

SAFETY DATA SHEET

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

1.1. Product identifier

Product Name CMS-3

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

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Laboratory chemicals

Uses advised against No information available

1.3. 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

1.4. Emergency telephone number

Chemtrec 1-800-424-9300 (North America)

Chemtrec +1 703-741-5970 (International)

Europe	See above
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

GHS

Skin corrosion/irritation	Category 2 - (H315)
Serious eye damage/eye irritation	Category 2 - (H319)
Corrosive to metals	Category 1 - (H290)

2.2. Label elements

Product identifier



Signal word

Warning

Hazard statements

H290 - May be corrosive to metals

H315 - Causes skin irritation

H318 - Causes serious eye damage

EUH071 - Corrosive to the respiratory tract

Precautionary Statements - EU (§28, 1272/2008)

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

P310 - Immediately call a POISON CENTER or doctor/physician

P264 - Wash face, hands and any exposed skin thoroughly after handling

2.3. Other hazards

No information available

SECTION 3: Composition/information on ingredients**3.1 Substances**

Chemical name	EC No. (Index No.)	CAS No.	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH registration number
Nitric acid	231-714-2 ()	7697-37-2	3.5	(EUH071) Skin Corr. 1A (H314) Ox. Liq. 3 (H272) Acute Tox. 3 (H331)	No data available
Hydrogen fluoride	231-634-8 ()	7664-39-3	0.5	Acute Tox. 2 (H300) Acute Tox. 1 (H310) Skin Corr. 1A (H314) Acute Tox. 2 (H330)	No data available

Full text of H- and EUH-phrases: see section 16**SECTION 4: First aid measures****4.1. Description of first aid measures****General Advice**

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

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.

Skin Contact

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

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.

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.

4.2. Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects Burn. Difficulty in breathing.

4.3. 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

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

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

Unsuitable Extinguishing Media

No information available

5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective suit. Use personal protection equipment.

SECTION 6: Accidental release measures

6.1. 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.

Advice for emergency responders

Ensure adequate ventilation.

6.2. 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.

6.3. Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up Take up mechanically, placing in appropriate containers for disposal.

6.4. Reference to other sections

See Section 12: ECOLOGICAL INFORMATION.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Ensure adequate ventilation.

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.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep container tightly closed in a dry and well-ventilated place.

7.3. Specific end use(s)

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	European Union	United Kingdom	France	Spain	Germany DFG	
Nitric acid 7697-37-2	STEL: 1 ppm STEL: 2.6 mg/m³	STEL: 1 ppm STEL: 2.6 mg/m³	STEL: 1 ppm STEL: 2.6 mg/m³	STEL: 1 ppm STEL: 2.6 mg/m³		
Hydrogen fluoride 7664-39-3	TWA: 1.8 ppm TWA: 1.5 mg/m³ STEL: 3 ppm STEL: 2.5 mg/m³	TWA: 1.8 ppm TWA: 1.5 mg/m³ STEL: 3 ppm STEL: 2.5 mg/m³	TWA: 1.8 ppm TWA: 1.5 mg/m³ STEL: 3 ppm STEL: 2.5 mg/m³	TWA: 1.8 ppm TWA: 1.5 mg/m³ STEL: 3 ppm STEL: 2.5 mg/m³	TWA: 1 ppm TWA: 0.83 mg/m³ TWA: 1 mg/m³ Peak: 2 ppm Peak: 1.66 mg/m³ Sk*	
Chemical name	Italy MDLPS	Portugal	Netherlands	Finland	Denmark	
Nitric acid 7697-37-2	STEL: 1 ppm STEL: 2.6 mg/m³	TWA: 2 ppm STEL: 1 ppm STEL: 2.6 mg/m³	STEL: 1.3 mg/m³	TWA: 0.5 ppm TWA: 1.3 mg/m³ STEL: 1 ppm STEL: 2.6 mg/m³	STEL: 1 ppm STEL: 2.6 mg/m³	
Hydrogen fluoride 7664-39-3	TWA: 1.8 ppm TWA: 1.5 mg/m³ STEL: 3 ppm STEL: 2.5 mg/m³	TWA: 1.8 ppm TWA: 1.5 mg/m³ TWA: 2.5 mg/m³ STEL: 3 ppm STEL: 2.5 mg/m³ Sk* Ceiling: 2 ppm	STEL: 1 mg/m³	TWA: 1.8 ppm TWA: 1.5 mg/m³ STEL: 3 ppm STEL: 2.5 mg/m³ Sk*	TWA: 1.8 ppm TWA: 1.5 mg/m³ TWA: 2.5 mg/m³	
Chemical name	Sweden	Austria	Switzerland	Poland	Norway	Ireland
Nitric acid 7697-37-2	LLV: 0.5 ppm LLV: 1.3 mg/m³ Binding STL:V: 1 ppm Binding STL:V: 2.6 mg/m³	STEL 1 ppm STEL 2.6 mg/m³	TWA: 2 ppm TWA: 5 mg/m³ STEL: 2 ppm STEL: 5 mg/m³	TWA: 1.4 mg/m³ STEL: 2.6 mg/m³	TWA: 2 ppm TWA: 5 mg/m³ STEL: 4 ppm STEL: 10 mg/m³	STEL: 1 ppm STEL: 2.6 mg/m³
Hydrogen fluoride 7664-39-3	LLV: 1.8 ppm LLV: 1.5 mg/m³ Binding STL:V: 2 ppm Binding STL:V: 1.7 mg/m³	TWA: 1.8 ppm TWA: 1.5 mg/m³ STEL 3 ppm STEL 2.5 mg/m³ Sk*	TWA: 1 ppm TWA: 0.83 mg/m³ STEL: 2 ppm STEL: 1.66 mg/m³	TWA: 0.5 mg/m³ TWA: 2 mg/m³ STEL: 2 mg/m³	TWA: 0.5 mg/m³ STEL: 1.5 mg/m³ STEL: 1.8 ppm Sk*	TWA: 1.5 mg/m³ TWA: 1.8 ppm TWA: 2.5 mg/m³ STEL: 2.5 mg/m³ STEL: 3 ppm STEL: 7.5 mg/m³ Sk*

Chemical name	European Union	United Kingdom	France	Spain	Germany TRGS
Hydrogen fluoride 7664-39-3			3 mg/g creatinine - urine (Fluorides) - beginning of shift 10 mg/g creatinine - urine (Fluorides) - end of shift	2 mg/L (urine - Fluorides pre-shift) 3 mg/L (urine - Fluorides end of shift)	4.0 mg/g Creatinine (urine - Fluoride end of shift)
Chemical name	Austria	Switzerland	Poland	Norway	Ireland
Hydrogen fluoride 7664-39-3		4 mg/L (urine - Fluoride end of shift)			

Derived No Effect Level (DNEL) No information available

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/Face Protection

Wear safety glasses with side shields (or goggles).

Hand Protection

Impervious gloves.

Skin and Body Protection

Impervious clothing. Boots. Chemical resistant apron.

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.

Environmental Exposure Controls Prevent product from entering drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

Liquid

Appearance

clear /COLORLESS

Odor

Odorless

pH - VALUE 1

No data available

Melting point / melting range

No data available

Initial boiling point and boiling range

100 °C / 212 °F

Evaporation rate

No data available

Flammability (solid, gas)

No data available

Vapor pressure @20 °C (kPa)

No data available

Relative vapor density

No data available

Relative Density

No data available

Specific gravity - VALUE 1

No data available

Water solubility

Miscible

Partition coefficient: n-octanol/water

No data available

Autoignition temperature

No data available

Decomposition temperature

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

SECTION 10: Stability and reactivity

10.1. Reactivity

No data available.

10.2. Chemical stability

Stable under normal conditions.

Explosion Data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

10.3. Possibility of hazardous reactions**Hazardous Polymerization**

None under normal processing.

Hazardous Reactions

None under normal processing.

10.4. Conditions to avoid

None known.

10.5. Incompatible materials

Bases Cyanides

10.6. Hazardous decomposition products

Nitrogen oxides (NO_x). Hydrogen fluoride.

SECTION 11: Toxicological information**11.1. Information on toxicological effects****Acute Toxicity****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.

The following ATE values have been calculated for the mixture

ATEmix (inhalation-dust/mist) 14.30 mg/l

ATEmix (inhalation-vapor) 75.70 mg/l

Unknown acute toxicity

3.50001 % of the mixture consists of ingredient(s) of unknown acute toxicity.

3.50001 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.

3.50001 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity.

3.50001 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas).

1E-05 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).

1E-05 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist).

Component Information**Skin corrosion/irritation**

No information available.

Serious eye damage/eye irritation

No information available.

Sensitization

No information available.

Mutagenic Effects

No information available.

Carcinogenic effects**Reproductive Toxicity**

No information available.

STOT - single exposure

No information available.

STOT - repeated exposure

No information available.

Target organ effects

Skin, Eyes, Respiratory system.

Aspiration hazard

No information available.

SECTION 12: Ecological information

12.1. Toxicity

Contains 0 % of components with unknown hazards to the aquatic environment

Chemical name	Algae/aquatic plants	Fish	Crustacea
Hydrogen fluoride			EC50: =270mg/L (48h, Daphnia species)

12.2. Persistence and degradability

No information available.

12.3. Bioaccumulative potential

No information available.

Chemical name	Partition coefficient
Nitric acid	-2.3
Hydrogen fluoride	-1.4

12.4. Mobility in soil**Mobility in soil**

No information available.

12.5. Results of PBT and vPvB assessment

No information available.

Chemical name	PBT and vPvB assessment
Nitric acid	Not PBT/vPvB
Hydrogen fluoride	Not PBT/vPvB

12.6. Other adverse effects

SECTION 13: Disposal considerations

13.1. 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.

Other Information

According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 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

SECTION 15: Regulatory information

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

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

International Inventories

All of the components in the product are on the following Inventory lists: U.S.A. (TSCA), Europe (EINECS/ELINCS/NLP), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), China (IECSC), Australia (AICS), Korea (ECL).

TSCA	Complies
EINECS/ELINCS	Complies
DSL/NDSL	Complies

PICCS	Complies
ENCS	Complies
IECSC	Complies
AIIC	Complies
KECL	Complies

Legend

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
PICCS - Philippines Inventory of Chemicals and Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
AICS - Australian Inventory of Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances

15.2. Chemical safety assessment

No information available

SECTION 16: Other information**Full text of R-phrases referred to under sections 2 and 3**

No information available

Full text of any hazard and/or precautionary statements referred to under Sections 2-15

H272 - May intensify fire; oxidizer
H300 - Fatal if swallowed
H310 - Fatal in contact with skin
H314 - Causes severe skin burns and eye damage
H330 - Fatal if inhaled
H331 - Toxic if inhaled

Revision Date 10-Nov-2025

Reason for Revision Not applicable.

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

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 Safety Data Sheet