

**Safety Data Sheet**  
acc. to OSHA HCS

Printing date 08/04/2022

Reviewed on 08/04/2022

**1 Identification**

- **Product identifier**
- **Trade name:** 6020-ICSA SOL A
- **Article number:** ICP-MS-ICS-3-A
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
High-Purity Standards  
7221 Investment Drive, North Charleston, SC 29418 United States  
Telephone: +1-843-767-7900  
Fax: +1-843-767-7906  
highpuritystandards.com  
Email: info@highpuritystandards.com
- **Information department:** Product safety department
- **Emergency telephone number:**  
INFOTRAC  
Emergency telephone numbers 1-800-535-5053  
Other emergency telephone numbers 1-352-323-3500

**2 Hazard(s) identification**

- **Classification of the substance or mixture**



GHS05 Corrosion

Met. Corr. 1 H290 May be corrosive to metals.

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Acute Tox. 4 H312 Harmful in contact with skin.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS05 GHS07

- **Signal word** Danger
- **Hazard-determining components of labeling:**  
nitric acid

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*hydrogen fluoride***· Hazard statements***H290 May be corrosive to metals.**H312 Harmful in contact with skin.**H314 Causes severe skin burns and eye damage.***· Precautionary statements***Keep only in original container.**Do not breathe dusts or mists.**Wash thoroughly after handling.**Wear protective gloves/protective clothing/eye protection/face protection.**If swallowed: Rinse mouth. Do NOT induce vomiting.**If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.**IF INHALED: Remove person to fresh air and keep comfortable for breathing.**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/doctor.**Specific treatment (see on this label).**Take off contaminated clothing and wash it before reuse.**Wash contaminated clothing before reuse.**Absorb spillage to prevent material damage.**Store locked up.**Store in corrosive resistant container with a resistant inner liner.**Dispose of contents/container in accordance with local/regional/national/international regulations.***· Classification system:****· NFPA ratings (scale 0 - 4)***Health = 3**Fire = 0**Reactivity = 0***· HMIS-ratings (scale 0 - 4)***Health = 3**Fire = 0**Reactivity = 0***· Other hazards****· Results of PBT and vPvB assessment****· PBT:** Not applicable.**· vPvB:** Not applicable.**3 Composition/information on ingredients****· Chemical characterization: Mixtures****· Description:** Mixture of the substances listed below with nonhazardous additions.

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**· Dangerous components:**

7697-37-2	nitric acid	2.0%
12015-14-4	[2H4]ammonium chloride	1.8%
7664-39-3	hydrogen fluoride	0.49%

**· Chemical identification of the substance/preparation**

7732-18-5	water, distilled, conductivity or of similar purity	94.206%
471-34-1	calcium carbonate	0.3%
497-19-8	sodium carbonate	0.25%
7439-89-6	iron	0.25%
631-61-8	ammonium acetate	0.2%
75-75-2	methanesulphonic acid	0.1%
7429-90-5	aluminium	0.1%
7439-95-4	magnesium	0.1%
7722-76-1	Ammonium dihydrogenphosphate	0.1%
7757-79-1	potassium nitrate	0.1%
7439-98-7	molybdenum	0.002%
7440-32-6	titanium	0.002%

### 4 First-aid measures

**· Description of first aid measures**
**· General information:**

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

· **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.

· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

· **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.

· **After swallowing:** Drink copious amounts of water and provide fresh air. Immediately call a doctor.

**· Information for doctor:**

· **Most important symptoms and effects, both acute and delayed** No further relevant information available.

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

No further relevant information available.

### 5 Fire-fighting measures

**· Extinguishing media**

· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.

**· Special hazards arising from the substance or mixture**

During heating or in case of fire poisonous gases are produced.

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- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**  
Mount respiratory protective device.  
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Use neutralizing agent.  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.
- **Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

#### · PAC-1:

7697-37-2	nitric acid	0.16 ppm
7664-39-3	hydrogen fluoride	1.0 ppm
471-34-1	calcium carbonate	45 mg/m <sup>3</sup>
497-19-8	sodium carbonate	7.6 mg/m <sup>3</sup>
7439-89-6	iron	3.2 mg/m <sup>3</sup>
631-61-8	ammonium acetate	3.8 mg/m <sup>3</sup>
75-75-2	methanesulphonic acid	0.99 mg/m <sup>3</sup>
7439-95-4	magnesium	18 mg/m <sup>3</sup>
7722-76-1	Ammonium dihydrogenphosphate	17 mg/m <sup>3</sup>
7757-79-1	potassium nitrate	9 mg/m <sup>3</sup>
7439-98-7	molybdenum	30 mg/m <sup>3</sup>
7440-32-6	titanium	30 mg/m <sup>3</sup>

#### · PAC-2:

7697-37-2	nitric acid	24 ppm
7664-39-3	hydrogen fluoride	24 ppm
471-34-1	calcium carbonate	210 mg/m <sup>3</sup>
497-19-8	sodium carbonate	83 mg/m <sup>3</sup>
7439-89-6	iron	35 mg/m <sup>3</sup>
631-61-8	ammonium acetate	42 mg/m <sup>3</sup>
75-75-2	methanesulphonic acid	11 mg/m <sup>3</sup>

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7439-95-4	magnesium	200 mg/m <sup>3</sup>
7722-76-1	Ammonium dihydrogenphosphate	190 mg/m <sup>3</sup>
7757-79-1	potassium nitrate	100 mg/m <sup>3</sup>
7439-98-7	molybdenum	330 mg/m <sup>3</sup>
7440-32-6	titanium	330 mg/m <sup>3</sup>
<b>· PAC-3:</b>		
7697-37-2	nitric acid	92 ppm
7664-39-3	hydrogen fluoride	44 ppm
471-34-1	calcium carbonate	1,300 mg/m <sup>3</sup>
497-19-8	sodium carbonate	500 mg/m <sup>3</sup>
7439-89-6	iron	150 mg/m <sup>3</sup>
631-61-8	ammonium acetate	250 mg/m <sup>3</sup>
75-75-2	methanesulphonic acid	65 mg/m <sup>3</sup>
7439-95-4	magnesium	1,200 mg/m <sup>3</sup>
7722-76-1	Ammonium dihydrogenphosphate	1,100 mg/m <sup>3</sup>
7757-79-1	potassium nitrate	600 mg/m <sup>3</sup>
7439-98-7	molybdenum	2,000 mg/m <sup>3</sup>
7440-32-6	titanium	2,000 mg/m <sup>3</sup>

### 7 Handling and storage

- **Handling:**
- **Precautions for safe handling**  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

### 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

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· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.

At this time, the remaining constituent has no known exposure limits.

**7697-37-2 nitric acid**

PEL	Long-term value: 5 mg/m <sup>3</sup> , 2 ppm
REL	Short-term value: 10 mg/m <sup>3</sup> , 4 ppm Long-term value: 5 mg/m <sup>3</sup> , 2 ppm
TLV	Short-term value: 4 ppm Long-term value: 2 ppm

**7664-39-3 hydrogen fluoride**

PEL	Long-term value: 1* mg/m <sup>3</sup> , 3 ppm as F, *sulfuric acid
REL	Long-term value: 2.5 mg/m <sup>3</sup> , 3 ppm Ceiling limit value: 5* mg/m <sup>3</sup> , 6* ppm *15-min, as F
TLV	Long-term value: 0.5 ppm Ceiling limit value: 2 ppm as F; Skin, BEI

· **Ingredients with biological limit values:**

**7664-39-3 hydrogen fluoride**

BEI	3 mg/g creatinine Medium: urine Time: prior to shift Parameter: Fluorides (background, nonspecific)
	10 mg/g creatinine Medium: urine Time: end of shift Parameter: Fluorides (background, nonspecific)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

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### · Protection of hands:



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

### · Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

### · Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

### · Eye protection:



Tightly sealed goggles

## 9 Physical and chemical properties

### · Information on basic physical and chemical properties

#### · General Information

#### · Appearance:

<b>Form:</b>	Liquid
<b>Color:</b>	According to product specification
<b>Odor:</b>	Characteristic
<b>Odor threshold:</b>	Not determined.

· **pH-value:** Not determined.

#### · Change in condition

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	100 °C (212 °F)

· **Flash point:** Not applicable.

· **Flammability (solid, gaseous):** Not applicable.

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product does not present an explosion hazard.

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· <b>Explosion limits:</b>	
Lower:	Not determined.
Upper:	Not determined.
· <b>Vapor pressure at 20 °C (68 °F):</b>	23 hPa (17.3 mm Hg)
· <b>Density at 20 °C (68 °F):</b>	1.04763 g/cm <sup>3</sup> (8.74247 lbs/gal)
· <b>Bulk density:</b>	~1,006~1,021 kg/m <sup>3</sup>
· <b>Relative density</b>	Not determined.
· <b>Vapor density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.
· <b>Solubility in / Miscibility with Water:</b>	Not miscible or difficult to mix.
· <b>Partition coefficient (n-octanol/water):</b>	Not determined.
· <b>Viscosity:</b>	
Dynamic:	Not determined.
Kinematic:	Not determined.
· <b>Solvent content:</b>	
Water:	94.2 %
VOC content:	0.00 %
	0.0 g/l / 0.00 lb/gal
· <b>Solids content:</b>	1.5 %
· <b>Other information</b>	No further relevant information available.

### 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

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### 11 Toxicological information

· **Information on toxicological effects**

· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

7664-39-3 hydrogen fluoride

Oral LD50 1,276 mg/kg (rat)

· **Primary irritant effect:**

· **on the skin:** Strong caustic effect on skin and mucous membranes.

· **on the eye:**

Strong caustic effect.

Strong irritant with the danger of severe eye injury.

· **Sensitization:** No sensitizing effects known.

· **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

Harmful

Corrosive

Irritant

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

### 12 Ecological information

· **Toxicity**

· **Aquatic toxicity:** No further relevant information available.

· **Persistence and degradability** No further relevant information available.

· **Behavior in environmental systems:**

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Additional ecological information:**

· **General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Must not reach bodies of water or drainage ditch undiluted or unneutralized.

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

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- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

### 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport information

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>· <b>UN-Number</b></li> <li>· <b>DOT, ADR, IMDG, IATA</b></li> </ul>   | <p style="margin-left: 20px;">UN3264</p>   |
| <ul style="list-style-type: none"> <li>· <b>UN proper shipping name</b></li> <li>· <b>DOT</b></li> <li>· <b>ADR</b></li> <li>· <b>IMDG, IATA</b></li> </ul> | <p style="margin-left: 20px;">Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid)<br/>3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)<br/>CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)</p> |
| <ul style="list-style-type: none"> <li>· <b>Transport hazard class(es)</b></li> <li>· <b>DOT</b></li> </ul>   | <div style="margin-left: 20px;">  </div>  |
| <ul style="list-style-type: none"> <li>· <b>Class</b></li> <li>· <b>Label</b></li> </ul>  | <p style="margin-left: 20px;">8 Corrosive substances<br/>8</p>   |
| <ul style="list-style-type: none"> <li>· <b>ADR</b></li> </ul>  | <div style="margin-left: 20px;">  </div>  |
| <ul style="list-style-type: none"> <li>· <b>Class</b></li> <li>· <b>Label</b></li> </ul>  | <p style="margin-left: 20px;">8 (C1) Corrosive substances<br/>8</p>  |

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**· IMDG, IATA**


· **Class** 8 Corrosive substances  
 · **Label** 8

· **Packing group**  
 · **DOT, ADR, IMDG, IATA** III

· **Environmental hazards:** Not applicable.

· **Special precautions for user** Warning: Corrosive substances  
 · **Hazard identification number (Kemler code):** 80  
 · **EMS Number:** F-A,S-B  
 · **Segregation groups** Acids  
 · **Stowage Category** A  
 · **Stowage Code** SW2 Clear of living quarters.

· **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable.

**· Transport/Additional information:**

· **DOT**  
 · **Quantity limitations** On passenger aircraft/rail: 5 L  
 On cargo aircraft only: 60 L

· **ADR**  
 · **Excepted quantities (EQ)** Code: E1  
 Maximum net quantity per inner packaging: 30 ml  
 Maximum net quantity per outer packaging: 1000 ml

· **IMDG**  
 · **Limited quantities (LQ)** 5L  
 · **Excepted quantities (EQ)** Code: E1  
 Maximum net quantity per inner packaging: 30 ml  
 Maximum net quantity per outer packaging: 1000 ml

· **UN "Model Regulation":** UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III

### 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**  
 No further relevant information available.

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· **Sara**

· **Section 355 (extremely hazardous substances):**

7697-37-2	nitric acid
7664-39-3	hydrogen fluoride

· **Section 313 (Specific toxic chemical listings):**

7697-37-2	nitric acid
7664-39-3	hydrogen fluoride
7429-90-5	aluminium
7757-79-1	potassium nitrate

· **TSCA (Toxic Substances Control Act):**

7732-18-5	water, distilled, conductivity or of similar purity	ACTIVE
7697-37-2	nitric acid	ACTIVE
7664-39-3	hydrogen fluoride	ACTIVE
471-34-1	calcium carbonate	ACTIVE
497-19-8	sodium carbonate	ACTIVE
7439-89-6	iron	ACTIVE
631-61-8	ammonium acetate	ACTIVE
75-75-2	methanesulphonic acid	ACTIVE
7429-90-5	aluminium	ACTIVE
7439-95-4	magnesium	ACTIVE
7722-76-1	Ammonium dihydrogenphosphate	ACTIVE
7757-79-1	potassium nitrate	ACTIVE
7439-98-7	molybdenum	ACTIVE
7440-32-6	titanium	ACTIVE

· **Hazardous Air Pollutants**

7664-39-3	hydrogen fluoride
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· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.
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· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.
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· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.
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· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.
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· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

631-61-8	ammonium acetate	D
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· **TLV (Threshold Limit Value)**

7429-90-5	aluminium	A4
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7439-98-7	molybdenum	A3
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· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS05   GHS07

· **Signal word** Danger

· **Hazard-determining components of labeling:**

nitric acid

hydrogen fluoride

· **Hazard statements**

H290 May be corrosive to metals.

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

· **Precautionary statements**

Keep only in original container.

Do not breathe dusts or mists.

Wash thoroughly after handling.

Wear protective gloves/protective clothing/eye protection/face protection.

If swallowed: Rinse mouth. Do NOT induce vomiting.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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/doctor.

Specific treatment (see on this label).

Take off contaminated clothing and wash it before reuse.

Wash contaminated clothing before reuse.

Absorb spillage to prevent material damage.

Store locked up.

Store in corrosive resistant container with a resistant inner liner.

Dispose of contents/container in accordance with local/regional/national/international regulations.

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· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.**16 Other information**

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Department issuing SDS:** Environment protection department.· **Contact:**

High-Purity Standards

Tel: 843-767-7900

Fax: 843-767-7906

· **Date of preparation / last revision** 08/04/2022 / -· **Abbreviations and acronyms:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety &amp; Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

BEI: Biological Exposure Limit

Met. Corr. 1: Corrosive to metals – Category 1

Acute Tox. 4: Acute toxicity – Category 4

Skin Corr. 1A: Skin corrosion/irritation – Category 1A

Eye Dam. 1: Serious eye damage/eye irritation – Category 1