

SAFETY DATA SHEET

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

1.1. Product identifier

Product Name CCS-5

Synonyms 100 µg/mL: B, Ge, Hf, Mo, Nb, P, Re, S, Sb, Si, Sn, Ta, Ti, W, Zr
Contains Nitric acid

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

Acute toxicity - Oral	Category 4 - (H302)
Acute toxicity - Dermal	Category 3 - (H311)
Skin corrosion/irritation	Category 2 - (H315)
Serious eye damage/eye irritation	Category 1 - (H318)
Corrosive to metals	Category 1 - (H290)

2.2. Label elements

Product identifier
Contains Nitric acid

**Signal word**

Danger

Hazard statements

H290 - May be corrosive to metals

H302 - Harmful if swallowed

H311 - Toxic in contact with skin

H315 - Causes skin irritation

H318 - Causes serious eye damage

EUH071 - Corrosive to the respiratory tract

Precautionary statements

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

P280 - Wear protective gloves, protective clothing, eye protection and face protection

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

P361 + P364 - Take off immediately all contaminated clothing and wash it before reuse

P501 - Dispose of contents and container in accordance with local, regional, national, and international regulations as applicable

2.3. Other hazards

Other hazards

Toxic to aquatic life

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 (007-004-00-1) (007-030-00-3) (078-012-00-0)	7697-37-2	4.9	(EUH071) Skin Corr. 1A (H314) Ox. Liq. 3 (H272) Acute Tox. 3 (H331)	No data available
Hydrogen fluoride	231-634-8 (009-002-00-6) (009-003-00-1)	7664-39-3	0.6	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.
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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 In case of contact with Hydrogen fluoride, anhydrous (UN1052), flush skin and eyes with water for 5 minutes; then, for skin exposures rub on a calcium/jelly combination; for eyes flush with a water/calcium solution for 15 minutes
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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.

Refer to protective measures listed in Sections 7 and 8.

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 (Directives 98/24/EC and 2004/37/EC)	United Kingdom	France (INRS ED 6443)	Spain (Occupational exposure limits for chemical agents in Spain, 2025)	Germany (DFG)
Nitric acid 7697-37-2	STEL: 1 ppm; STEL: 2.6 mg/m ³ ;	STEL: 1 ppm; STEL: 2.6 mg/m ³ ;	STEL-VLCT (indicatif): 1 ppm; STEL-VLCT (indicatif): 2.6 mg/m ³ ;	STEL (VLA-EC): 1 ppm; STEL (VLA-EC): 2.6 mg/m ³ ;	
Hydrogen fluoride 7664-39-3	TWA: 1.8 ppm; TWA: 1.5 mg/m ³ ; STEL: 3 ppm; STEL: 2.5 mg/m ³ ;	TWA: 1.8 ppm; TWA: 1.5 mg/m ³ ; STEL: 3 ppm; STEL: 2.5 mg/m ³ ;	TWA-VME (restrictif): 1.8 ppm; TWA-VME (restrictif): 1.5 mg/m ³ ; STEL-VLCT (restrictif): 3 ppm;	TWA-(VLA-ED): 1.8 ppm; TWA-(VLA-ED): 1.5 mg/m ³ ; STEL (VLA-EC): 3 ppm;	TWA-MAK: 1 ppm; I(2); TWA-MAK: 0.83 mg/m ³ ; I(2);

			STEL-VLCT (restrictif): 2.5 mg/m³;	STEL (VLA-EC): 2.5 mg/m³;		
Chemical name	Italy (Legislative Decree no. 81)	Portugal (NP 1796:2014)	Netherlands (Working Conditions Regulations)	Finland (HTP-ARVOT 2025)	Denmark (BEK no. 1619 of 19/12/2024)	
Nitric acid 7697-37-2	STEL: 1 ppm; STEL: 2.6 mg/m³;	TWA (VLE-MP): 2 ppm; STEL (VLE-CD): 1 ppm; STEL (VLE-CD): 2.6 mg/m³;	STEL: 0.5 ppm; 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 (VLE-MP): 1.8 ppm; TWA (VLE-MP): 1.5 mg/m³; TWA (VLE-MP): 2.5 mg/m³; STEL (VLE-CD): 3 ppm; STEL (VLE-CD): 2.5 mg/m³; Ceiling (VLE-CM): 2 ppm; pSk	STEL: 1.27 ppm; STEL: 1 mg/m³;	TWA: 1.8 ppm; TWA: 1.5 mg/m³; STEL: 3 ppm; STEL: 2.5 mg/m³; pSk	TWA: 1.8 ppm; TWA: 1.5 mg/m³; TWA: 2.5 mg/m³; STEL: 2.5 mg/m³; STEL: 3 ppm; STEL: 5 mg/m³;	
Chemical name	Sweden	Austria (GKV BGBl. II Nr. 330/2024)	Switzerland (MAK Values)	Poland (Legislative Journal 2018 item 1286)	Norway (FOR-2011-12-06- 1358)	Ireland (CoP 2024)
Nitric acid 7697-37-2	LLV: 0.5 ppm LLV: 1.3 mg/m³ Binding STLV: 1 ppm Binding STLV: 2.6 mg/m³	TWA-TMW: 1 ppm; TWA-TMW: 2.6 mg/m³; STEL-KZGW: 1 ppm (); STEL-KZGW: 2.6 mg/m³ (); Ceiling: 1 ppm; Ceiling: 2.6 mg/m³;	TWA-MAK: 2 ppm; TWA-MAK: 5 mg/m³; STEL-KZGW: 2 ppm; STEL-KZGW: 5 mg/m³;	TWA-NDS: 1.4 mg/m³; STEL-NDSch: 2.6 mg/m³;	TWA: 2 ppm; TWA: 5 mg/m³; STEL: 4 ppm (value calculated); STEL: 10 mg/m³ (value calculated);	STEL: 1 ppm; STEL: 2.6 mg/m³;
Hydrogen fluoride 7664-39-3	LLV: 1.8 ppm LLV: 1.5 mg/m³ Binding STLV: 2 ppm Binding STLV: 1.7 mg/m³	TWA-TMW: 1.8 ppm; TWA-TMW: 1.5 mg/m³; STEL-KZGW: 3 ppm (4 X 15 min); STEL-KZGW: 2.5 mg/m³ (4 X 15 min); Sk	TWA-MAK: 1 ppm; TWA-MAK: 0.83 mg/m³; STEL-KZGW: 2 ppm; STEL-KZGW: 1.66 mg/m³;	TWA-NDS: 0.5 mg/m³; TWA-NDS: 2 mg/m³; STEL-NDSch: 2 mg/m³;	TWA: 0.6 ppm; TWA: 0.5 mg/m³; STEL: 1.5 mg/m³ (value from the regulation); STEL: 1.8 ppm (value from the regulation); 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 (calculated); pSk

Chemical name	European Union (Directive 98/24/EC)	United Kingdom	France (Decree 2009-157)	Spain (Occupational exposure limits for chemical agents in Spain, 2025)	Germany (TRGS 903)
Hydrogen fluoride 7664-39-3			- urine (Fluorides) - beginning of shift - 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 exposure or shift)
Chemical name	Austria (VGÜ 2008)	Switzerland (BAT Values)	Poland	Norway	Ireland (CoP 2024)
Hydrogen fluoride 7664-39-3		4 mg/L (urine - Fluoride end of shift) 211 µmol/L (urine - Fluoride end of shift)			

Derived No Effect Level (DNEL) No information available

**Predicted No Effect Concentration
(PNEC)**

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/Range

No data available

Initial boiling point and boiling range

100 °C / 212 °F

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

Solubility(ies)

No data available

Partition coefficient

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

Heating can release hazardous gases.

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

<u>Product Information</u>	Toxic by inhalation. Toxic in contact with skin. Toxic if swallowed. The product causes burns of eyes, skin and mucous membranes.
Inhalation	Toxic by inhalation. Causes burns. Inhaled corrosive substances can lead to a toxic edema of the lungs. Corrosive to respiratory system.
Eye Contact	Causes burns.
Skin Contact	Toxic in contact with skin. May be absorbed through the skin in harmful amounts. Causes burns. Symptoms may be delayed.
Ingestion	Toxic if swallowed. Can burn mouth, throat, and stomach.

The following ATE values have been calculated for the mixture

ATEmix (oral)	835.00 mg/kg
ATEmix (dermal)	833.30 mg/kg
ATEmix (inhalation-gas)	99,999.00
ATEmix (inhalation-dust/mist)	8.35 mg/l
ATEmix (inhalation-vapor)	54.10 mg/l

Unknown acute toxicity

0 % of the mixture consists of ingredient(s) of unknown acute toxicity.
 0 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.
 0 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity.
 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas).
 0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).
 0 % 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 -1E-05 % 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

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	UN2922
14.2. Proper shipping name	Corrosive liquid, toxic, n.o.s
14.3. Transport hazard class(es)	8
Subsidiary hazard class	6.1
14.4. Packing group	III

Description	Not applicable
14.5. Marine Pollutant	None
14.6. Special Provisions	None
No information available in bulk according to Annex II of MARPOL 73/78 and the IBC Code	No information available

RID

14.1. UN-No	UN2922
14.2. Proper shipping name	Corrosive liquid, toxic, n.o.s
14.3. Transport hazard class(es)	8 (6.1)
14.4. Packing group	III
Description	Not applicable
14.5. Environmental hazards	None
14.6. Special Provisions	None

ADR

14.1. UN-No	UN2922
14.2. Proper shipping name	Corrosive liquid, toxic, n.o.s
14.3. Transport hazard class(es)	8 (6.1)
14.4. Packing group	III
Description	Not applicable
14.5. Environmental hazards	None
14.6. Special Provisions	None

ICAO

14.1. UN-No	UN2922
14.2. Proper Shipping Name	Corrosive liquid, toxic, n.o.s
14.3. Hazard Class	8
Subsidiary hazard class	6.1
14.4. Packing Group	III
Description	Not applicable
14.5. Environmental hazards	None
14.6. Special Provisions	None

IATA-DGR

14.1. UN-No	UN2922
14.2. Proper shipping name	Corrosive liquid, toxic, n.o.s
14.3. Transport hazard class(es)	8
Subsidiary hazard class	6.1
14.4. Packing group	III
Description	Not applicable
14.5. Environmental hazards	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/NDL), 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

EUH071 - Corrosive to the respiratory tract
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 28-Sep-2026

Reason for Revision Not applicable.

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

Disclaimer

The information provided in this Safety Data Sheet 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 guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered 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 materials or in any process, unless specified in the text.

End of Safety Data Sheet