

SAFETY DATA SHEET

Cermet

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

1.1 Product identifier

Product name : Cermet
Other means of identification : Coated Cermet, Cermet Tools

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

Product use : Cutting tools mainly for metallic materials, resistant tools for plastic forming process, tools for macadam, civil engineering, and urban development, etc.

1.3 Details of the supplier of the safety data sheet

Sumitomo Electric Hardmetal Corp.
 1-1-1, Koya-kita, Itami, Hyogo
 664-0016 Japan
 Phone Number: +81-72-771-0555

e-mail address of person responsible for this SDS :

1.4 Emergency telephone number

Supplier

Telephone number : +81-72-771-0555

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Resp. Sens. 1, H334

Skin Sens. 1, H317

Muta. 2, H341

Carc. 1B, H350

Repr. 1B, H360F

STOT RE 1, H372

Aquatic Chronic 4, H413

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

Ingredients of unknown toxicity : 100 percent of the mixture consists of component(s) of unknown acute oral toxicity
 100 percent of the mixture consists of component(s) of unknown acute dermal toxicity
 100 percent of the mixture consists of component(s) of unknown acute inhalation toxicity

Ingredients of unknown ecotoxicity : Contains 100% of components with unknown hazards to the aquatic environment

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :



Signal word : Danger

Cermet

SECTION 2: Hazards identification

| | |
|---|---|
| Hazard statements | : H317 - May cause an allergic skin reaction. H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled. H341 - Suspected of causing genetic defects. H350 - May cause cancer. H360F - May damage fertility. H372 - Causes damage to organs through prolonged or repeated exposure. H413 - May cause long lasting harmful effects to aquatic life. |
| Precautionary statements | |
| Prevention | : P201 - Obtain special instructions before use. P280 - Wear protective gloves, protective clothing and eye or face protection. P261 - Avoid breathing dust/fume/gas/mist/vapors/spray. |
| Response | : P308 + P313 - IF exposed or concerned: Get medical advice or attention. P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor. |
| Storage | : Not applicable. |
| Disposal | : Not applicable. |
| Hazardous ingredients | : cobalt Nickel chromium |
| Supplemental label elements | : Not applicable. |
| Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles | : Restricted to professional users. |

2.3 Other hazards

| | |
|--|---|
| Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII | : This mixture does not contain any substances that are assessed to be a PBT or a vPvB. |
| Other hazards which do not result in classification | : None known. |

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

| Product/ingredient name | Identifiers | % | Classification | Type |
|-------------------------|----------------------------------|--------|---------------------|---------|
| titanium carbide | EC: 235-120-4 CAS: 12070-08-5 | 5 - 85 | Not classified. | [3] |
| titanium nitride | EC: 247-117-5 CAS: 25583-20-4 | 0 - 80 | Not classified. | [3] |
| niobium carbide | EC: 235-117-8 CAS: 12069-94-2 | 0 - 35 | Not classified. | [3] |
| tungsten carbide | EC: 235-123-0 CAS: 12070-12-1 | 0 - 30 | Not classified. | [3] |
| tantalum carbide | EC: 235-118-3 CAS: 12070-06-3 | 0 - 20 | Not classified. | [3] |
| dimolybdenum carbide | EC: 235-115-7 CAS: 12069-89-5 | 0 - 20 | Not classified. | [3] |
| cobalt | EC: 231-158-0 | 0 - 20 | Resp. Sens. 1, H334 | [1] [2] |

Cermet

SECTION 3: Composition/information on ingredients

| | | | | |
|----------------------|--|--------|---|---------|
| | CAS: 7440-48-4 Index: 027-001-00-9 | | Skin Sens. 1, H317 Muta. 2, H341 Carc. 1B, H350 Repr. 1B, H360F Aquatic Chronic 4, H413 | |
| Nickel | EC: 231-111-4 CAS: 7440-02-0 Index: 028-002-00-7 | 0 - 20 | Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372 Aquatic Chronic 3, H412 | [1] [2] |
| tantalum mononitride | EC: 234-788-4 CAS: 12033-62-4 | 0 - 15 | Not classified. | [3] |
| chromium | EC: 231-157-5 CAS: 7440-47-3 | 0 - 10 | Resp. Sens. 1, H334 Skin Sens. 1, H317 | [1] [2] |
| vanadium carbide | EC: 235-122-5 CAS: 12070-10-9 | 0 - 5 | Not classified. | [2] |
| zirconium carbide | EC: 235-125-1 CAS: 12070-14-3 | 0 - 5 | Not classified. | [3] |
| zirconium nitride | EC: 247-166-2 CAS: 25658-42-8 | 0 - 5 | Flam. Sol. 1, H228 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 EUH029 See Section 16 for the full text of the H statements declared above. | [1] |

| Product/ingredient name | Specific Conc. Limits, M-factors and ATEs |
|-------------------------|---|
| titanium carbide | - |
| titanium nitride | - |
| niobium carbide | - |
| tungsten carbide | - |
| tantalum carbide | - |
| dimolybdenum carbide | - |
| cobalt | - |
| Nickel | - |
| tantalum mononitride | - |
| chromium | - |
| vanadium carbide | - |
| zirconium carbide | - |
| zirconium nitride | - |

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [3] Additional disclosure due to company policy

SECTION 3: Composition/information on ingredients

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.
- Skin contact** : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- Skin contact** : May cause an allergic skin reaction.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : Adverse symptoms may include the following:
wheezing and breathing difficulties
asthma
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Cermet

SECTION 4: First aid measures

Ingestion : Adverse symptoms may include the following:
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use dry chemical, CO₂ or sand. Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : Do not use water.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : This material may cause long lasting harmful effects to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products : Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 nitrogen oxides
 metal oxide/oxides

5.3 Advice for firefighters

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

Additional information (Explosibility) : None.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and materials for containment and cleaning up

SECTION 6: Accidental release measures

- Small spill** : Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor.
- 6.4 Reference to other sections** : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Storage class (TRGS 510) : 6.1D

7.3 Specific end use(s)

Section 7. Handling and storage: The information in this section contains generic advice and guidance.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.

8.1 Control parameters

Occupational exposure limits

Occupational exposure limits (national)

Cermet

SECTION 8: Exposure controls/personal protection

| Product/ingredient name | Exposure limit values |
|-------------------------|---|
| cobalt | <p>TRGS 910 (Germany, 7/2022). [cobalt and cobalt compounds] Excursion factor: 8 Tolerance Concentration: 5 µg/m³ Acceptance Concentration: 0.5 µg/m³ DFG MAC-values list (Germany, 7/2022). [Cobalt and cobalt compounds (inhalable fraction)] Absorbed through skin. Skin sensitizer. Inhalation sensitizer.</p> <p>DFG MAC-values list (Germany, 7/2022). [Hard metal containing tungsten carbide and cobalt (inhalable fraction)] Absorbed through skin. Skin sensitizer. Inhalation sensitizer.</p> |
| Nickel | <p>TRGS 900 OEL (Germany, 6/2022). Skin sensitizer. PEAK: 0.048 mg/m³ 15 minutes. Form: alveolar fraction TWA: 0.006 mg/m³ 8 hours. Form: alveolar fraction</p> |
| chromium | <p>TRGS 900 OEL (Germany, 6/2022). [Chromium and inorganic chromium (II) and (III) compounds (except those named)] TWA: 2 mg/m³ 8 hours. Form: inhalable fraction PEAK: 2 mg/m³ 15 minutes. Form: inhalable fraction</p> |
| vanadium carbide | <p>TRGS 900 OEL (Germany, 6/2022). [Vanadium compounds, inorganic, 4+ and 5+ and quality] PEAK: 0.005 mg/m³ 15 minutes. Form: alveolar fraction TWA: 0.005 mg/m³ 8 hours. Form: alveolar fraction PEAK: 0.03 mg/m³ 15 minutes. Form: inhalable fraction TWA: 0.03 mg/m³ 8 hours. Form: inhalable fraction</p> |

Occupational exposure limits (European Union)

| Product/ingredient name | Exposure limit values |
|-------------------------|---|
| chromium | <p>EU OEL (Europe, 1/2022). [Chromium Metal, Inorganic Chromium (II) Compounds and Inorganic Chromium (III) Compounds (insoluble)] TWA: 2 mg/m³ 8 hours.</p> |

Biological exposure indices

| Product/ingredient name | Exposure indices |
|-------------------------|---|
| dimolybdenum carbide | <p>DFG BEI-values list (Germany, 7/2022) [Molybdenum and its compounds] BEI: See Section XII.2: Substances for which no BAT values are currently be derived, but documentaries in the "work Medico-toxicological justifications for BAT values, EKA and BLW", molybdenum [in urine, in plasma]. BEI: 150 µg/l, molybdenum [in urine].</p> |
| cobalt | <p>DFG BEI-values list (Germany, 7/2022) [Cobalt and its compounds] Notes: danger from percutaneous absorption (see p. 211 and p. 228). BGV: 35 µg/l, cobalt [in urine]. Sampling time: for long-term exposures: at the end of the shift after several shifts. BEI: 1.5 µg/l, cobalt [in urine]. Sampling time: for long-term exposures: at the end of the shift after several shifts.</p> |
| chromium | <p>DFG BEI-values list (Germany, 7/2022) [Chromium and its compounds] BEI: 0.6 µg/l, total chromium [in urine]. Sampling time: end of exposure or end of shift.</p> |
| vanadium carbide | <p>DFG BEI-values list (Germany, 7/2022) [Vanadium and its inorganic compounds] BEI: 0.15 µg/l, Vanadium [in urine]. Sampling time: end of exposure or end of shift / for long-term exposures: at the end of the shift after several shifts.</p> |

SECTION 8: Exposure controls/personal protection

Recommended monitoring procedures : Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

DNEL/DMEL Summary : Not applicable.

PNECs

PNEC Summary : Not applicable.

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Wear safety glasses with side protection in accordance with EN 166.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. **Recommended:** Wear suitable gloves tested to EN374.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. **Recommended:** Particle filter device (DIN EN 143). Filter type: P3

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

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

| | |
|--|--------------------|
| Physical state | : Solid. |
| Color | : Dark grey. |
| Odor | : Odorless. |
| Odor threshold | : Not applicable. |
| pH | : Not available. |
| Melting point/freezing point | : Not available. |
| Initial boiling point and boiling range | : Not available. |
| Flash point | : Not applicable. |
| Evaporation rate | : Not available. |
| Flammability | : Non-combustible. |
| Lower and upper explosion limit | : Not applicable. |
| Vapor pressure | : Not available. |
| Vapor density | : Not applicable. |
| Relative density | : 5.5-9.0 |
| Solubility in water | : Insoluble |
| Partition coefficient: n-octanol/water | : Not applicable. |
| Auto-ignition temperature | : Not applicable. |
| Decomposition temperature | : Not available. |
| Viscosity | : Not applicable. |
| Explosive properties | : None. |
| Oxidizing properties | : None. |

Particle characteristics

| | |
|-----------------------------|------------------|
| Median particle size | : Not available. |
|-----------------------------|------------------|

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

| | |
|--|--|
| 10.1 Reactivity | : No specific test data related to reactivity available for this product or its ingredients. |
| 10.2 Chemical stability | : The product is stable. |
| 10.3 Possibility of hazardous reactions | : Under normal conditions of storage and use, hazardous reactions will not occur. |
| 10.4 Conditions to avoid | : Keep away from heat, sparks, flame and humidity. |
| 10.5 Incompatible materials | : Reactive or incompatible with the following materials: Oxidizing materials, acids, oxygen, alkalis. |
| 10.6 Hazardous decomposition products | : Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

SECTION 11: Toxicological information**11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008****Acute toxicity**

Conclusion/Summary : Not available.

Acute toxicity estimates

Not available.

Irritation/Corrosion

Conclusion/Summary

Skin : Not available.

Eyes : Not available.

Respiratory : Not available.

Sensitization

Conclusion/Summary

Skin : May cause an allergic skin reaction.

Respiratory : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Mutagenicity

Conclusion/Summary : Suspected of causing genetic defects.

Carcinogenicity

Conclusion/Summary : May cause cancer.

Reproductive toxicity

Conclusion/Summary : May damage fertility.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

| Product/ingredient name | Category | Route of exposure | Target organs |
|-------------------------|------------|-------------------|------------------------------|
| zirconium nitride | Category 3 | - | Respiratory tract irritation |

Specific target organ toxicity (repeated exposure)

| Product/ingredient name | Category | Route of exposure | Target organs |
|-------------------------|------------|-------------------|---------------|
| Nickel | Category 1 | - | - |

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin contact : May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : Adverse symptoms may include the following:
wheezing and breathing difficulties
asthma
reduced fetal weight
increase in fetal deaths
skeletal malformations

Cermet

SECTION 11: Toxicological information

- Skin contact** : Adverse symptoms may include the following:
 irritation
 redness
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

Not available.

- Conclusion/Summary** : Not available.
- General** : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Carcinogenicity** : May cause cancer. Risk of cancer depends on duration and level of exposure.
- Mutagenicity** : Suspected of causing genetic defects.
- Reproductive toxicity** : May damage fertility.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

No known significant effects or critical hazards (Human Health).

11.2.2 Other information

Not available.

SECTION 12: Ecological information

12.1 Toxicity

- Conclusion/Summary** : May cause long lasting harmful effects to aquatic life.

12.2 Persistence and degradability

- Conclusion/Summary** : The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Not available.

12.4 Mobility in soil

- Soil/water partition coefficient (K_{oc})** : Not available.
- Mobility** : Not available.

12.5 Results of PBT and vPvB assessment

Cermet

SECTION 12: Ecological information

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

12.6 Endocrine disrupting properties

No known significant effects or critical hazards (Environment).

12.7 Other adverse effects

No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance.

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

The allocation of waste identity numbers/waste descriptions must be carried out according to the EWC, specific to the industry and process.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal : The generation of waste should be avoided or minimized wherever possible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

| | ADR/RID | ADN | IMDG | IATA |
|---------------------------------|----------------|----------------|----------------------|----------------|
| 14.1 UN number or ID number | Not regulated. | Not regulated. | Not regulated. | Not regulated. |
| 14.2 UN proper shipping name | - | - | - | - |
| 14.3 Transport hazard class(es) | - | - | - | - |
| Label | | | | |
| 14.4 Packing group | - | - | - | - |
| 14.5 Environmental hazards | No. | No. | Marine Pollutant: No | No. |

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Maritime transport in bulk according to IMO instruments : Not applicable.

Cermet

SECTION 15: Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU Regulation (EC) No. 1907/2006 (REACH)****Annex XIV - List of substances subject to authorization****Annex XIV**

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

| Country | Name | Restriction |
|---------|--------|-------------|
| EU | Cermet | 28 |
| EU | Cermet | 30 |
| EU | cobalt | 28 |
| EU | cobalt | 30 |
| EU | Nickel | 27 |
| GB | Cermet | 28 |
| GB | Cermet | 30 |
| GB | cobalt | 28 |
| GB | cobalt | 30 |
| GB | Nickel | 27 |
| TR | Nickel | 27 |

Label: Restricted to professional users.**Other EU regulations****Industrial emissions
(integrated pollution
prevention and control) -
Air** : Listed**Industrial emissions
(integrated pollution
prevention and control) -
Water** : Listed**Ozone depleting substances (1005/2009/EU)**

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Persistent Organic Pollutants

Not listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

National regulations

| Product/ingredient name | List name | Name on list | Classification | Notes |
|-------------------------|---------------------|--|----------------|-------|
| cobalt | DFG MAC-values list | Hard metal containing tungsten carbide and cobalt (inhalable fraction) | K1, M3 | - |
| Nickel | DFG MAC-values list | Nickel and nickel compounds (inhalable fraction) | K1 | - |
| chromium | DFG MAC-values list | Chromium(VI) compounds (inhalable fraction) | K1, M2 | - |
| vanadium carbide | DFG MAC-values list | Vanadium and its inorganic compounds (inhalable fraction) | K3, M3 | - |

SECTION 15: Regulatory information

Storage class (TRGS 510) : 6.1D

Hazardous incident ordinance

This product is not controlled under the Germany Hazardous Incident Ordinance.

Hazard class for water : 3

Maternity Protection Act (MuSchG) : Applicable.

Law on the protection of young workers : Observe employment restrictions according to §22 JArbSchG for young people.

German Chemicals Prohibition Ordinance (ChemVerbotsV) : This product is subject to the Chemical Prohibition Ordinance (ChemVerbotsV).

Technical instruction on air quality control : TA-Luft Number 5.2.1: 5-100%
TA-Luft Class III - Number 5.2.2: 0-15%
TA-Luft Class II - Number 5.2.2: 0-20%
TA-Luft Class I - Number 5.2.7.1.1: 0-20%

AOX : The product does not contain organically bound halogens which could lead to an AOX value in waste water.

There are no known additional national regulations relevant to the SDS.

International regulations**Chemical Weapon Convention List Schedules I, II & III Chemicals**

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Canada : At least one component is not listed in DSL but all such components are listed in NDSL.

Republic of Korea : All components are listed or exempted.

Taiwan : All components are listed or exempted.

United States : All components are active or exempted.

Viet Nam : All components are listed or exempted.

15.2 Chemical Safety Assessment : This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

This Safety Data Sheet is prepared in accordance with Annex II to Regulation (EC) No 1907/2006, as amended by Commission Regulation (EU) 2020/878.

🔍 Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DMEL = Derived Minimal Effect Level

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SECTION 16: Other information

DNEL = Derived No Effect Level
 EUH statement = CLP-specific Hazard statement
 EWC = European Waste Catalogue
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 N/A = Not available
 PBT = Persistent, Bioaccumulative and Toxic
 PNEC = Predicted No Effect Concentration
 RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
 RRN = REACH Registration Number
 SGG = Segregation Group
 vPvB = Very Persistent and Very Bioaccumulative

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

| Classification | Justification |
|-------------------------|--------------------|
| Resp. Sens. 1, H334 | Calculation method |
| Skin Sens. 1, H317 | Calculation method |
| Muta. 2, H341 | Calculation method |
| Carc. 1B, H350 | Calculation method |
| Repr. 1B, H360F | Calculation method |
| STOT RE 1, H372 | Calculation method |
| Aquatic Chronic 4, H413 | Calculation method |

Full text of abbreviated H statements

| | |
|--------|--|
| H228 | Flammable solid. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H319 | Causes serious eye irritation. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation. |
| H341 | Suspected of causing genetic defects. |
| H350 | May cause cancer. |
| H351 | Suspected of causing cancer. |
| H360F | May damage fertility. |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H412 | Harmful to aquatic life with long lasting effects. |
| H413 | May cause long lasting harmful effects to aquatic life. |
| EUH029 | Contact with water liberates toxic gas. |

Full text of classifications [CLP/GHS]

| | |
|-------------------|---|
| Aquatic Chronic 3 | AQUATIC HAZARD (LONG-TERM) - Category 3 |
| Aquatic Chronic 4 | AQUATIC HAZARD (LONG-TERM) - Category 4 |
| Carc. 1B | CARCINOGENICITY - Category 1B |
| Carc. 2 | CARCINOGENICITY - Category 2 |
| Eye Irrit. 2 | SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2 |
| Flam. Sol. 1 | FLAMMABLE SOLIDS - Category 1 |
| Muta. 2 | GERM CELL MUTAGENICITY - Category 2 |
| Repr. 1B | TOXIC TO REPRODUCTION - Category 1B |
| Resp. Sens. 1 | RESPIRATORY SENSITIZATION - Category 1 |
| Skin Irrit. 2 | SKIN CORROSION/IRRITATION - Category 2 |
| Skin Sens. 1 | SKIN SENSITIZATION - Category 1 |
| STOT RE 1 | SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1 |
| STOT SE 3 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 3 |

Date of printing : 18/04/2023

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SECTION 16: Other information

Date of issue/ Date of revision : 18/04/2023

Date of previous issue : No previous validation

Version : 1

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.