# SAFETY DATA SHEET

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

**Issue Date** 12-Sep-2016 **Revision Date** 14-Feb-2023 **Version** 1.9

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

### 1.1. Product identifier

**Product Code(s)** 2833649

**Product Name** Metals-Drinking Water/High Range Quality Control Standard

**Molecular weight** No data available

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

**Recommended Use** Standard solution. Water Analysis.

**Uses advised against** Consumer use

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

**Supplier**
HACH UK
Laser House
Ground Floor, Suite B
Waterfront Quay, Salford Quays
GB - Manchester, M50 3XW
Tel. +44 (0) 161 872 1487
info-uk@hach.com

HACH Ireland
Unit 34 GB Business Park
Little Island
IRL-Co. Cork
T45 H681
Tel. +353 (0)146 02 522
info-ie@hach.com

### 1.4. Emergency telephone number

UK: Poison Control Center Mainz: Tel: +49 (0) 6131 19240 - 24 hour emergency service
IE: National Poisons Information Centre (NPIC) 01 809 2566 (24/7)

## Section 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

*Regulation (EC) No 1272/2008*

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

### 2.2. Label elements

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

**Hazard statements**
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

**2.3. Other hazards**
No information available.

PBT & vPvB
This mixture contains no substance considered to be persistent, bioaccumulating or toxic (PBT)
This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

## Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

**3.1 Substances**

Not applicable

**3.2 Mixtures**

**Full text of H- and EUH-phrases: see section 16**

*Acute Toxicity Estimate* *No information available*

## Section 4: FIRST AID MEASURES

**4.1. Description of first aid measures**

| | |
|---|---|
| **General advice** | Take off contaminated clothing and shoes immediately. Show this safety data sheet to the doctor in attendance. |
| **Inhalation** | Remove to fresh air. If symptoms persist, call a doctor. |
| **Eye contact** | Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a doctor. |
| **Skin contact** | Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a doctor. |
| **Ingestion** | Rinse mouth. |
| **Self-protection of the first aider** | Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8). 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**

**Symptoms** No information available.

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

**Note to doctors** Treat symptomatically.

## Section 5: FIREFIGHTING MEASURES

**5.1. Extinguishing media**

**Suitable Extinguishing Media** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Product itself does not burn.

**Unsuitable extinguishing media** No information available.

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

**Specific hazards arising from the chemical** Thermal decomposition can lead to release of irritating and toxic gases and vapours.

**5.3. Advice for firefighters**

**Special protective equipment and precautions for fire-fighters** Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

**Additional information** Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

## Section 6: ACCIDENTAL RELEASE MEASURES

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

**Personal precautions** Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information.

**For emergency responders** Use personal protection recommended in Section 8.

**6.2. Environmental precautions**

**Environmental precautions** Do not flush into surface water or sanitary sewer system. See Section 12 for additional Ecological Information.

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

**Methods for containment** Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13).

**Methods for cleaning up** Take up mechanically, placing in appropriate containers for disposal. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

**Prevention of secondary hazards** Clean contaminated objects and areas thoroughly observing environmental regulations.

**6.4. Reference to other sections**

**Reference to other sections** See section 8 for more information. See section 13 for more information.

## Section 7: HANDLING AND STORAGE

**7.1. Precautions for safe handling**

**Advice on safe handling** Avoid contact with skin, eyes or clothing. Avoid breathing dust/fume/gas/mist/vapours/spray.

**General hygiene considerations** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with

skin, eyes or clothing. Wash hands before breaks and after work.

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

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

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

**Specific use(s)** Analytical reagent.
**Risk Management Methods (RMM)** The information required is contained in this Safety Data Sheet.

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**8.1. Control parameters**

**Exposure Limits** This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

**Derived No Effect Level (DNEL)** No information available.

**Predicted No Effect Concentration (PNEC)** No information available.

**Additional information** No information available.

**8.2. Exposure controls**

**Engineering controls** Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Personal protective equipment**
**Eye/face protection** Wear safety glasses with side shields (or goggles).

**Hand protection** Wear suitable gloves. Barrier creams may help to protect the exposed areas of skin. Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 2016/425 and the standard EN 374-1:2016 derived from it. Chemical resistant gloves made of butyl rubber or nitrile rubber category III acco.

**Skin and body protection** Avoid contact with eyes, skin and clothing.

**Respiratory protection** Ensure adequate ventilation. Wear breathing apparatus if exposed to vapours/dusts/aerosols.

**Recommended filter type:** ABEK-P3.

**General hygiene considerations** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Wash hands before breaks and after work.

**Environmental exposure controls** Do not allow into any sewer, on the ground or into any body of water.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

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

**Physical state** Liquid

**Colour** colourless **Odour** Odourless

**Odour threshold** No information available

| Property | Values | Remarks • Method |
|---|---|---|
| **Molecular weight** | No data available | |
| **pH** | 2.8 | @ 20 °C |
| **Melting point / freezing point** | ~ 0 °C / 32 °F | |
| **Initial boiling point and boiling range** | ~ 100 °C / 212 °F | |
| **Evaporation rate** | 1 (water = 1) | |
| **Vapour pressure** | 23.777 mm Hg / 3.17 kPa at 25 °C / 77 °F | |
| **Relative vapor density** | 0.62 | |
| **Specific Gravity** | 1 | |
| **Partition coefficient** | Not applicable | |
| **Soil Organic Carbon-Water Partition Coefficient** | Not applicable | |
| **Autoignition temperature** | No data available | |
| **Decomposition temperature** | No information available | |
| **Dynamic viscosity** | No data available | |
| **Kinematic viscosity** | No data available | |
| **Relative density** | 1 g/mL | @ 20 °C |

**Solubility(ies)**

**Water solubility**

| Water solubility classification | Water solubility | Water Solubility Temperature |
|---|---|---|
| Soluble | > 1000 mg/L | 25 °C / 77 °F |

**Solubility in other solvents**

| Chemical Name | Solubility classification | Solubility | Solubility Temperature |
|---|---|---|---|
| Acid | Soluble | > 1000 mg/L | 25 °C / 77 °F |

**Metal Corrosivity**

**Steel Corrosion Rate** No data available
**Aluminum Corrosion Rate** No data available

**Explosive properties**

**Upper explosion limit** Not applicable
**Lower explosion limit** Not applicable

**Flammable properties**

| | |
|---|---|
| **Flash point** | No data available |

**Flammability**

| | |
|---|---|
| **Upper flammability limit:** | No data available |
| **Lower flammability limit** | No data available |

| | |
|---|---|
| **Oxidising properties** | No data available. |
| **Bulk density** | Not applicable |

**9.2. Other information**

No information available.

## Section 10: STABILITY AND REACTIVITY

**10.1. Reactivity**

**Reactivity** No information available.

**10.2. Chemical stability**

**Stability** Stable under normal conditions.

**10.3. Possibility of hazardous reactions**

**Possibility of hazardous reactions** None under normal processing.

**10.4. Conditions to avoid**

**Conditions to avoid** Extremes of temperature and direct sunlight.

**10.5. Incompatible materials**

**Incompatible materials** None known based on information supplied.

**10.6. Hazardous decomposition products**

**Hazardous Decomposition Products** None known based on information supplied.

## Section 11: TOXICOLOGICAL INFORMATION

**11.1. Information on toxicological effects**

**Acute toxicity**
Based on available data, the classification criteria are not met

*Mixture* No data available.

*Substance* Test data reported below.

**Oral Exposure Route:**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Cupric nitrate | Rat $LD_{50}$ | 794 mg/kg | None reported | None reported | ERMA |
| Iron chloride (FeCl2) | Rat $LD_{50}$ | 450 mg/kg | None reported | None reported | RTECS |

**Dermal Exposure Route:**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Iron chloride (FeCl2) | Rat $LD_{50}$ | > 2000 mg/kg | None reported | None reported | OECD 429: Skin Sensitization: Local Lymph Node Assay |

**Acute Toxicity Estimate (ATE)**

**Unknown acute toxicity**
0 % of the mixture consists of ingredient(s) of unknown toxicity.

**Skin corrosion/irritation**
Based on available data, the classification criteria are not met.

*Mixture* No data available.

*Substance* Test data reported below.

| Chemical name | Test method | Species | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Hydrochloric acid | Existing human experience | Human | None reported | None reported | Corrosive to skin | RTECS |
| Cupric nitrate | Rinse Test | Rabbit | 100 mg | 4 seconds | Skin irritant | ERMA |
| Iron chloride (FeCl2) | OECD Test 404: Acute Dermal Corrosion/Irritation | Rabbit | 500 mg | 4 hours | Mild skin irritant | ECHA |

**Serious eye damage/eye irritation**
Based on available data, the classification criteria are not met.

*Mixture* No data available.

*Substance* Test data reported below.

| Chemical name | Test method | Species | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Hydrochloric acid | Existing human experience | Human | None reported | None reported | Corrosive to eyes | RTECS |
| Cupric nitrate | Draize Test | Rabbit | 100 mg | None reported | Corrosive to eyes | ERMA |
| Iron chloride (FeCl2) | OECD Test 405: Acute Eye Corrosion/Irritation | Rabbit | 100 mg | None reported | Corrosive to eyes | ECHA |

**Respiratory or skin sensitisation**
Based on available data, the classification criteria are not met.

*Mixture* No data available.

*Substance* Test data reported below.

**Skin Sensitization Exposure Route:**

| Chemical name | Test method | Species | Results | Key literature references and sources for data |
|---|---|---|---|---|
| Iron chloride (FeCl2) | Local Lymph Node Assay | Mouse | No sensitisation responses were observed. | No information available |

**STOT - single exposure**
Based on available data, the classification criteria are not met.

*Mixture* No data available.

*Substance* Test data reported below.

**Oral Exposure Route:**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Hydrochloric acid | Man $LD_{Lo}$ | 2.857 mg/kg | None reported | **Vascular**<br>BP lowering not characterized in autonomic section<br>**Lungs, Thorax, or Respiration**<br>Respiratory depression<br>**Gastrointestinal**<br>Other changes | RTECS |

**Inhalation (Vapor) Exposure Route:**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Hydrochloric acid | Human $TC_{Lo}$ | 0.05 mg/L | None reported | **Lungs, Thorax, or Respiration**<br>Cough | RTECS |

**STOT - repeated exposure**
Based on available data, the classification criteria are not met.

*Mixture* No data available.

*Substance* Test data reported below.

**Oral Exposure Route:**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Iron chloride (FeCl2) | Rat $TD_{Lo}$ | 6604 mg/kg | 30 days | **Biochemical**<br>Enzyme inhibition, induction, or change in blood or tissue levels (phosphatases)<br>**Blood**<br>Changes in serum composition (e.g. TP, bilirubin, cholesterol)<br>**Liver**<br>Other changes | RTECS |

**Inhalation (Dust/Mist) Exposure Route:**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Iron chloride (FeCl2) | Rat<br>$TC_{Lo}$ | 0.0002 mg/L | 65 days | **Biochemical**<br>Other degenerative changes<br>**Blood**<br>Changes in serum composition (e.g. TP, bilirubin, cholesterol)<br>**Brain and Coverings** | RTECS |

**Inhalation (Vapor) Exposure Route:**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Hydrochloric acid | Rat<br>$TC_{Lo}$ | 0.000685 mg/L | 84 days | **Behavioral**<br>Muscle contraction or spasticity<br>**Biochemical**<br>Enzyme inhibition, induction, or change in blood or tissue levels (true cholinesterase)<br>**Kidney, Ureter, or Bladder**<br>Other changes in urine composition | RTECS |

**Germ cell mutagenicity**
Based on available data, the classification criteria are not met.

*Mixture invitro* **Data** No data available.

*Substance invitro* **Data** Test data reported below.

| Chemical name | Test | Cell Strain | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---|---|---|---|---|---|
| Hydrochloric acid | Cytogenetic analysis | Hamster lung | 30 mmol/L | None reported | Positive test result for mutagenicity | RTECS |
| Cupric nitrate | Cytogenetic analysis | Rat ascites tumor | 600 mg/kg | None reported | Positive test result for mutagenicity | RTECS |
| Iron chloride (FeCl2) | Morphological transformation | Hamster embryo | 2.5 mmol/L | None reported | Positive test result for mutagenicity | RTECS |

*Mixture invivo* **Data** No data available.

*Substance invivo* **Data** No data available.

**Carcinogenicity**
Based on available data, the classification criteria are not met.

*Mixture* No data available.

*Substance* No data available.

**Reproductive toxicity**
Based on available data, the classification criteria are not met.

*Mixture* No data available.

*Substance* Test data reported below.

**Inhalation (Dust/Mist) Exposure Route:**

| Chemical name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---|---|---|---|---|
| Hydrochloric acid | Rat $TC_{Lo}$ | 0.450 mg/L | 1 hours | **Effects on Embryo or Fetus** Fetotoxicity (except death e.g. stunted fetus) **Specific Developmental Abnormalities** Homeostasis | RTECS |

**Aspiration hazard**
Based on available data, the classification criteria are not met.

**11.2 Information on other hazards**
Other dangerous properties can not be excluded. Handle in accordance with good industrial hygiene and safety practice.

**11.2.1. Endocrine disrupting properties**
**Endocrine disrupting properties** No information available.

**11.2.2. Other information**
**Other adverse effects** No information available.

## Section 12: ECOLOGICAL INFORMATION

**12.1. Toxicity**

**Ecotoxicity** Based on available data, the classification criteria are not met.

**Unknown aquatic toxicity** Contains 0 % of components with unknown hazards to the aquatic environment.

**Mixture**

**Acute aquatic toxicity:** No data available.

**Aquatic Chronic Toxicity:** No data available.

**Substance**

**Acute aquatic toxicity:** Test data reported below.

*Fish:*

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Nitric acid, manganese(2+) salt | 96 hours | *Pimephales promelas* | $LC_{50}$ | 33.8 mg/L | Vendor SDS |

*Crustacea:*

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Cupric nitrate | 48 Hours | *Ceriodaphnia dubia* | $LC_{50}$ | 0.0095 mg/L | ERMA |
| Iron chloride (FeCl2) | 48 Hours | *Daphnia magna* | $EC_{50}$ | 19 mg/L | OECD 429: Skin Sensitization: Local Lymph Node Assay |

*Algae:*

| Chemical name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|---|---|---|---|---|---|
| Iron chloride (FeCl2) | 72 Hours | *Selenastrum capricornutum* | $EC_{50}$ | 6.9 mg/L | OECD 429: Skin Sensitization: Local Lymph Node Assay |

**Aquatic Chronic Toxicity:** No data available.

**12.2. Persistence and degradability**

**Mixture** No data available.

**12.3. Bioaccumulative potential**

**Mixture:** No data available.

*Partition coefficient* Not applicable

**12.4. Mobility in soil**

*Soil Organic Carbon-Water Partition Coefficient* Not applicable

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

The components in this formulation do not meet the criteria for classification as PBT or vPvB.

**12.6. Endocrine disrupting properties**

*Endocrine Disruptor Information:* This product does not contain any known or suspected endocrine disruptors

**12.7. Other adverse effects**

No information available.

*Ozone:* Not applicable

*Ozone depletion potential (ODP):* No information available

## Section 13: DISPOSAL CONSIDERATIONS

**13.1. Waste treatment methods**

**Advice on Disposal**

**Waste from residues/unused products** Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

**Waste disposal number of waste from residues/unused products**

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste.

**Waste disposal number of used product**

160506 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals; hazardous waste.

**Contaminated packaging** Dispose of contents/containers in accordance with local regulations.

**Other Information** Do not reuse empty containers.

## Section 14: TRANSPORT INFORMATION

**IMDG**

| | |
|---|---|
| **14.1 UN number or ID number** | Not regulated |
| **14.2 Proper shipping name** | Not regulated |
| **14.3 Transport hazard class(es)** | Not regulated |
| **14.4 Packing Group** | Not regulated |
| **14.5 Marine pollutant** | Not applicable |
| **14.6 Special precautions for user** | See section 6-8 for more information |
| **14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code** | Not applicable |

**ADR**

| | |
|---|---|
| **14.1 UN number or ID number** | Not regulated |
| **14.2 Proper shipping name** | Not regulated |
| **14.3 Transport hazard class(es)** | Not regulated |
| **14.4 Packing Group** | Not regulated |
| **14.5 Environmental hazards** | Not applicable |
| **14.6 Special precautions for user** | See section 6-8 for more information |

**IATA** Not regulated

| | |
|---|---|
| **14.1 UN number or ID number** | Not regulated |
| **14.2 Proper shipping name** | Not regulated |
| **14.3 Transport hazard class(es)** | Not regulated |
| **14.4 Packing group** | Not regulated |
| **14.5 Environmental hazards** | Not applicable |
| **14.6 Special precautions for user** | See section 6-8 for more information |

**Additional information**
There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods.
If the item is not in a reagent set or kit, the classification given above applies.
If the item is part of a reagent set or kit the classification would change to the following:
UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.
If the item is not regulated, the Chemical Kit classification does not apply.

## Section 15: REGULATORY INFORMATION

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

**European Union**

**Authorisations and/or restrictions on use:**
This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV) This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

**Persistent Organic Pollutants** Not applicable

**Dangerous substance category per Seveso Directive (2012/18/EU)**
• Non-controlled

**Ozone-depleting substances (ODS) regulation (EC) 1005/2009**
Not applicable

**Germany**

**Water hazard class (WGK)** slightly hazardous to water (WGK 1)

**International Inventories**

| | |
|---|---|
| **EINECS/ELINCS** | Complies |
| **TSCA** | Complies |
| **DSL/NDSL** | Complies |
| **ENCS** | Complies |
| **IECSC** | Complies |
| **KECL - Existing substances** | Complies |
| **PICCS** | Complies |
| **AICS** | Complies |

**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
**ENCS** - Japan Existing and New Chemical Substances
**IECSC** - China Inventory of Existing Chemical Substances
**KECL** - Korean Existing and Evaluated Chemical Substances
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances
**AICS** - Australian Inventory of Chemical Substances

**15.2. Chemical safety assessment**

**Chemical Safety Report** Chemical safety assessments for substances in this mixture were not carried out.

## Section 16: OTHER INFORMATION

**Issue Date** 12-Sep-2016

**Revision Date** 14-Feb-2023

**Revision Note** New SDS, SDS sections updated, 3, 9, 11, 12.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

**Legend**

| | |
|---|---|
| ** | Hazard Designation |
| ADN | Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieure |
| ADR | European Agreement concerning the International Carriage of Dangerous Goods by Road |
| ATE | Acute Toxicity Estimate |
| CAS | Chemical Abstracts Service Number |
| Ceiling | Maximum limit value |
| CLP | Classification, Labelling and Packaging of substances and mixtures [Regulation (EC) No. 1272/2008] |
| DNEL | Derived No Effect Level (DNEL) |
| EC | European Community |
| ECHA | ECHA (The European Chemicals Agency) |
| EC50 | Effective Concentration to 50% of a test population |
| EEC | European Economic Community |
| EN | European Standard |

| | |
|---|---|
| IMDG | International Maritime Dangerous Goods (IMDG) |
| IATA | International Air Transport Association (IATA) |
| IATA-DGR | International Air Transport Association - Dangerous Goods Regulations |
| ICAO | International Civil Aviation Organization |
| ICAO-TI | International Civil Aviation Organization - Technical Instructions |
| IUCLID | IUCLID (The International Uniform Chemical Information Database) |
| GHS | Globally Harmonized System of Classification and Labelling of Chemicals |
| LOAEL | Lowest observed adverse effect level |
| LOAEC | Lowest observed adverse effect concentration |
| LC50 | Lethal Concentration to 50% of a test population |
| LD50 | Lethal Dose to 50% of a test population (Median Lethal Dose) |
| LOLI | LOLI (List of Lists - An International Chemical Regulatory Database) |
| MAK | Maximale Arbeitsplatz-Konzentration, a German expression corresponding to threshold limit value, which relates to safe daily exposure levels to chemical substances |
| NOAEL | NOAEL (No observed adverse effect level) |
| NOAEC | No observed adverse effect concentration |
| OSHA | OSHA (Occupational Safety and Health Administration of the US Department of Labour) |
| PEC | Predicted Effect Concentration |
| PNEC | Predicted No Effect Concentration (PNEC) |
| PBT | Persistent, Bioaccumulative, and Toxic (PBT) Chemicals |
| REACH | Registration, Evaluation, Authorisation and Restriction of Chemicals [Regulation (EC) No. 1907/2006]) |
| RID | Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail) |
| RTECS | RTECS (Registry of Toxic Effects of Chemical Substances) |
| TWA | TWA (time-weighted average) |
| SKN* | Skin designation |
| SKN+ | Skin sensitisation |
| STEL | STEL (Short Term Exposure Limit) |
| STOT | Specific Target Organ Toxicity |
| STOT RE | Specific target organ toxicity — repeated exposure |
| STOT SE | Specific target organ toxicity — single exposure |
| SVHC | Substances of Very High Concern |
| TLV | Threshold Limit Value |
| TRGS | Technical rules for hazardous substances, Germany |
| TSCA | Toxic Substances Control Act |
| UN | United Nations |
| vPvB | very persistent and very bioaccumulative |
| VOC | Volatile organic compounds |
| AwSV | Administrative regulation of water polluting substances, Germany |

**Key literature references and sources for data**
See Section 11: TOXICOLOGICAL INFORMATION
See Section 12: ECOLOGICAL INFORMATION

**Classification procedure**

| **Classification according to Regulation (EC) No. 1272/2008 [CLP]** | **Method Used** |
|---|---|
| Acute oral toxicity | Calculation method |
| Acute dermal toxicity | Calculation method |
| Acute inhalation toxicity - gas | Calculation method |
| Acute inhalation toxicity - Vapour | Calculation method |
| Acute inhalation toxicity - dust/mist | Calculation method |
| Skin corrosion/irritation | Calculation method |
| Serious eye damage/eye irritation | Calculation method |
| Respiratory sensitisation | Calculation method |
| Skin sensitisation | Calculation method |
| Mutagenicity | Calculation method |
| Carcinogenicity | Calculation method |
| Reproductive toxicity | Calculation method |

| | |
|---|---|
| STOT - single exposure | Calculation method |
| STOT - repeated exposure | Calculation method |
| Acute aquatic toxicity | Calculation method |
| Chronic aquatic toxicity | Calculation method |
| Aspiration toxicity | Calculation method |
| Ozone | Calculation method |

**Training Advice** 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

**Restrictions on use** For Laboratory Use Only.

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

**End of Safety Data Sheet**