

# SAFETY DATA SHEET

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

### Product identifier

**Product Name** CMS-3

### Other means of identification

**Product Description** 10 µg/mL: Ge, Hf, Mo, Nb, Sn, Ta, Ti, W, Zr

### Recommended use of the chemical and restrictions on use

**Recommended Use** Laboratory chemicals.

**Uses advised against** No information available

### Details of the supplier of the safety data sheet

#### Company

Inorganic Ventures  
300 Technology Drive  
Christiansburg, VA 24073  
Phone: 1(800) 669-6799  
Email: info@inorganicventures.com

### Emergency Telephone Number

Chemtrec 1-800-424-9300 (North America)  
Chemtrec +1 703-741-5970 (International)

## 2. HAZARDS IDENTIFICATION

### GHS

#### Classification

|                                   |            |
|-----------------------------------|------------|
| Skin corrosion/irritation         | Category 2 |
| Serious eye damage/eye irritation | Category 1 |
| Corrosive to metals               | Category 1 |

#### Label Elements

#### Danger

#### Hazard statements

Causes skin irritation  
Causes serious eye damage  
May be corrosive to metals



**Appearance** clear /COLORLESS

**Physical state** Liquid

**Odor** Odorless

**Precautionary Statements - Prevention**

Wash face, hands and any exposed skin thoroughly after handling  
Wear protective gloves/protective clothing/eye protection/face protection  
Keep only in original container

**Precautionary Statements - Response****Eyes**

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 or doctor/physician

**Skin**

IF ON SKIN: Wash with plenty of soap and water  
If skin irritation occurs: Get medical advice/attention  
Take off contaminated clothing and wash before reuse

**Spill**

Absorb spillage to prevent material damage

**Hazards not otherwise classified (HNOC)****Other Information**

No information available

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Chemical name     | CAS No.   | Weight-% |
|-------------------|-----------|----------|
| Nitric acid       | 7697-37-2 | 3.5      |
| Hydrogen fluoride | 7664-39-3 | 0.5      |

**4. FIRST AID MEASURES****Description of first aid measures****General Advice**

Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

**Eye Contact**

Immediate medical attention is required. Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area.

**Skin Contact**

Immediate medical attention is required. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

**Inhalation**

Call a physician or poison control center immediately. Remove to fresh air. If breathing is difficult, give oxygen. If breathing is irregular or stopped, administer artificial respiration. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

**Ingestion**

Immediate medical attention is required. Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person.

**Self-protection of the first aider**

Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

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

**Most Important Symptoms and Effects** Burn. Difficulty in breathing.

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

**Notes to Physician** Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure

## 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable Extinguishing Media** Decomposition by contact with water may generate vapors which can be ignited by heat or open flame.

**Special Exposure Hazards Arising from the Substance/Mixture**

The product causes burns of eyes, skin and mucous membranes Thermal decomposition can lead to release of irritating gases and vapors

**Explosion Data**

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**Personal Precautions** Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Use personal protective equipment as required. Do not get in eyes, on skin, or on clothing.

**Environmental precautions**

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system. Prevent product from entering drains. See Section 12 for additional Ecological Information.

**Methods and material for containment and cleaning up**

**Methods for Cleaning up** Dam up. Neutralise with lime milk; soda. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

## 7. HANDLING AND STORAGE

**Precautions for safe handling**

**Handling** Wear personal protective equipment. Ensure adequate ventilation In case of insufficient ventilation, wear suitable respiratory equipment Do not get in eyes, on skin, or on clothing Do not breathe vapors or spray mist.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions** Keep containers tightly closed in a dry, cool and well-ventilated place.

**Incompatible Products** None known based on information supplied.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

#### Exposure Guidelines

| Chemical name                  | ACGIH TLV                                                                 | OSHA PEL                                                                                                                                                              | NIOSH IDLH                                                                                                                                |
|--------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Nitric acid<br>7697-37-2       | TWA: 2 ppm<br>STEL: 4 ppm                                                 | TWA: 2 ppm<br>TWA: 5 mg/m <sup>3</sup><br>(vacated) TWA: 2 ppm<br>(vacated) TWA: 5 mg/m <sup>3</sup><br>(vacated) STEL: 4 ppm<br>(vacated) STEL: 10 mg/m <sup>3</sup> | IDLH: 25 ppm<br>TWA: 2 ppm<br>TWA: 5 mg/m <sup>3</sup><br>STEL: 4 ppm<br>STEL: 10 mg/m <sup>3</sup>                                       |
| Hydrogen fluoride<br>7664-39-3 | TWA: 0.5 ppm F<br>TWA: 2.5 mg/m <sup>3</sup> F<br>Sk*<br>Ceiling: 2 ppm F | TWA: 3 ppm<br>TWA: 2.5 mg/m <sup>3</sup><br>(vacated) TWA: 3 ppm<br>(vacated) TWA: 2.5 mg/m <sup>3</sup><br>(vacated) STEL: 6 ppm                                     | IDLH: 30 ppm<br>IDLH: 250 mg/m <sup>3</sup><br>Ceiling: 6 ppm<br>Ceiling: 5 mg/m <sup>3</sup><br>TWA: 3 ppm<br>TWA: 2.5 mg/m <sup>3</sup> |

### Appropriate engineering controls

**Engineering Measures** Ensure adequate ventilation, especially in confined areas.

### Individual protection measures, such as personal protective equipment

**Eye Protection** Tightly fitting safety goggles Face-shield  
**Skin and Body Protection** Impervious clothing Boots Chemical resistant apron  
**Hand Protection** Impervious gloves  
**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn  
**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|                                                |                   |
|------------------------------------------------|-------------------|
| <b>Physical state</b>                          | Liquid            |
| <b>Appearance</b>                              | clear /COLORLESS  |
| <b>Odor</b>                                    | Odorless          |
| <b>pH - VALUE 1</b>                            | No data available |
| <b>Melting point / melting range</b>           | No data available |
| <b>Initial boiling point and boiling range</b> | 100 °C / 212 °F   |
| <b>Evaporation rate</b>                        | No data available |
| <b>Flammability (solid, gas)</b>               | No data available |
| <b>Vapor pressure @20 °C (kPa)</b>             | No data available |
| <b>Relative vapor density</b>                  | No data available |
| <b>Relative Density</b>                        | No data available |
| <b>Specific gravity - VALUE 1</b>              | No data available |
| <b>Water solubility</b>                        | Miscible          |
| <b>Partition coefficient: n-octanol/water</b>  | No data available |
| <b>Autoignition temperature</b>                | No data available |
| <b>Decomposition temperature</b>               | No data available |

Dynamic viscosity - VALUE 1

No data available

Explosive Properties

No information available

Oxidizing Properties

No information available

VOC content

No information available

## 10. STABILITY AND REACTIVITY

### Reactivity

No data available

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

None under normal processing.

#### **Hazardous Polymerization**

None under normal processing.

### Conditions to Avoid

None known.

### Incompatible materials

Bases Cyanides

### Hazardous decomposition products

Nitrogen oxides (NOx). Hydrogen fluoride.

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

#### **Product Information**

The product causes burns of eyes, skin and mucous membranes

#### **Inhalation**

Causes burns. Corrosive to respiratory system. Inhaled corrosive substances can lead to a toxic edema of the lungs. Contact with moist mucous membranes of the respiratory system can cause caustic condition resulting in burns. Aspiration may cause pulmonary edema and pneumonitis.

#### **Eye Contact**

Causes burns.

#### **Skin Contact**

Causes burns.

#### **Ingestion**

Can burn mouth, throat, and stomach.

#### **Component Information**

| Chemical name                 | Oral LD50 | Dermal LD50 | Inhalation LC50       |
|-------------------------------|-----------|-------------|-----------------------|
| Nitric acid - 7697-37-2       | -         | -           | = 2500 ppm (Rat) 1 h  |
| Hydrogen fluoride - 7664-39-3 | -         | -           | = 0.79 mg/L (Rat) 1 h |

### Symptoms related to the physical, chemical and toxicological characteristics

#### **Symptoms**

No information available.

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

#### **Sensitization**

No information available.

#### **Mutagenic Effects**

No information available.

**Carcinogenic effects**

| Chemical name            | ACGIH | IARC                | NTP | OSHA |
|--------------------------|-------|---------------------|-----|------|
| Nitric acid<br>7697-37-2 |       | Group 1<br>Group 2A |     | X    |

|                                 |                                 |
|---------------------------------|---------------------------------|
| <b>Reproductive Toxicity</b>    | No information available.       |
| <b>STOT - single exposure</b>   | No information available.       |
| <b>STOT - repeated exposure</b> | No information available.       |
| <b>Target organ effects</b>     | Skin, Eyes, Respiratory system. |
| <b>Aspiration hazard</b>        | No information available.       |

**Numerical measures of toxicity - Product Information**

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (inhalation-dust/mist) 14.3 mg/L

ATEmix (inhalation-vapor) 92 mg/L

**12. ECOLOGICAL INFORMATION****Ecotoxicity****Ecotoxicity effects**

| Chemical name                  | Algae/aquatic plants | Fish | Toxicity to microorganisms | Crustacea                                |
|--------------------------------|----------------------|------|----------------------------|------------------------------------------|
| Hydrogen fluoride<br>7664-39-3 |                      |      |                            | EC50: =270mg/L (48h,<br>Daphnia species) |

**Persistence and Degradability**

No information available.

**Bioaccumulation**

No information available.

| Chemical name                  | Partition coefficient |
|--------------------------------|-----------------------|
| Nitric acid<br>7697-37-2       | -2.3                  |
| Hydrogen fluoride<br>7664-39-3 | -1.4                  |

**13. DISPOSAL CONSIDERATIONS****Waste treatment methods**

**Waste from Residues/Unused Products** Dispose of in accordance with federal, state and local regulations

**Contaminated Packaging** Do not reuse empty containers.

| Chemical name                  | California Hazardous Waste Status |
|--------------------------------|-----------------------------------|
| Nitric acid<br>7697-37-2       | Toxic<br>Corrosive<br>Ignitable   |
| Hydrogen fluoride<br>7664-39-3 | Toxic<br>Corrosive<br>Reactive    |

**14. TRANSPORT INFORMATION****IMDG**

|                                  |                                            |
|----------------------------------|--------------------------------------------|
| 14.1. UN-No                      | UN3264                                     |
| 14.2. Proper shipping name       | Corrosive liquid, acidic, inorganic, n.o.s |
| 14.3. Transport hazard class(es) | 8                                          |
| 14.4. Packing Group              | III                                        |
| Description                      | Not applicable                             |
| 14.5. Marine Pollutant           | None                                       |
| 14.6. Special Provisions         | None                                       |

No information available Transport No information available  
in bulk according  
to Annex II of MARPOL 73/78 and  
the IBC Code

**RID**

|                                  |                                            |
|----------------------------------|--------------------------------------------|
| 14.1. UN-No                      | UN3264                                     |
| 14.2. Proper shipping name       | Corrosive liquid, acidic, inorganic, n.o.s |
| 14.3. Transport hazard class(es) | 8                                          |
| 14.4. Packing Group              | III                                        |
| Description                      | Not applicable                             |
| 14.5. Environmental hazard       | None                                       |
| 14.6. Special Provisions         | None                                       |

**ADR**

|                                  |                                            |
|----------------------------------|--------------------------------------------|
| 14.1. UN-No                      | UN3264                                     |
| 14.2. Proper shipping name       | Corrosive liquid, acidic, inorganic, n.o.s |
| 14.3. Transport hazard class(es) | 8                                          |
| 14.4. Packing Group              | III                                        |
| Description                      | Not applicable                             |
| 14.5. Environmental hazard       | None                                       |
| 14.6. Special Provisions         | None                                       |

**ICAO**

|                            |                                            |
|----------------------------|--------------------------------------------|
| 14.1. UN-No                | UN3264                                     |
| 14.2. Proper Shipping Name | Corrosive liquid, acidic, inorganic, n.o.s |
| 14.3. Hazard Class         | 8                                          |
| 14.4. Packing Group        | III                                        |
| Description                | Not applicable                             |
| 14.5. Environmental hazard | None                                       |
| 14.6. Special Provisions   | None                                       |

**IATA-DGR**

|                                  |                                            |
|----------------------------------|--------------------------------------------|
| 14.1. UN-No                      | UN3264                                     |
| 14.2. Proper shipping name       | Corrosive liquid, acidic, inorganic, n.o.s |
| 14.3. Transport hazard class(es) | 8                                          |
| 14.4. Packing Group              | III                                        |
| Description                      | Not applicable                             |
| 14.5. Environmental hazard       | None                                       |
| 14.6. Special Provisions         | None                                       |

**15. REGULATORY INFORMATION****International Inventories**

|               |          |
|---------------|----------|
| TSCA          | Complies |
| DSL/NDL       | Complies |
| EINECS/ELINCS | Complies |
| ENCS          | Complies |
| IECSC         | Complies |
| KECL          | Complies |
| PICCS         | Complies |
| AIIC          | Complies |

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TSCA - United States Toxic Substances Control Act Section 8(b) Inventory  
 DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List  
 EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances  
 ENCS - Japan Existing and New Chemical Substances  
 IECSC - China Inventory of Existing Chemical Substances  
 KECL - Korean Existing and Evaluated Chemical Substances  
 PICCS - Philippines Inventory of Chemicals and Chemical Substances  
 AICS - Australian Inventory of Chemical Substances

### U.S. Federal Regulations

#### **SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

| Chemical name                 | CAS No.   | Weight-% | SARA 313 - Threshold Values % |
|-------------------------------|-----------|----------|-------------------------------|
| Nitric acid - 7697-37-2       | 7697-37-2 | 3.5      | 1.0                           |
| Hydrogen fluoride - 7664-39-3 | 7664-39-3 | 0.5      | 1.0                           |

#### **SARA 311/312 Hazard Categories**

|                                   |                |
|-----------------------------------|----------------|
| Acute health hazard               | No             |
| Chronic Health Hazard             | Not classified |
| Fire hazard                       | No             |
| Sudden Release of Pressure Hazard | No             |
| Reactive Hazard                   | No             |

#### **Clean Water Act**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

| Chemical name                  | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|--------------------------------|-----------------------------|------------------------|---------------------------|----------------------------|
| Nitric acid<br>7697-37-2       | 1000 lb                     |                        |                           | X                          |
| Hydrogen fluoride<br>7664-39-3 | 100 lb                      |                        |                           | X                          |

#### **CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

| Chemical name                  | Hazardous Substances RQs | Extremely Hazardous Substances RQs | RQ                                        |
|--------------------------------|--------------------------|------------------------------------|-------------------------------------------|
| Nitric acid<br>7697-37-2       | 1000 lb                  | 1000 lb                            | RQ 1000 lb final RQ<br>RQ 454 kg final RQ |
| Hydrogen fluoride<br>7664-39-3 | 100 lb                   | 100 lb                             | RQ 100 lb final RQ<br>RQ 45.4 kg final RQ |

### U.S. State Regulations

#### **California Proposition 65**

This product does not contain any Proposition 65 chemicals

#### **U.S. State Right-to-Know Regulations**

| Chemical name                  | New Jersey | Massachusetts | Pennsylvania |
|--------------------------------|------------|---------------|--------------|
| Nitric acid<br>7697-37-2       | X          | X             | X            |
| Hydrogen fluoride<br>7664-39-3 | X          | X             | X            |

#### **U.S. EPA Label Information**

**16. OTHER INFORMATION**

**Revision Date** 10-Nov-2025

**Revision Note**

No information available

**Disclaimer**

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

**End of SDS**