headache, tingling sensation, visual disturbances, dilated pupils, bluish skin color, paralysis, convulsions, coma
LONG TERM EXPOSURE: same as effects reported in short term exposure

4. 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 CONTACT: 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.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

ANTIDOTE: dimercaprol; calcium disodium edetate. calcium gluconate, intravenous; milk of magnesia.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. Avoid gastric lavage or emesis.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials. Containers may rupture or explode if exposed to heat.
**EXTINGUISHING MEDIA:** carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

**FIRE FIGHTING:** Do not get water inside container. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Keep unnecessary people away, isolate hazard area and deny entry. Use extinguishing agents appropriate for surrounding fire. Flood with fine water spray. Cool containers with water spray until well after the fire is out. 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. Consider downwind evacuation if material is leaking.

**FIRE FIGHTING PROTECTIVE EQUIPMENT:** Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

**FLASH POINT:** Not available

**LOWER FLAMMABLE LIMIT:** Not available

**UPPER FLAMMABLE LIMIT:** Not available

**AUTOIGNITION:** Not available

**HAZARDOUS COMBUSTION PRODUCTS:**
Thermal decomposition or combustion products: hydrogen fluoride

---

**6. ACCIDENTAL RELEASE MEASURES**

**OCCUPATIONAL RELEASE:**

**7. HANDLING AND STORAGE**

**STORAGE:** Store and handle in accordance with all current regulations and standards. Store in a cool, dry place. Store in a well-ventilated area. Do not puncture or burn containers, even when empty. Store below 52 C. Keep separated from incompatible substances.

**8. EXPOSURE CONTROLS, PERSONAL PROTECTION**

**EXPOSURE LIMITS:**
**TUNGSTEN HEXAFLUORIDE:**
**INORGANIC FLUORIDES (as F):**
2.5 mg/m³ OSHA TWA
2.5 mg/m³ ACGIH TWA
2.5 mg/m³ NIOSH recommended TWA 10 hour(s) (solid fluorides)

TUNGSTEN AND INSOLUBLE COMPOUNDS (as W):
5 mg/m³ OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
10 mg/m³ OSHA STEL (vacated by 58 FR 35338, June 30, 1993)
5 mg/m³ ACGIH TWA
10 mg/m³ ACGIH STEL
5 mg/m³ NIOSH recommended TWA 10 hour(s)
10 mg/m³ NIOSH recommended STEL

VENTILATION: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

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

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

PROTECTIVE MATERIAL TYPES: rubber

RESPIRATOR: 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.
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.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas
COLOR: colorless or yellow
CHANGE IN APPEARANCE: deliquescent, hygroscopic
PHYSICAL FORM: gas, liquid
ODOR: odorless
MOLECULAR WEIGHT: 297.84
MOLECULAR FORMULA: F₆-W
BOILING POINT: 64-68 F (18-20 C)
FREEZING POINT: 36-37 F (2-3 C)
DECOMPOSITION POINT: Not available
VAPOR PRESSURE: 863 mmHg @ 21 C
VAPOR DENSITY (air=1): 10.6
SPECIFIC GRAVITY: Not applicable
DENSITY: 12.9 g/L
WATER SOLUBILITY: decomposes/reacts
PH: Not applicable
VOLATILITY: Not applicable
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not applicable
VISCOITY: 0.01754 cP @ 25 C
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable
SOLVENT SOLUBILITY:
Soluble: alkali, carbon disulfide, hydrogen fluoride

10. STABILITY AND REACTIVITY

REACTIVITY: Reacts violently with water to generate toxic and/or flammable gases.

CONDITIONS TO AVOID: Minimize contact with material. Avoid inhalation of material or combustion by-products. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES: combustible materials, reducing agents, acids, metals

HAZARDOUS DECOMPOSITION:
Decomposition products on contact with water or moisture: hydrogen fluoride, tungsten compounds
Thermal decomposition or combustion products: hydrogen fluoride

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

TUNGSTEN HEXAFLUORIDE:
TOXICITY DATA: 1430 mg/m3 inhalation-rat LC50
CARCINOGEN STATUS: ACGIH: A4 -Not Classifiable as a Human Carcinogen (Fluorides)
LOCAL EFFECTS:
Corrosive: inhalation, skin, eye, ingestion
Lacrimator: eye
ACUTE TOXICITY LEVEL:
Highly Toxic: inhalation
TARGET ORGANS: respiratory system, skin, eyes, skeletal system
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: central nervous system disorders, bone, joint or tooth disorders, eye disorders, kidney disorders, respiratory disorders, skin disorders and allergies
ADDITIONAL DATA: May cross the placenta. May be excreted in breast milk.
12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:
FISH TOXICITY: No data available.

INVERTEBRATE TOXICITY: No data available.

ALGAL TOXICITY: No data available.

FATE AND TRANSPORT:
BIODEGRADATION: No data available.

ABIOTIC DEGRADATION: Will decompose on contact with water to form hydrogen fluoride.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. D003.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Tungsten hexafluoride
ID NUMBER: UN2196
HAZARD CLASS OR DIVISION: 2.3
LABELING REQUIREMENTS: 2.3; 8
QUANTITY LIMITATIONS:
PASSENGER AIRCRAFT OR RAILCAR: Forbidden
CARGO AIRCRAFT ONLY: Forbidden
ADDITIONAL SHIPPING DESCRIPTION: Toxic-Inhalation Hazard Zone B

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Tungsten hexafluoride
UN NUMBER: UN2196
CLASS: 2.3; 8

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.


SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: Yes
FIRE: Yes
REACTIVE: Yes
SUDDEN RELEASE: Yes


STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: AD1E

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

"RTECS®" is a United States trademark owned and licensed under authority of the U.S. Government, by and through Symyx Software, Inc. Portions ©Copyright 2001, U.S. Government. All rights reserved.

©Copyright 1984-2009 ChemADVISOR, Inc. All rights reserved.

MATHESON TRI-GAS, INC. MAKES NO EXPRESS OR IMPLIED WARRANTIES, GUARANTEES OR REPRESENTATIONS REGARDING THE PRODUCT OR THE INFORMATION HEREIN, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR USE. MATHESON TRI-GAS, INC. SHALL NOT BE LIABLE FOR ANY PERSONAL INJURY, PROPERTY OR OTHER DAMAGES OF ANY NATURE, WHETHER COMPENSATORY, CONSEQUENTIAL, EXEMPLARY, OR OTHERWISE, RESULTING FROM ANY PUBLICATION, USE OR RELIANCE UPON THE INFORMATION HEREIN.