

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

Product Description: **Refractory Metals, plasma standard solution, Specpure®**  
Cat No. : **44270**  
Molecular Formula Matrix: 5% HCl/tr. HF

### 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 Avocado Research Chemicals Ltd.  
(Part of Thermo Fisher Scientific)  
Shore Road, Heysham  
Lancashire, LA3 2XY,  
United Kingdom  
Office Tel: +44 (0) 1524 850506  
Office Fax: +44 (0) 1524 850608

E-mail address begel.sdsdesk@thermofisher.com

### 1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11  
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

Poison Centre - Emergency information services **Ireland** : National Poisons Information Centre (NPIC) -  
**01 809 2166** (8am-10pm, 7 days a week)  
**Malta** : +356 2395 2000  
**Cyprus** : +357 2240 5611

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

**GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567**

#### Physical hazards

Substances/mixtures corrosive to metal

Category 1 (H290)

#### Health hazards

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Acute Inhalation Toxicity - Vapors  
Skin Corrosion/Irritation  
Serious Eye Damage/Eye Irritation

Category 4 (H332)  
Category 1 B (H314)  
Category 1 (H318)

## **Environmental hazards**

Based on available data, the classification criteria are not met

Full text of Hazard Statements: see section 16

## **2.2. Label elements**



Signal Word

Danger

## **Hazard Statements**

H290 - May be corrosive to metals  
H332 - Harmful if inhaled  
H314 - Causes severe skin burns and eye damage

## **Precautionary Statements**

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting  
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower  
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

## **2.3. Other hazards**

This product does not contain any known or suspected endocrine disruptors

## **SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

### **3.2. Mixtures**

| Component         | CAS No    | EC No             | Weight % | GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567 |
|-------------------|-----------|-------------------|----------|-----------------------------------------------------------------------------------------|
| Water             | 7732-18-5 | 231-791-2         | 94.9     | -                                                                                       |
| Hydrochloric acid | 7647-01-0 | 231-595-7         | 5.0      | Met. Corr. 1 (H290)<br>Skin Corr. 1B (H314)<br>Eye Dam. 1 (H318)<br>STOT SE 3 (H335)    |
| Hydrogen fluoride | 7664-39-3 | EEC No. 231-634-8 | 0.1      | Met. Corr. 1 (H290)<br>Acute Tox. 2 (H300)                                              |

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|  |  |  |  |                                                                                         |
|--|--|--|--|-----------------------------------------------------------------------------------------|
|  |  |  |  | Acute Tox. 1 (H310)<br>Acute Tox. 2 (H330)<br>Skin Corr. 1A (H314)<br>Eye Dam. 1 (H318) |
|--|--|--|--|-----------------------------------------------------------------------------------------|

| Component         | Specific concentration limits (SCL's)                                                                                                  | M-Factor | Component notes |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|
| Hydrochloric acid | Skin Corr. 1B :: C>=25%<br>Skin Irrit. 2 :: 10%<=C<25%<br>Eye Irrit. 2 :: 10%<=C<25%<br>STOT SE 3 :: C>=10%<br>Met. Corr. 1 :: C>=0.1% | -        | -               |
| Hydrogen fluoride | Skin Corr. 1A :: C>=7%<br>Skin Corr. 1B :: 1%<=C<7%<br>Eye Irrit. 2 :: 0.1%<=C<1%                                                      | -        | -               |

## Note

Contains Al, B, Cr, Hf, Mo, Nb, Si, Ta, Ti, V, W, Zr @ 100 µg/ml

Full text of Hazard Statements: see section 16

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

|                                           |                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General Advice</b>                     | Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.                                                                                                                                                                                                                              |
| <b>Eye Contact</b>                        | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.                                                                                                                                                                                              |
| <b>Skin Contact</b>                       | Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Call a physician immediately.                                                                                                                                        |
| <b>Ingestion</b>                          | Do NOT induce vomiting. Clean mouth with water. Never give anything by mouth to an unconscious person. Call a physician immediately.                                                                                                                                                                                           |
| <b>Inhalation</b>                         | If not breathing, give artificial respiration. Remove from exposure, lie down. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician immediately. |
| <b>Self-Protection of the First Aider</b> | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.                                                                                                                                                                               |

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

Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

### 4.3. Indication of any immediate medical attention and special treatment needed

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to Physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

## SECTION 5: FIREFIGHTING MEASURES

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## 5.1. Extinguishing media

### **Suitable Extinguishing Media**

Not combustible. CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam.

### **Extinguishing media which must not be used for safety reasons**

No information available.

## 5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. None reasonably foreseeable.

### **Hazardous Combustion Products**

Hydrogen chloride, Hydrogen fluoride, Metal oxides.

## 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

## **SECTION 6: ACCIDENTAL RELEASE MEASURES**

### 6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

### 6.2. Environmental precautions

Should not be released into the environment. See Section 12 for additional Ecological Information. Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.

### 6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

### 6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

## **SECTION 7: HANDLING AND STORAGE**

### 7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance.

### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

### 7.2. Conditions for safe storage, including any incompatibilities

Corrosives area. Keep containers tightly closed in a dry, cool and well-ventilated place.

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Technical Rules for Hazardous Substances (TRGS) 510  
Storage Class (LGK) (Germany)

Class 8B

## 7.3. Specific end use(s)

Use in laboratories

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

#### Exposure limits

List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020. **IRE** - 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority

| Component         | The United Kingdom                                                                                               | European Union                                                                                                     | Ireland                                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Hydrochloric acid | STEL: 5 ppm 15 min<br>STEL: 8 mg/m <sup>3</sup> 15 min<br>TWA: 1 ppm 8 hr<br>TWA: 2 mg/m <sup>3</sup> 8 hr       | TWA: 5 ppm 8 hr<br>TWA: 8 mg/m <sup>3</sup> 8 hr<br>STEL: 10 ppm 15 min<br>STEL: 15 mg/m <sup>3</sup> 15 min       | TWA: 8 mg/m <sup>3</sup> 8 hr. F<br>TWA: 5 ppm 8 hr.<br>STEL: 10 ppm 15 min<br>STEL: 15 mg/m <sup>3</sup> 15 min             |
| Hydrogen fluoride | STEL: 3 ppm 15 min<br>STEL: 2.5 mg/m <sup>3</sup> 15 min<br>TWA: 1.8 ppm 8 hr<br>TWA: 1.5 mg/m <sup>3</sup> 8 hr | TWA: 1.8 ppm (8h)<br>TWA: 1.5 mg/m <sup>3</sup> (8h)<br>STEL: 3 ppm (15min)<br>STEL: 2.5 mg/m <sup>3</sup> (15min) | TWA: 1.5 mg/m <sup>3</sup> 8 hr.<br>TWA: 1.8 ppm 8 hr. F<br>STEL: 2.5 mg/m <sup>3</sup> 15 min<br>STEL: 3 ppm 15 min<br>Skin |

#### Biological limit values

List source(s): **UK** - Biological Monitoring Guidance Values provided by the UK's Health and Safety Executive (HSE) Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended) and EH40/2005.

#### Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

| Component                              | Acute effects local (Oral) | Acute effects systemic (Oral) | Chronic effects local (Oral) | Chronic effects systemic (Oral) |
|----------------------------------------|----------------------------|-------------------------------|------------------------------|---------------------------------|
| Hydrogen fluoride<br>7664-39-3 ( 0.1 ) |                            | 0.01 mg/kg/ bw/day            |                              | 0.01 mg/kg bw/day               |

| Component                              | Acute effects local (Inhalation) | Acute effects systemic (Inhalation) | Chronic effects local (Inhalation) | Chronic effects systemic (Inhalation) |
|----------------------------------------|----------------------------------|-------------------------------------|------------------------------------|---------------------------------------|
| Hydrochloric acid<br>7647-01-0 ( 5.0 ) | DNEL = 15mg/m <sup>3</sup>       |                                     | DNEL = 8mg/m <sup>3</sup>          |                                       |
| Hydrogen fluoride<br>7664-39-3 ( 0.1 ) | DNEL = 2.5mg/m <sup>3</sup>      | DNEL = 2.5mg/m <sup>3</sup>         | DNEL = 1.5µg/m <sup>3</sup>        | DNEL = 1.5mg/m <sup>3</sup>           |

#### Predicted No Effect Concentration (PNEC)

See values below.

| Component                              | Fresh water    | Fresh water sediment | Water Intermittent | Microorganisms in sewage treatment | Soil (Agriculture)     |
|----------------------------------------|----------------|----------------------|--------------------|------------------------------------|------------------------|
| Hydrogen fluoride<br>7664-39-3 ( 0.1 ) | PNEC = 0.9mg/L |                      |                    | PNEC = 51mg/L                      | PNEC = 11mg/kg soil dw |

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| Component                              | Marine water   | Marine water sediment | Marine water intermittent | Food chain | Air |
|----------------------------------------|----------------|-----------------------|---------------------------|------------|-----|
| Hydrogen fluoride<br>7664-39-3 ( 0.1 ) | PNEC = 0.9mg/L |                       |                           |            |     |

## 8.2. Exposure controls

### Engineering Measures

Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

### Personal protective equipment

#### Eye Protection

Goggles (European standard - EN 166)

#### Hand Protection

Protective gloves

| Glove material | Breakthrough time | Glove thickness | EU standard | Glove comments        |
|----------------|-------------------|-----------------|-------------|-----------------------|
| Natural rubber | See manufacturers | -               | EN 374      | (minimum requirement) |
| Nitrile rubber | recommendations   |                 |             |                       |
| Neoprene       |                   |                 |             |                       |
| PVC            |                   |                 |             |                       |

#### Skin and body protection

Long sleeved clothing.

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

#### Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

#### Large scale/emergency use

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

**Recommended Filter type:** Acid gases filter Particulates filter conforming to EN 143

#### Small scale/Laboratory use

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended half mask:-** Particle filtering: EN149:2001

When RPE is used a face piece Fit Test should be conducted

#### Environmental exposure controls

No information available.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

#### Physical State

Liquid

#### Appearance

#### Odor

No information available

#### Odor Threshold

No data available

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|                                         |                          |                                   |
|-----------------------------------------|--------------------------|-----------------------------------|
| Melting Point/Range                     | No data available        |                                   |
| Softening Point                         | No data available        |                                   |
| Boiling Point/Range                     | No information available |                                   |
| Flammability (liquid)                   | No data available        |                                   |
| Flammability (solid,gas)                | Not applicable           | Liquid                            |
| Explosion Limits                        | No data available        |                                   |
| Flash Point                             | No information available | Method - No information available |
| Autoignition Temperature                | No data available        |                                   |
| Decomposition Temperature               | No data available        |                                   |
| pH                                      | No information available |                                   |
| Viscosity                               | No data available        |                                   |
| Water Solubility                        | Miscible                 |                                   |
| Solubility in other solvents            | No information available |                                   |
| Partition Coefficient (n-octanol/water) |                          |                                   |
| Component                               | log Pow                  |                                   |
| Hydrogen fluoride                       | -1.4                     |                                   |
| Vapor Pressure                          | 23 hPa @ 20 °C           |                                   |
| Density / Specific Gravity              | No data available        |                                   |
| Bulk Density                            | Not applicable           | Liquid                            |
| Vapor Density                           | No data available        | (Air = 1.0)                       |
| Particle characteristics                | (liquid) Not applicable  |                                   |

## 9.2. Other information

Molecular Formula Matrix: 5% HCl/tr. HF

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

None known, based on information available

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

Hazardous Polymerization No information available.  
Hazardous Reactions None under normal processing.

### 10.4. Conditions to avoid

Incompatible products. Excess heat.

### 10.5. Incompatible materials

Strong bases. Oxidizing agent.

### 10.6. Hazardous decomposition products

Hydrogen chloride. Hydrogen fluoride. Metal oxides.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Product Information

(a) acute toxicity;

ALFAA44270

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|            |                   |
|------------|-------------------|
| Oral       | No data available |
| Dermal     | No data available |
| Inhalation | No data available |

## Toxicology data for the components

| Component         | LD50 Oral               | LD50 Dermal             | LC50 Inhalation              |
|-------------------|-------------------------|-------------------------|------------------------------|
| Water             | -                       | -                       | -                            |
| Hydrochloric acid | 238 - 277 mg/kg ( Rat ) | > 5010 mg/kg ( Rabbit ) | 1.68 mg/L ( Rat ) 1 h        |
| Hydrogen fluoride | -                       | -                       | LC50 = 0.79 mg/L ( Rat ) 1 h |

(b) skin corrosion/irritation; No data available

(c) serious eye damage/irritation; No data available

(d) respiratory or skin sensitization;

|             |                   |
|-------------|-------------------|
| Respiratory | No data available |
| Skin        | No data available |

(e) germ cell mutagenicity; No data available

(f) carcinogenicity; No data available

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; No data available

(h) STOT-single exposure; No data available

(i) STOT-repeated exposure; No data available

|               |                           |
|---------------|---------------------------|
| Target Organs | No information available. |
|---------------|---------------------------|

(j) aspiration hazard; No data available

**Symptoms / effects, both acute and delayed** Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

## 11.2. Information on other hazards

|                                        |                                                                                                                                     |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>Endocrine Disrupting Properties</b> | Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors. |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

#### **Ecotoxicity effects**

May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.



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| Component         | Freshwater Fish                                                      | Water Flea                             | Freshwater Algae |
|-------------------|----------------------------------------------------------------------|----------------------------------------|------------------|
| Hydrochloric acid | 282 mg/L LC50 96 h Gambusia affinis<br>mg/L LC50 48 h Leuciscus idus | 56mg/L EC50 72h Daphnia                | -                |
| Hydrogen fluoride | LC50 = 660 mg/L, 48h (Leuciscus idus)                                | EC50 = 270 mg/L, 48h (Daphnia species) |                  |

| Component         | Microtox | M-Factor |
|-------------------|----------|----------|
| Hydrochloric acid | -        |          |

**12.2. Persistence and degradability** Product contains heavy metals. Discharge into the environment must be avoided. Special pre-treatment is necessary based on information available, May persist.  
**Persistence**  
**Degradation in sewage treatment plant** Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

**12.3. Bioaccumulative potential** May have some potential to bioaccumulate

| Component         | log Pow | Bioconcentration factor (BCF) |
|-------------------|---------|-------------------------------|
| Hydrogen fluoride | -1.4    | No data available             |

**12.4. Mobility in soil** The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

**12.5. Results of PBT and vPvB assessment** No data available for assessment.

**12.6. Endocrine disrupting properties**  
**Endocrine Disruptor Information**

**12.7. Other adverse effects**  
**Persistent Organic Pollutant** This product does not contain any known or suspected substance  
**Ozone Depletion Potential** This product does not contain any known or suspected substance

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

**Waste from Residues/Unused Products** Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

**Contaminated Packaging** Dispose of this container to hazardous or special waste collection point.

**European Waste Catalogue (EWC)** According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

**Other Information** Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not flush to sewer. Large amounts will affect pH and harm aquatic organisms.

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## SECTION 14: TRANSPORT INFORMATION

### IMDG/IMO

|                                                                 |                                                                                       |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>14.1. UN number</b>                                          | UN3264                                                                                |
| <b>14.2. UN proper shipping name</b><br>Technical Shipping Name | Corrosive liquid, acidic, inorganic, n.o.s.<br>(HYDROCHLORIC ACID, Hydrofluoric acid) |
| <b>14.3. Transport hazard class(es)</b>                         | 8                                                                                     |
| <b>14.4. Packing group</b>                                      | III                                                                                   |

### ADR

|                                                                 |                                                                                       |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>14.1. UN number</b>                                          | UN3264                                                                                |
| <b>14.2. UN proper shipping name</b><br>Technical Shipping Name | Corrosive liquid, acidic, inorganic, n.o.s.<br>(HYDROCHLORIC ACID, Hydrofluoric acid) |
| <b>14.3. Transport hazard class(es)</b>                         | 8                                                                                     |
| <b>14.4. Packing group</b>                                      | III                                                                                   |

### IATA

|                                                                 |                                                                                       |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>14.1. UN number</b>                                          | UN3264                                                                                |
| <b>14.2. UN proper shipping name</b><br>Technical Shipping Name | Corrosive liquid, acidic, inorganic, n.o.s.<br>(HYDROCHLORIC ACID, Hydrofluoric acid) |
| <b>14.3. Transport hazard class(es)</b>                         | 8                                                                                     |
| <b>14.4. Packing group</b>                                      | III                                                                                   |

|                                                                      |                                  |
|----------------------------------------------------------------------|----------------------------------|
| <b>14.5. Environmental hazards</b>                                   | No hazards identified            |
| <b>14.6. Special precautions for user</b>                            | No special precautions required. |
| <b>14.7. Maritime transport in bulk according to IMO instruments</b> | Not applicable, packaged goods   |

## SECTION 15: REGULATORY INFORMATION

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

#### International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

| Component         | CAS No    | EINECS    | ELINCS | NLP | IECSC | TCSI | KECL     | ENCS | ISHL |
|-------------------|-----------|-----------|--------|-----|-------|------|----------|------|------|
| Water             | 7732-18-5 | 231-791-2 | -      | -   | X     | X    | KE-35400 | X    | -    |
| Hydrochloric acid | 7647-01-0 | 231-595-7 | -      | -   | X     | X    | KE-20189 | X    | X    |
| Hydrogen fluoride | 7664-39-3 | 231-634-8 | -      | -   | X     | X    | KE-20198 | X    | X    |

| Component         | CAS No    | TSCA | TSCA Inventory notification - Active-Inactive | DSL | NDSL | AICS | NZIoC | PICCS |
|-------------------|-----------|------|-----------------------------------------------|-----|------|------|-------|-------|
| Water             | 7732-18-5 | X    | ACTIVE                                        | X   | -    | X    | X     | X     |
| Hydrochloric acid | 7647-01-0 | X    | ACTIVE                                        | X   | -    | X    | X     | X     |
| Hydrogen fluoride | 7664-39-3 | X    | ACTIVE                                        | X   | -    | X    | X     | X     |

Legend: X - Listed '-' - Not Listed

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

### Authorisation/Restrictions according to EU REACH

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| Component         | CAS No    | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|-------------------|-----------|---------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Water             | 7732-18-5 | -                                                                   | -                                                                             | -                                                                                                     |
| Hydrochloric acid | 7647-01-0 | -                                                                   | Use restricted. See entry 75.<br>(see link for restriction details)           | -                                                                                                     |
| Hydrogen fluoride | 7664-39-3 | -                                                                   | Use restricted. See entry 75.<br>(see link for restriction details)           | -                                                                                                     |

## REACH links

<https://echa.europa.eu/substances-restricted-under-reach>

## Seveso III Directive (2012/18/EC)

| Component         | CAS No    | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements |
|-------------------|-----------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Water             | 7732-18-5 | Not applicable                                                                            | Not applicable                                                                           |
| Hydrochloric acid | 7647-01-0 | 25 tonne                                                                                  | 250 tonne                                                                                |
| Hydrogen fluoride | 7664-39-3 | Not applicable                                                                            | Not applicable                                                                           |

## Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Not applicable

## Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

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 .

Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values

## National Regulations

**UK** - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

## WGK Classification

Water endangering class = 1 (self classification)

| Component         | Germany - Water Classification (AwSV) | Germany - TA-Luft Class |
|-------------------|---------------------------------------|-------------------------|
| Hydrochloric acid | WGK1                                  |                         |
| Hydrogen fluoride | WGK2                                  |                         |

| Component         | France - INRS (Tables of occupational diseases)      |
|-------------------|------------------------------------------------------|
| Hydrogen fluoride | Tableaux des maladies professionnelles (TMP) - RG 32 |

| Component | Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR) | Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC) | Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure |
|-----------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|           |                                                                                                         |                                                                                 |                                                                                             |

# SAFETY DATA SHEET

Refractory Metals, plasma standard solution, Specpure®

Revision Date 30-Nov-2024

|                                        |                                         |  |  |
|----------------------------------------|-----------------------------------------|--|--|
|                                        | <b>814.81)</b>                          |  |  |
| Hydrochloric acid<br>7647-01-0 ( 5.0 ) | Prohibited and Restricted<br>Substances |  |  |
| Hydrogen fluoride<br>7664-39-3 ( 0.1 ) | Prohibited and Restricted<br>Substances |  |  |

## 15.2. Chemical safety assessment

Chemical Safety Assessment/Reports (CSA/CSR) are not required for mixtures

## SECTION 16: OTHER INFORMATION

### Full text of H-Statements referred to under sections 2 and 3

H290 - May be corrosive to metals

H332 - Harmful if inhaled

H314 - Causes severe skin burns and eye damage

H318 - Causes serious eye damage

### Legend

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**DNEL** - Derived No Effect Level

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**NOEC** - No Observed Effect Concentration

**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average

**IARC** - International Agency for Research on Cancer  
Predicted No Effect Concentration (PNEC)

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**POW** - Partition coefficient Octanol:Water

**vPvB** - very Persistent, very Bioaccumulative

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

### Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** - (Volatile Organic Compound)

### Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

**Physical hazards** On basis of test data

**Health Hazards** Calculation method

**Environmental hazards** Calculation method

### Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

**Prepared By**

Health, Safety and Environmental Department

**Revision Date**

30-Nov-2024

**Revision Summary**

Not applicable.

# **SAFETY DATA SHEET**

Refractory Metals, plasma standard solution, Specpure®

Revision Date 30-Nov-2024

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**This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.**

## **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**