

## SAFETY DATA SHEET

(REACH regulation (EC) n° 1907/2006 - n° 2020/878)

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

#### 1.1. Product identifier

Product name : REACTIF INVAR - KOVAR

Product code : 17246-17247.

INVAR-KOVAR ETCHANT / INVAR-KOVAR ÄTZMITTEL / INVAR-KOVAR REACTIV

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

Etching reagent

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

Registered company name : PRESI S.A.S.

Address : 11 Rue du vercors.38320.EYBENS.France.

Telephone : +33 (0)4.76.72.00.21. Fax : +33 (0)4.76.72.05.84.

presi@presi.com

www.presi.com

#### 1.4. Emergency telephone number : +33 (0)1.45.42.59.59.

Association/Organisation : INRS / ORFILA <http://www.centres-antipoison.net>.

### SECTION 2 : HAZARDS IDENTIFICATION

#### 2.1. Classification of the substance or mixture

##### In compliance with EC regulation No. 1272/2008 and its amendments.

Flammable liquid, Category 3 (Flam. Liq. 3, H226).

Acute oral toxicity, Category 3 (Acute Tox. 3, H301).

Acute dermal toxicity, Category 3 (Acute Tox. 3, H311).

Acute inhalation toxicity, Category 3 (Acute Tox. 3, H331).

Skin irritation, Category 2 (Skin Irrit. 2, H315).

Serious eye damage, Category 1 (Eye Dam. 1, H318).

Specific target organ toxicity (single exposure), Category 1 (STOT SE 1, H370).

Specific target organ toxicity (single exposure), Category 3 (STOT SE 3, H335).

Hazardous to the aquatic environment - Chronic hazard, Category 3 (Aquatic Chronic 3, H412).

#### 2.2. Label elements

##### In compliance with EC regulation No. 1272/2008 and its amendments.

Hazard pictograms :



GHS02



GHS05



GHS06



GHS08

Signal Word :

DANGER

Product identifiers :

EC 200-659-6

METHANOL

EC 231-595-7

HYDROCHLORIC ACID

EC 231-729-4

FER(III) CHLORURE, 6H2O

EC 231-714-2

NITRIC ACID [C <= 70 %]

Hazard statements :

H226

Flammable liquid and vapour.

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|   |  |
|---|--|
| H301 + H311 + H331                      | Toxic if swallowed, in contact with skin or if inhaled.  |
| H315                                    | Causes skin irritation.  |
| H318                                    | Causes serious eye damage.   |
| H335                                    | May cause respiratory irritation.  |
| H370                                    | Causes damage to organs (if inhaled, if swallowed, in contact with skin).  |
| H412                                    | Harmful to aquatic life with long lasting effects.   |
| Precautionary statements - Prevention : |  |
| P210                                    | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.                                   |
| P260                                    | Do not breathe dust/fume/gas/mist/vapours/spray.   |
| P264                                    | Wash ... thoroughly after handling.  |
| P270                                    | Do not eat, drink or smoke when using this product.  |
| P271                                    | Use only outdoors or in a well-ventilated area.  |
| P273                                    | Avoid release to the environment.  |
| P280                                    | Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/ ...                                |
| Precautionary statements - Response :   |  |
| P301 + P310                             | IF SWALLOWED: Immediately call a POISON CENTER/doctor/...  |
| P302 + P352                             | IF ON SKIN: Wash with plenty of water/...  |
| P303 + P361 + P353                      | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].                         |
| P304 + P340                             | IF INHALED: Remove person to fresh air and keep comfortable for breathing.   |
| P305 + P351 + P338                      | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P308 + P311                             | IF exposed or concerned: Call a POISON CENTER/doctor/...   |
| P312                                    | Call a POISON CENTER/doctor/... if you feel unwell.  |
| P321                                    | Specific treatment (see ... on this label).  |
| P330                                    | Rinse mouth.   |
| P332 + P313                             | If skin irritation occurs: Get medical advice/attention.   |
| P361 + P364                             | Take off immediately all contaminated clothing and wash it before reuse.   |
| P362 + P364                             | Take off contaminated clothing and wash it before reuse.   |
| Precautionary statements - Storage :    |  |
| P403 + P235                             | Store in a well-ventilated place. Keep cool.   |
| P405                                    | Store locked up.   |
| Precautionary statements - Disposal :   |  |
| P501                                    | Dispose of contents/container to ...   |
| Other information :                     |  |

### 2.3. Other hazards

The mixture does not contain substances classified as 'Substances of Very High Concern' (SVHC)  $\geq$  0.1% published by the European Chemicals Agency (ECHA) under article 57 of REACH: <http://echa.europa.eu/fr/candidate-list-table>

The mixture fulfils neither the PBT nor the vPvB criteria for mixtures in accordance with annexe XIII of the REACH regulations EC 1907/2006.

The mixture does not contain substances  $\geq$  0.1% with endocrine disrupting properties in accordance with the criteria of the Delegated Regulation (EU) 2017/2100 of the Commission or Regulation (EU) 2018/605 of the Commission.

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

**3.2. Mixtures**

**Composition :**

| Identification  | (EC) 1272/2008  | Note          | %              |
|---|---|---------------|----------------|
| CAS: 67-56-1<br>EC: 200-659-6<br>REACH: 01-2119433307-44<br><br>METHANOL                          | GHS06, GHS08, GHS02<br>Dgr<br>Flam. Liq. 2, H225<br>Acute Tox. 3, H301<br>Acute Tox. 3, H311<br>Acute Tox. 3, H331<br>STOT SE 1, H370   | [1]<br>[XVII] | 25 <= x % < 50 |
| EC: 231-595-7<br>REACH: 01-2119484862-27<br><br>HYDROCHLORIC ACID                                 | GHS05, GHS07<br>Dgr<br>Skin Corr. 1B, H314<br>STOT SE 3, H335   | B             | 10 <= x % < 25 |
| CAS: 10025-77-1<br>EC: 231-729-4<br>REACH: 01-2119497998-05-0000<br><br>FER(III) CHLORURE, 6H2O   | GHS07<br>Wng<br>Acute Tox. 4, H302  |               | 1 <= x % < 2.5 |
| CAS: 7697-37-2<br>EC: 231-714-2<br>REACH: 01-2119487297-23-0000<br><br>NITRIC ACID [C <= 70 %]    | GHS06, GHS05, GHS03<br>Dgr<br>Ox. Liq. 3, H272<br>Skin Corr. 1A, H314<br>Acute Tox. 3, H331<br>EUH:071  | B<br>[1]      | 1 <= x % < 2.5 |
| CAS: 10125-13-0<br>EC: 231-210-2<br>REACH: 01-2119970306-36-0000<br><br>CUIVRE (II) CHLORURE 2H2O | GHS07, GHS09<br>Wng<br>Acute Tox. 4, H302<br>Skin Irrit. 2, H315<br>Eye Irrit. 2, H319<br>STOT SE 3, H335<br>Aquatic Acute 1, H400<br>M Acute = 1<br>Aquatic Chronic 1, H410<br>M Chronic = 1 |               | 0 <= x % < 1   |

**Specific concentration limits:**

| Identification  | Specific concentration limits  | ATE                      |
|---|--|--------------------------|
| CAS: 67-56-1<br>EC: 200-659-6<br>REACH: 01-2119433307-44<br><br>METHANOL                        | STOT SE 1 (Cut) : H370 C>= 10%<br>STOT SE 2: H371 3% <= C < 10%<br>STOT SE 1 (Oral) : H370 C>= 10%<br>STOT SE 2: H371 3% <= C < 10%<br>STOT SE 1 (Inh) : H370 C>= 10%<br>STOT SE 2: H371 3% <= C < 10% |                          |
| EC: 231-595-7<br>REACH: 01-2119484862-27<br><br>HYDROCHLORIC ACID                               | Skin Corr. 1B: H314 C>= 25%<br>Skin Irrit. 2: H315 10% <= C < 25%<br>Eye Dam. 1: H318 C>= 25%<br>Eye Irrit. 2: H319 10% <= C < 25%<br>STOT SE 3: H335 C>= 10%  |                          |
| CAS: 10025-77-1<br>EC: 231-729-4<br>REACH: 01-2119497998-05-0000<br><br>FER(III) CHLORURE, 6H2O |  | oral: ATE = 900 mg/kg BW |



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|   |  |                                |
|---|--|--------------------------------|
| CAS: 7697-37-2<br>EC: 231-714-2<br>REACH: 01-2119487297-23-0000<br>NITRIC ACID [C ≤ 70 %] | Ox. Liq. 3: H272 C <sub>2</sub> = 100%<br>Skin Corr. 1A: H314 C <sub>2</sub> = 20%<br>Skin Corr. 1B: H314 5% ≤ C < 20%<br>Skin Corr. 1C: H314 0% ≤ C < 5%<br>Skin Irrit. 2: H315 1% ≤ C < 0% | inhalation: ATE = 2.65 mg/l 4h |
|---|--|--------------------------------|

**Information on ingredients :**

(Full text of H-phrases: see section 16)

[XVII] Restricted substance under Regulation (EC) No. 1907/2006 (REACH), Annex XVII.

[1] Substance for which maximum workplace exposure limits are available.

**SECTION 4 : FIRST AID MEASURES**

As a general rule, in case of doubt or if symptoms persist, always call a doctor.

NEVER induce swallowing by an unconscious person.

**4.1. description of first aid measures**

**In the event of exposure by inhalation :**

In the event of massive inhalation, remove the person exposed to fresh air. Keep warm and at rest.

If the person is unconscious, place in recovery position. Notify a doctor in all events, to ascertain whether observation and supportive hospital care will be necessary.

If breathing is irregular or has stopped, effect mouth-to-mouth resuscitation and call a doctor.

Do not proceed with mouth-to-mouth or mouth-to-nose resuscitation. Use the appropriate equipment.

**In the event of splashes or contact with eyes :**

Wash thoroughly with fresh, clean water for 15 minutes holding the eyelids open.

Regardless of the initial state, refer the patient to an ophthalmologist and show him the label.

**In the event of splashes or contact with skin :**

Remove contaminated clothing and wash the skin thoroughly with soap and water or a recognised cleaner.

Remove any soiled or splashed clothing immediately.

Watch out for any remaining product between skin and clothing, watches, shoes, etc.

If the contaminated area is widespread and/or there is damage to the skin, a doctor must be consulted or the patient transferred to hospital.

**In the event of swallowing :**

Do not give the patient anything orally.

In the event of swallowing, if the quantity is small (no more than one mouthful), rinse the mouth with water, administer activated medical charcoal and consult a doctor.

Keep the person exposed at rest. Do not force vomiting.

Seek medical attention immediately, showing the label.

If swallowed accidentally, call a doctor to ascertain whether observation and hospital care will be necessary. Show the label.

If swallowed accidentally, do not allow to drink, do not induce vomiting and transfer to hospital immediately by ambulance. Show the label to the doctor.

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

No data available.

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

No data available.

**SECTION 5 : FIREFIGHTING MEASURES**

Flammable.

Chemical powders, carbon dioxide and other extinguishing gas are suitable for small fires.

**5.1. Extinguishing media**

Keep packages near the fire cool, to prevent pressurised containers from bursting.

**Suitable methods of extinction**

In the event of a fire, use :

- sprayed water or water mist



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- water with AFFF (Aqueous Film Forming Foam) additive
- halon
- foam
- multipurpose ABC powder
- BC powder
- carbon dioxide (CO<sub>2</sub>)

Prevent the effluent of fire-fighting measures from entering drains or waterways.

**Unsuitable methods of extinction**

In the event of a fire, do not use :

- water jet

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

A fire will often produce a thick black smoke. Exposure to decomposition products may be hazardous to health.

Do not breathe in smoke.

In the event of a fire, the following may be formed :

- carbon monoxide (CO)
- carbon dioxide (CO<sub>2</sub>)
- nitrogen oxide (NO)
- nitrogen dioxide (NO<sub>2</sub>)
- hydrogen chloride (HCl)
- phosgene (CCl<sub>2</sub>O)
- chlorine (Cl<sub>2</sub>)

**5.3. Advice for firefighters**

Due to the toxicity of the gas emitted on thermal decomposition of the products, fire-fighting personnel are to be equipped with autonomous insulating breathing apparatus.

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**SECTION 6 : ACCIDENTAL RELEASE MEASURES**

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

Consult the safety measures listed under headings 7 and 8.

**For non first aid worker**

Because of the organic solvents contained in the mixture, eliminate sources of ignition and ventilate the area.

Avoid inhaling the vapors.

Avoid any contact with the skin and eyes.

If a large quantity has been spilt, evacuate all personnel and only allow intervention by trained operators equipped with safety apparatus.

**For first aid worker**

First aid workers will be equipped with suitable personal protective equipment (See section 8).

**6.2. Environmental precautions**

Contain and control the leaks or spills with non-combustible absorbent materials such as sand, earth, vermiculite, diatomaceous earth in drums for waste disposal.

Prevent any material from entering drains or waterways.

If the product contaminates waterways, rivers or drains, alert the relevant authorities in accordance with statutory procedures

Use drums to dispose of collected waste in compliance with current regulations (see section 13).

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

Neutralise with an alkaline decontaminant, such as an aqueous solution of sodium carbonate or similar.

If the ground is contaminated, once the product has been recovered by sponging with an inert and non-combustible absorbent material, wash the contaminated area in plenty of water.

Clean preferably with a detergent, do not use solvents.



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**6.4. Reference to other sections**

No data available.

**SECTION 7 : HANDLING AND STORAGE**

Requirements relating to storage premises apply to all facilities where the mixture is handled.

**7.1. Precautions for safe handling**

Always wash hands after handling.

Remove and wash contaminated clothing before re-using.

Ensure that there is adequate ventilation, especially in confined areas.

Remove contaminated clothing and protective equipment before entering eating areas.

Emergency showers and eye wash stations will be required in facilities where the mixture is handled constantly.

**Fire prevention :**

Handle in well-ventilated areas.

Vapours are heavier than air. They can spread along the ground and form mixtures that are explosive with air.

Prevent the formation of flammable or explosive concentrations in air and avoid vapor concentrations higher than the occupational exposure limits.

Prevent the accumulation of electrostatic charges with connections to earth.

The mixture can become electrostatically charged: always ground when decanting. Wear antistatic shoes and clothing and make floors of non-conductive

Use the mixture in premises free of naked flames or other sources of ignition and ensure that electrical equipment is suitably protected.

Keep packages tightly closed and away from sources of heat, sparks and naked flames.

Do not use tools which may produce sparks. Do not smoke.

Prevent access by unauthorised personnel.

**Recommended equipment and procedures :**

For personal protection, see section 8.

Observe precautions stated on label and also industrial safety regulations.

Do not inhale vapours.

Avoid inhaling vapors. Carry out any industrial operation which may give rise to this in a sealed apparatus.

Provide vapor extraction at the emission source and also general ventilation of the premises.

Also provide breathing apparatus for certain short tasks of an exceptional nature and for emergency interventions.

In all cases, recover emissions at source.

Avoid skin and eye contact with this mixture at all times.

Avoid exposure - obtain special instructions before use.

Packages which have been opened must be reclosed carefully and stored in an upright position.

**Prohibited equipment and procedures :**

No smoking, eating or drinking in areas where the mixture is used.

Never open the packages under pressure.

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

No data available.

**Storage**

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

Keep away from food and drink, including those for animals.

Keep away from all sources of ignition - do not smoke.

Keep well away from all sources of ignition, heat and direct sunlight.

Avoid accumulation of electrostatic charges.

The floor must be impermeable and form a collecting basin so that, in the event of an accidental spillage, the liquid cannot spread beyond this area.

**Packaging**

Always keep in packaging made of an identical material to the original.

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Suitable packaging materials :

- Polyethylene

**7.3. Specific end use(s)**

No data available.

**SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1. Control parameters**

**Occupational exposure limits :**

- European Union (2022/431, 2019/1831, 2017/2398, 2017/164, 2009/161, 2006/15/CE, 2000/39/CE, 98/24/CE) :

| CAS       | VME-mg/m <sup>3</sup> : | VME-ppm : | VLE-mg/m <sup>3</sup> : | VLE-ppm : | Notes : |
|-----------|-------------------------|-----------|-------------------------|-----------|---------|
| 67-56-1   | 260                     | 200       | -                       | -         | Peau    |
| 7697-37-2 | -                       | -         | 2.6                     | 1         | -       |

- ACGIH TLV (American Conference of Governmental Industrial Hygienists, Threshold Limit Values, 2010) :

| CAS       | TWA :   | STEL :  | Ceiling : | Definition : | Criteria : |
|-----------|---------|---------|-----------|--------------|------------|
| 67-56-1   | 200 ppm | 250 ppm |           | Skin; BEI    |            |
| 7697-37-2 | 2 ppm   | 4 ppm   |           |              |            |

- Germany - AGW (BAuA - TRGS 900, 02/2022) :

| CAS       | VME : | VME :                            | Excess | Notes |
|-----------|-------|----------------------------------|--------|-------|
| 67-56-1   |       | 200 ppm<br>270 mg/m <sup>3</sup> |        | 4(II) |
| 7697-37-2 |       | 1 ppm<br>2.6 mg/m <sup>3</sup>   |        |       |

- Canada / Quebec (Regulations on occupational health and safety) :

| CAS       | TWA :                            | STEL :                           | Ceiling : | Definition : | Criteria : |
|-----------|----------------------------------|----------------------------------|-----------|--------------|------------|
| 67-56-1   | 200 ppm<br>262 mg/m <sup>3</sup> | 250 ppm<br>328 mg/m <sup>3</sup> |           | Pc           |            |
| 7697-37-2 | 2 ppm<br>5.2 mg/m <sup>3</sup>   | 4 ppm<br>10 mg/m <sup>3</sup>    |           |              |            |

- France (INRS - Outils 65 / 2021-1849, 2021-1763, decree of 09/12/2021) :

| CAS       | VME-ppm : | VME-mg/m <sup>3</sup> : | VLE-ppm : | VLE-mg/m <sup>3</sup> : | Notes : | TMP No : |
|-----------|-----------|-------------------------|-----------|-------------------------|---------|----------|
| 67-56-1   | 200       | 260                     | 1000      | 1300                    | (12)    | 84       |
| 7697-37-2 | -         | -                       | 1         | 2.6                     | -       | -        |

- Japan (JSOH, Recommendation of occupational exposure limits 2021-2022) :

| CAS       | TWA :                            | STEL : | Ceiling : | Definition : | Criteria : |
|-----------|----------------------------------|--------|-----------|--------------|------------|
| 67-56-1   | 200 ppm<br>260 mg/m <sup>3</sup> |        |           |              |            |
| 7697-37-2 | 2 ppm<br>5.2 mg/m <sup>3</sup>   |        |           |              |            |

- Switzerland (Suva 2021) :

| CAS       | VME                              | VLE                              | Valeur plafond | Notations |
|-----------|----------------------------------|----------------------------------|----------------|-----------|
| 67-56-1   | 200 ppm<br>260 mg/m <sup>3</sup> | 400 ppm<br>520 mg/m <sup>3</sup> |                |           |
| 7697-37-2 | 2 ppm<br>5 mg/m <sup>3</sup>     | 2 ppm<br>5 mg/m <sup>3</sup>     |                |           |

- USA / NIOSH IDLH (National Institute for Occupational Safety and Health, Immediately Dangerous to Life or Health Concentrations) :

| CAS       | TWA :                            | STEL :                           | Ceiling : | Definition : | Criteria : |
|-----------|----------------------------------|----------------------------------|-----------|--------------|------------|
| 67-56-1   | 200 ppm<br>260 mg/m <sup>3</sup> | 250 ppm<br>325 mg/m <sup>3</sup> |           | skin         |            |
| 7697-37-2 | 2 ppm<br>5 mg/m <sup>3</sup>     | 4 ppm<br>10 mg/m <sup>3</sup>    |           |              |            |

- UK / WEL (Workplace exposure limits, EH40/2005, Fourth Edition 2020) :

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| CAS       | TWA :                            | STEL :                           | Ceiling : | Definition : | Criteria : |
|-----------|----------------------------------|----------------------------------|-----------|--------------|------------|
| 67-56-1   | 200 ppm<br>266 mg/m <sup>3</sup> | 250 ppm<br>333 mg/m <sup>3</sup> |           | Sk           |            |
| 7697-37-2 |                                  | 1 ppm<br>2.6 mg/m <sup>3</sup>   |           |              |            |

**Derived no effect level (DNEL) or derived minimum effect level (DMEL):**

NITRIC ACID [C <= 70 %] (CAS: 7697-37-2)

**Final use:**

Exposure method:  
Potential health effects:  
DNEL :

**Workers.**

Inhalation.  
Short term local effects.  
2.6 mg of substance/m<sup>3</sup>

Exposure method:  
Potential health effects:  
DNEL :

Inhalation.  
Long term local effects.  
2.6 mg of substance/m<sup>3</sup>

**Final use:**

Exposure method:  
Potential health effects:  
DNEL :

**Man exposed via the environment.**

Inhalation.  
Short term local effects.  
1.3 mg of substance/m<sup>3</sup>

Exposure method:  
Potential health effects:  
DNEL :

Inhalation.  
Long term local effects.  
1.3 mg of substance/m<sup>3</sup>

FER(III) CHLORURE, 6H<sub>2</sub>O (CAS: 10025-77-1)

**Final use:**

Exposure method:  
Potential health effects:  
DNEL :

**Workers.**

Dermal contact.  
Long term systemic effects.  
2.8 mg/kg body weight/day

**Final use:**

Exposure method:  
Potential health effects:  
DNEL :

**Man exposed via the environment.**

Ingestion.  
Long term systemic effects.  
0.28 mg/kg body weight/day

Exposure method:  
Potential health effects:  
DNEL :

Dermal contact.  
Long term systemic effects.  
1.4 mg/kg body weight/day

HYDROCHLORIC ACID

**Final use:**

Exposure method:  
Potential health effects:  
DNEL :

**Workers.**

Inhalation.  
Long term local effects.  
8 mg of substance/m<sup>3</sup>

Exposure method:  
Potential health effects:  
DNEL :

Inhalation.  
Short term local effects.  
15 mg of substance/m<sup>3</sup>

METHANOL (CAS: 67-56-1)





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**Final use:**

Exposure method:  
Potential health effects:  
DNEL :

Exposure method:  
Potential health effects:  
DNEL :

Exposure method:  
Potential health effects:  
DNEL :

Exposure method:  
Potential health effects:  
DNEL :

Exposure method:  
Potential health effects:  
DNEL :

Exposure method:  
Potential health effects:  
DNEL :

Exposure method:  
Potential health effects:  
DNEL :

Exposure method:  
Potential health effects:  
DNEL :

**Final use:**

Exposure method:  
Potential health effects:  
DNEL :

Exposure method:  
Potential health effects:  
DNEL :

Exposure method:  
Potential health effects:  
DNEL :

Exposure method:  
Potential health effects:  
DNEL :

**Workers.**

Dermal contact.  
Short term systemic effects.  
40 mg/kg body weight/day

Dermal contact.  
Long term systemic effects.  
40 mg/kg body weight/day

Dermal contact.  
Long term local effects.  
50 mg/kg body weight/day

Dermal contact.  
Short term local effects.  
50 mg/kg body weight/day

Inhalation.  
Long term systemic effects.  
260 mg of substance/m3

Inhalation.  
Short term systemic effects.  
260 mg of substance/m3

Inhalation.  
Long term local effects.  
260 mg of substance/m3

Inhalation.  
Short term local effects.  
260 mg of substance/m3

**Man exposed via the environment.**

Ingestion.  
Long term systemic effects.  
8 mg/kg body weight/day

Ingestion.  
Short term systemic effects.  
8 mg/kg body weight/day

Dermal contact.  
Long term systemic effects.  
8 mg/kg body weight/day

Dermal contact.  
Short term systemic effects.  
8 mg/kg body weight/day



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**Predicted no effect concentration (PNEC):**

**CUIVRE (II) CHLORURE 2H<sub>2</sub>O (CAS: 10125-13-0)**

|                            |                              |
|----------------------------|------------------------------|
| Environmental compartment: | Soil.                        |
| PNEC :                     | 65 mg/kg                     |
| Environmental compartment: | Fresh water.                 |
| PNEC :                     | 7.8 µg/l                     |
| Environmental compartment: | Sea water.                   |
| PNEC :                     | 5.2 µg/l                     |
| Environmental compartment: | Fresh water sediment.        |
| PNEC :                     | 87 mg/kg                     |
| Environmental compartment: | Marine sediment.             |
| PNEC :                     | 676 mg/kg                    |
| Environmental compartment: | Waste water treatment plant. |
| PNEC :                     | 230 µg/l                     |

**HYDROCHLORIC ACID**

|                            |                              |
|----------------------------|------------------------------|
| Environmental compartment: | Fresh water.                 |
| PNEC :                     | 36 µg/l                      |
| Environmental compartment: | Sea water.                   |
| PNEC :                     | 36 µg/l                      |
| Environmental compartment: | Intermittent waste water.    |
| PNEC :                     | 45 µg/l                      |
| Environmental compartment: | Waste water treatment plant. |
| PNEC :                     | 36 µg/l                      |

**METHANOL (CAS: 67-56-1)**

|                            |                              |
|----------------------------|------------------------------|
| Environmental compartment: | Soil.                        |
| PNEC :                     | 23.5 mg/kg                   |
| Environmental compartment: | Fresh water.                 |
| PNEC :                     | 154 mg/l                     |
| Environmental compartment: | Sea water.                   |
| PNEC :                     | 15.4 mg/l                    |
| Environmental compartment: | Intermittent waste water.    |
| PNEC :                     | 1540 mg/l                    |
| Environmental compartment: | Fresh water sediment.        |
| PNEC :                     | 570.4 mg/kg                  |
| Environmental compartment: | Waste water treatment plant. |
| PNEC :                     | 100 mg/l                     |

## 8.2. Exposure controls

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

Pictogram(s) indicating the obligation of wearing personal protective equipment (PPE) :



Use personal protective equipment that is clean and has been properly maintained.

Store personal protective equipment in a clean place, away from the work area.

Never eat, drink or smoke during use. Remove and wash contaminated clothing before re-using. Ensure that there is adequate ventilation, especially in confined areas.

#### - Eye / face protection

Avoid contact with eyes.

Use eye protectors designed to protect against liquid splashes

Before handling, wear safety goggles with protective sides accordance with standard EN166.

In the event of high danger, protect the face with a face shield.

Prescription glasses are not considered as protection.

Individuals wearing contact lenses should wear prescription glasses during work where they may be exposed to irritant vapours.

Provide eyewash stations in facilities where the product is handled constantly.

#### - Hand protection

Use suitable protective gloves that are resistant to chemical agents in accordance with standard EN ISO 374-1.

Gloves must be selected according to the application and duration of use at the workstation.

Protective gloves need to be selected according to their suitability for the workstation in question : other chemical products that may be handled, necessary physical protections (cutting, pricking, heat protection), level of dexterity required.

Type of gloves recommended :

- Nitrile rubber (butadiene-acrylonitrile copolymer rubber (NBR))

- PVC (polyvinyl chloride)

- Butyl Rubber (Isobutylene-isoprene copolymer)

#### - Body protection

Avoid skin contact.

Wear suitable protective clothing.

Suitable type of protective clothing :

In the event of substantial spatter, wear liquid-tight protective clothing against chemical risks (type 3) in accordance with EN14605/A1 to prevent skin contact.

In the event of a risk of splashing, wear protective clothing against chemical risks (type 6) in accordance with EN13034/A1 to prevent skin contact.

Wear suitable protective clothing and, in particular, an apron and boots. These items of clothing shall be maintained in good condition and cleaned after use.

Suitable type of protective boots :

In the event of minor spatter, wear protective boots or half-boots against chemical risks in accordance with standard EN13832-2.

In the event of prolonged contact, wear boots or half-boots with liquid-chemical-resistant and waterproof soles and uppers in accordance with standard EN13832-3.

Work clothing worn by personnel shall be laundered regularly.

After contact with the product, all parts of the body that have been soiled must be washed.

#### - Respiratory protection

Avoid inhaling vapors.

Avoid inhaling vapors. Carry out any industrial task giving rise to this risk in a closed circuit. Provide extractor fans to capture the vapors at the emission source as well as general ventilation of the premises.

If the ventilation is insufficient, wear appropriate breathing apparatus.

When workers are confronted with concentrations that are above occupational exposure limits, they must wear a suitable, approved, respiratory protection device.

Likewise provide safety breathing apparatus for certain short tasks of an exceptional nature or for emergency interventions



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Anti-gas and vapour filter(s) (Combined filters) in accordance with standard EN14387 :

- A1 (Brown)
- A2 (Brown)
- A3 (Brown)

**SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES**

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

**Physical state**

Physical state : Fluid liquid.

**Colour**

Unspecified

**Odour**

Odour threshold : Not stated.

**Melting point**

Melting point/melting range : Not specified.

**Freezing point**

Freezing point / Freezing range : Not stated.

**Boiling point or initial boiling point and boiling range**

Boiling point/boiling range : Not specified.

**Flammability**

Flammability (solid, gas) : Not stated.

**Lower and upper explosion limit**

Explosive properties, lower explosivity limit (%) : Not stated.

Explosive properties, upper explosivity limit (%) : Not stated.

**Flash point**

Flash Point Interval : 23°C <= FP <= 55°C

**Auto-ignition temperature**

Self-ignition temperature : Not specified.

**Decomposition temperature**

Decomposition point/decomposition range : Not specified.

**pH**

pH : Not stated.  
Strongly acidic.

pH (aqueous solution) : Not stated.

**Kinematic viscosity**

Viscosity : Not stated.

**Solubility**

Water solubility : Soluble.

Fat solubility : Not stated.

**Partition coefficient n-octanol/water (log value)**

Partition coefficient: n-octanol/water : Not stated.

**Vapour pressure**

Vapour pressure (50°C) : Not relevant.

**Density and/or relative density**

Density : < 1

**Relative vapour density**

Vapour density : Not stated.

**9.2. Other information**

No data available.



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**9.2.1. Information with regard to physical hazard classes**

No data available.

**9.2.2. Other safety characteristics**

No data available.

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**SECTION 10 : STABILITY AND REACTIVITY**

**10.1. Reactivity**

No data available.

**10.2. Chemical stability**

This mixture is stable under the recommended handling and storage conditions in section 7.

**10.3. Possibility of hazardous reactions**

When exposed to high temperatures, the mixture can release hazardous decomposition products, such as carbon monoxide and dioxide, fumes and nitrogen oxide.

**10.4. Conditions to avoid**

Any apparatus likely to produce a flame or to have a metallic surface at high temperature (burners, electric arcs, furnaces etc.) must not be allowed on the premises.

Avoid :

- accumulation of electrostatic charges.
- heating
- heat
- flames and hot surfaces

**10.5. Incompatible materials**

No data available.

**10.6. Hazardous decomposition products**

The thermal decomposition may release/form :

- carbon monoxide (CO)
- carbon dioxide (CO<sub>2</sub>)
- nitrogen oxide (NO)
- nitrogen dioxide (NO<sub>2</sub>)
- hydrogen chloride (HCl)
- phosgene (CCl<sub>2</sub>O)
- chlorine (Cl<sub>2</sub>)

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**SECTION 11 : TOXICOLOGICAL INFORMATION**

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

Toxic if swallowed.

Toxic in contact with the skin.

Toxic by inhalation.

May cause irreversible damage to the skin; namely inflammation of the skin or the formation of erythema and eschar or oedema following exposure up to four hours.

May have irreversible effects on the eyes, such as tissue damage in the eye, or serious physical decay of sight, which is not fully reversible by the end of observation at 21 days.

Serious eye damage is typified by the destruction of cornea, persistent corneal opacity and iritis.

Respiratory tract irritation may occur, together with symptoms such as coughing, choking and breathing difficulties.

Causes damage to organs.

**11.1.1. Substances**

**Acute toxicity :**

NITRIC ACID [C ≤ 70 %] (CAS: 7697-37-2)

Inhalation route (n/a) :

LC50 = 2.65 mg/l



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Duration of exposure : 4 h

FER(III) CHLORURE, 6H<sub>2</sub>O (CAS: 10025-77-1)

Oral route : LD50 = 900 mg/kg  
Species : Rat

**11.1.2. Mixture**

**Serious damage to eyes/eye irritation :**

The risk of serious ocular lesions is based on the low/high pH and has been confirmed by tests.

**11.2. Information on other hazards**

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**SECTION 12 : ECOLOGICAL INFORMATION**

Harmful to aquatic life with long lasting effects.

The product must not be allowed to run into drains or waterways.

**12.1. Toxicity**

**12.1.2. Mixtures**

No aquatic toxicity data available for the mixture.

**12.2. Persistence and degradability**

**12.2.1. Substances**

NITRIC ACID [C ≤ 70 %] (CAS: 7697-37-2)

Biodegradability : no degradability data is available, the substance is considered as not degrading quickly.

HYDROCHLORIC ACID

Biodegradability : no degradability data is available, the substance is considered as not degrading quickly.

**12.3. Bioaccumulative potential**

No data available.

**12.4. Mobility in soil**

No data available.

**12.5. Results of PBT and vPvB assessment**

No data available.

**12.6. Endocrine disrupting properties**

No data available.

**12.7. Other adverse effects**

No data available.

**German regulations concerning the classification of hazards for water (WGK, AwSV Annex I, KBws) :**

WGK 2 : Hazardous for water.

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**SECTION 13 : DISPOSAL CONSIDERATIONS**

Proper waste management of the mixture and/or its container must be determined in accordance with Directive 2008/98/EC.

**13.1. Waste treatment methods**

Do not pour into drains or waterways.

**Waste :**

Waste management is carried out without endangering human health, without harming the environment and, in particular without risk to water, air, soil, plants or animals.

Recycle or dispose of waste in compliance with current legislation, preferably via a certified collector or company.

Do not contaminate the ground or water with waste, do not dispose of waste into the environment.

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**Soiled packaging :**

Empty container completely. Keep label(s) on container.  
Give to a certified disposal contractor.

**SECTION 14 : TRANSPORT INFORMATION**

Transport product in compliance with provisions of the ADR for road, RID for rail, IMDG for sea and ICAO/IATA for air transport (ADR 2021 - IMDG 2020 [40-20] - ICAO/IATA 2022 [63]).

**14.1. UN number or ID number**

1992

**14.2. UN proper shipping name**

UN1992=FLAMMABLE LIQUID, TOXIC, N.O.S.  
(methanol)

**14.3. Transport hazard class(es)**

- Classification :



3+6.1

**14.4. Packing group**

III

**14.5. Environmental hazards**

-

**14.6. Special precautions for user**

| ADR/RID | Class | Code | Pack gr. | Label | Ident. | LQ  | Provis. | EQ | Cat. | Tunnel |
|---------|-------|------|----------|-------|--------|-----|---------|----|------|--------|
|         | 3     | FT1  | III      | 3+6.1 | 36     | 5 L | 274     | E1 | 3    | D/E    |

| IMDG | Class | 2°Label | Pack gr. | LQ  | EMS      | Provis. | EQ | Stowage Handling | Segregation |
|------|-------|---------|----------|-----|----------|---------|----|------------------|-------------|
|      | 3     | 6.1     | III      | 5 L | F-E, S-D | 223 274 | E1 | Category A       | -           |

| IATA | Class | 2°Label | Pack gr. | Passager | Passager | Cargo | Cargo | note | EQ |
|------|-------|---------|----------|----------|----------|-------|-------|------|----|
|      | 3     | 6.1     | III      | 355      | 60 L     | 366   | 220 L | A3   | E1 |
|      | 3     | 6.1     | III      | Y343     | 2 L      | -     | -     | A3   | E1 |

For limited quantities, see part 2.7 of the OACI/IATA and chapter 3.4 of the ADR and IMDG.

For excepted quantities, see part 2.6 of the OACI/IATA and chapter 3.5 of the ADR and IMDG.

**14.7. Maritime transport in bulk according to IMO instruments**

No data available.

**SECTION 15: Regulatory information**

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

**- Classification and labelling information included in section 2:**

The following regulations have been used:

- EU Regulation No. 1272/2008 amended by EU Regulation No. 2022/692 (ATP 18)

**- Container information:**

No data available.

**-Restrictions applied under Title VIII of Regulation (EC) No. 1907/2006 (REACH):**

The mixture contains at least one restricted substance under Annex XVII of Regulation (EC) No. 1907/2006 (REACH):  
<https://echa.europa.eu/substances-restricted-under-reach>. Please refer to Section 3 to identify the substance involved.



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**- Particular provisions :**

No data available.

**- German regulations concerning the classification of hazards for water (WGK, AwSV Annex I, KBws) :**

WGK 2 : Hazardous for water.

**15.2. Chemical safety assessment**

No data available.

**SECTION 16 : OTHER INFORMATION**

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations.

The mixture must not be used for other uses than those specified in section 1 without having first obtained written handling instructions.

It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.

The information in this safety data sheet must be regarded as a description of the safety requirements relating to the mixture and not as a guarantee of the properties thereof.

**Wording of the phrases mentioned in section 3 :**

|        |   |
|--------|---|
| H225   | Highly flammable liquid and vapour.                   |
| H272   | May intensify fire; oxidiser.                         |
| H301   | Toxic if swallowed.                                   |
| H302   | Harmful if swallowed.                                 |
| H311   | Toxic in contact with skin.                           |
| H314   | Causes severe skin burns and eye damage.              |
| H315   | Causes skin irritation.                               |
| H319   | Causes serious eye irritation.                        |
| H331   | Toxic if inhaled.                                     |
| H335   | May cause respiratory irritation.                     |
| H370   | Causes damage to organs .                             |
| H400   | Very toxic to aquatic life.                           |
| H410   | Very toxic to aquatic life with long lasting effects. |
| EUH071 | Corrosive to the respiratory tract.                   |

**Abbreviations :**

LD50 : The dose of a test substance resulting in 50% lethality in a given time period.

LC50 : The concentration of a test substance resulting in 50% lethality in a given period.

REACH : Registration, Evaluation, Authorization and Restriction of Chemical Substances.

ATE : Acute Toxicity Estimate

BW : Body Weight

DNEL : Derived No-Effect Level

PNEC : Predicted No-Effect Concentration

STEL : Short-term exposure limit

TWA : Time Weighted Averages

TMP : French Occupational Illness table

TLV : Threshold Limit Value (exposure)

AEV : Average Exposure Value.

ADR : European agreement concerning the international carriage of dangerous goods by Road.

IMDG : International Maritime Dangerous Goods.

IATA : International Air Transport Association.

ICAO : International Civil Aviation Organisation

RID : Regulations concerning the International carriage of Dangerous goods by rail.

WGK : Wassergefährdungsklasse (Water Hazard Class).

GHS02 : Flame

GHS05 : Corrosion





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GHS06 : Skull and crossbones

GHS08 : Health hazard

PBT: Persistent, bioaccumulable and toxic.

vPvB : Very persistent, very bioaccumulable.

SVHC : Substances of very high concern.