

# Synthetic diamond impregnated segments

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date: 4/8/2025 Issue date: 4/8/2025 Supersedes: 4/5/2024 Version: 2.1

### SECTION 1: Identification

#### 1.1. Identification

|                               |                                        |
|-------------------------------|----------------------------------------|
| Product form                  | Article                                |
| Trade name                    | Synthetic diamond impregnated segments |
| Product code                  | BU Diamond                             |
| Other means of identification | Floor Saw SP-S 300-600mm / 350-600mm   |

#### 1.2. Recommended use and restrictions on use

|                     |                           |
|---------------------|---------------------------|
| Recommended use     | Grinding materials        |
| Restrictions on use | For professional use only |

#### 1.3. Supplier

##### Supplier

Hilti, Inc.  
Legacy Tower, Suite 1000  
7250 Dallas Parkway  
US TX 75024 Plano  
USA  
T +1 9724035800  
1-800-879-8000 toll free, F +1 918 254 0522  
[us-sales@hilti.com](mailto:us-sales@hilti.com)

##### Department issuing data specification sheet

Hilti AG  
Feldkircherstraße 100  
FL 9494 Schaan  
Liechtenstein  
T +423 234 2111  
[product.compliance-power.tools@hilti.com](mailto:product.compliance-power.tools@hilti.com)

#### 1.4. Emergency telephone number

|                  |                                                                                                                                      |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Emergency number | Emergency CONTACT (24-Hour-Number)<br>GBK/Infotrac ID 101022<br>(USA domestic) 1 800 535 5053<br>or international (001) 352 323 3500 |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------|

### SECTION 2: Hazard(s) identification

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

##### GHS-US classification

Not classified

#### 2.2. GHS Label elements, including precautionary statements

#### 2.3. Other hazards which do not result in classification

No additional information available

#### 2.4. Unknown acute toxicity (GHS US)

Not applicable

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Not applicable

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### 3.2. Mixtures

Comments

Phosphorus is present in bound form and is not released in elemental form.

| Name             | Common Name (Synonyms)                                                                                                                                           | Product identifier  | %         | GHS-US classification                                                                                                        |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------|------------------------------------------------------------------------------------------------------------------------------|
| tungsten carbide |                                                                                                                                                                  | CAS-No.: 12070-12-1 | 15 – 60   | Carc. 1B, H350<br>STOT RE 2, H373                                                                                            |
| copper           | copper bronze,<br>powder / copper,<br>powder                                                                                                                     | CAS-No.: 7440-50-8  | 10 – 30   | Not classified                                                                                                               |
| Iron             | iron / iron, chip /<br>iron, foil / iron,<br>granule / iron,<br>wire                                                                                             | CAS-No.: 7439-89-6  | 10 – 30   | Not classified                                                                                                               |
| nickel           | elemental nickel                                                                                                                                                 | CAS-No.: 7440-02-0  | 7 – 30    | Skin Sens. 1, H317<br>Carc. 2, H351<br>STOT RE 1, H372                                                                       |
| Cobalt           |                                                                                                                                                                  | CAS-No.: 7440-48-4  | 3 – 13    | Acute Tox. 4 (Oral), H302<br>Resp. Sens. 1B, H334<br>Skin Sens. 1, H317<br>Muta. 2, H341<br>Carc. 1B, H350<br>Repr. 1B, H360 |
| Tungsten (W)     | tungsten /<br>wolfram                                                                                                                                            | CAS-No.: 7440-33-7  | 3 – 13    | Not classified                                                                                                               |
| Manganese        | colloidal<br>manganese /<br>manganese /<br>manganese, chip<br>/ manganese,<br>elemental /<br>manganese,<br>flakes /<br>manganese,<br>metal /<br>manganese, slabs | CAS-No.: 7439-96-5  | 1 – 7     | Not classified                                                                                                               |
| Tin              | alpha-tin / silver<br>matt / tin                                                                                                                                 | CAS-No.: 7440-31-5  | 0.5 – 5   | Not classified                                                                                                               |
| red phosphorus   | phosphorus /<br>phosphorus,<br>amorphous, red /<br>phosphorus, red,<br>amorphous                                                                                 | CAS-No.: 7723-14-0  | 0.1 – 1.5 | Flam. Sol. 1, H228                                                                                                           |

Full text of hazard classes and H-statements : see section 16

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### SECTION 4: First-aid measures

#### 4.1. Description of first aid measures

|                                       |                                                                                                                                    |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| First-aid measures after inhalation   | Remove person to fresh air and keep comfortable for breathing. When symptoms occur: go into open air and ventilate suspected area. |
| First-aid measures after skin contact | Gently wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.                        |
| First-aid measures after eye contact  | Rinse eyes with water as a precaution. If eye irritation persists: Get medical advice/attention.                                   |
| First-aid measures after ingestion    | Rinse mouth.                                                                                                                       |

#### 4.2. Most important symptoms and effects (acute and delayed)

|                                                     |                                                             |
|-----------------------------------------------------|-------------------------------------------------------------|
| Potential adverse human health effects and symptoms | Irritation: may cause irritation to the respiratory system. |
| Symptoms/effects after inhalation                   | May cause respiratory irritation.                           |
| Symptoms/effects after eye contact                  | May cause severe irritation.                                |

#### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

### SECTION 5: Fire-fighting measures

#### 5.1. Suitable (and unsuitable) extinguishing media

|                                |                                                                                           |
|--------------------------------|-------------------------------------------------------------------------------------------|
| Suitable extinguishing media   | Use extinguishing agent suitable for surrounding fire. Water. Sand. Foam. Carbon dioxide. |
| Unsuitable extinguishing media | Do not use a heavy water stream.                                                          |

#### 5.2. Specific hazards arising from the chemical

|             |                |
|-------------|----------------|
| Fire hazard | Not flammable. |
|-------------|----------------|

#### 5.3. Special protective equipment and precautions for fire-fighters

|                                |                                                                                               |
|--------------------------------|-----------------------------------------------------------------------------------------------|
| Protection during firefighting | Do not enter fire area without proper protective equipment, including respiratory protection. |
|--------------------------------|-----------------------------------------------------------------------------------------------|

### SECTION 6: Accidental release measures

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

##### 6.1.1. For non-emergency personnel

No additional information available

##### 6.1.2. For emergency responders

No additional information available

#### 6.2. Environmental precautions

No additional information available

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

|                         |                                                         |
|-------------------------|---------------------------------------------------------|
| Methods for cleaning up | Shovel into suitable and closed container for disposal. |
|-------------------------|---------------------------------------------------------|

#### 6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For further information refer to section 13.

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### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

|                                   |                                                                                                                                                               |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Additional hazards when processed | Normal use of this product shall imply use in accordance with the instructions on the packaging and in line with the expectations of a professional user.     |
| Precautions for safe handling     | The product should not be used for purposes other than those shown above without first referring to the supplier and obtaining written handling instructions. |
| Hygiene measures                  | Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Wash contaminated clothing before reuse.                    |

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

|                    |                       |
|--------------------|-----------------------|
| Storage conditions | Store in a dry place. |
|--------------------|-----------------------|

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

| Synthetic diamond impregnated segments     |                                                                                                            |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------|
| No additional information available        |                                                                                                            |
| Cobalt (7440-48-4)                         |                                                                                                            |
| USA - ACGIH - Occupational Exposure Limits |                                                                                                            |
| Local name                                 | Cobalt and inorganic compounds as Co                                                                       |
| ACGIH OEL TWA                              | 0.02 mg/m <sup>3</sup>                                                                                     |
| Remark (ACGIH)                             | Pneumonitis                                                                                                |
| Regulatory reference                       | ACGIH 2024                                                                                                 |
| USA - ACGIH - Biological Exposure Indices  |                                                                                                            |
| Local name                                 | Cobalt and inorganic compounds                                                                             |
| BEI                                        | 15 µg/l Parameter: Cobalt - Medium: urine - Sampling time: End of shift at end of workweek - Notations: Ns |
| Regulatory reference                       | ACGIH 2024                                                                                                 |
| USA - OSHA - Occupational Exposure Limits  |                                                                                                            |
| Local name                                 | Cobalt metal, dust, and fume (as Co)                                                                       |
| OSHA PEL TWA                               | 0.1 mg/m <sup>3</sup>                                                                                      |
| Regulatory reference (US-OSHA)             | OSHA Annotated Table Z-1                                                                                   |
| copper (7440-50-8)                         |                                                                                                            |
| USA - ACGIH - Occupational Exposure Limits |                                                                                                            |
| Local name                                 | Copper, as Cu                                                                                              |
| ACGIH OEL TWA                              | 0.2 mg/m <sup>3</sup>                                                                                      |
| Remark (ACGIH)                             | TLV® Basis: Irr; GI; metal fume fever                                                                      |
| Regulatory reference                       | ACGIH 2024                                                                                                 |
| USA - OSHA - Occupational Exposure Limits  |                                                                                                            |
| Local name                                 | Copper                                                                                                     |

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|                                                   |                                                                                                                                                                                                                                                                                                                       |
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| <b>copper (7440-50-8)</b>                         |                                                                                                                                                                                                                                                                                                                       |
| OSHA PEL TWA                                      | 0.1 mg/m <sup>3</sup> (Fume (as Cu))<br>1 mg/m <sup>3</sup> (Dusts and mists (as Cu))                                                                                                                                                                                                                                 |
| Regulatory reference (US-OSHA)                    | OSHA Annotated Table Z-1                                                                                                                                                                                                                                                                                              |
| <b>Tin (7440-31-5)</b>                            |                                                                                                                                                                                                                                                                                                                       |
| <b>USA - ACGIH - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                       |
| Local name                                        | Tin and inorganic compounds, excluding Tin hydride and Indium tin oxide, as Sn                                                                                                                                                                                                                                        |
| ACGIH OEL TWA                                     | 2 mg/m <sup>3</sup> (Inhalable fraction)                                                                                                                                                                                                                                                                              |
| Remark (ACGIH)                                    | Non fibrous = TLV® Basis: URT irr<br>Fibrous (including whiskers) = TLV® Basis: Mesothelioma; cancer. Notations: A2 (Suspected Human Carcinogen)                                                                                                                                                                      |
| Regulatory reference                              | ACGIH 2024                                                                                                                                                                                                                                                                                                            |
| <b>USA - OSHA - Occupational Exposure Limits</b>  |                                                                                                                                                                                                                                                                                                                       |
| Local name                                        | Tin                                                                                                                                                                                                                                                                                                                   |
| OSHA PEL TWA                                      | 2 mg/m <sup>3</sup> (inorganic compounds (except oxides) (as Sn))<br>0.1 mg/m <sup>3</sup> (organic compounds (as Sn))                                                                                                                                                                                                |
| Regulatory reference (US-OSHA)                    | OSHA Annotated Table Z-1                                                                                                                                                                                                                                                                                              |
| <b>Iron (7439-89-6)</b>                           |                                                                                                                                                                                                                                                                                                                       |
| <b>USA - ACGIH - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                       |
| ACGIH OEL TWA                                     | 10 mg/m <sup>3</sup> as iron oxide dust or fume                                                                                                                                                                                                                                                                       |
| <b>nickel (7440-02-0)</b>                         |                                                                                                                                                                                                                                                                                                                       |
| <b>USA - ACGIH - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                       |
| Local name                                        | Nickel, elemental                                                                                                                                                                                                                                                                                                     |
| ACGIH OEL TWA                                     | 1.5 mg/m <sup>3</sup> (Inhalable fraction)                                                                                                                                                                                                                                                                            |
| Remark (ACGIH)                                    | TLV® Basis: Dermatitis; pneumoconiosis. Notations: A5 (Not Suspected as a Human Carcinogen)                                                                                                                                                                                                                           |
| Regulatory reference                              | ACGIH 2024                                                                                                                                                                                                                                                                                                            |
| <b>USA - ACGIH - Biological Exposure Indices</b>  |                                                                                                                                                                                                                                                                                                                       |
| Local name                                        | Nickel and inorganic compounds                                                                                                                                                                                                                                                                                        |
| BEI                                               | 5 µg/l Parameter: Nickel - Medium: urine after exposure to elemental Nickel and poorly soluble compounds - Sampling time: Post-shift at end of workweek - Notations: B<br>30 µg/l Parameter: Nickel - Medium: urine after exposure to soluble compounds - Sampling time: Post-shift at end of workweek - Notations: B |
| Regulatory reference                              | ACGIH 2024                                                                                                                                                                                                                                                                                                            |
| <b>USA - OSHA - Occupational Exposure Limits</b>  |                                                                                                                                                                                                                                                                                                                       |
| Local name                                        | Nickel                                                                                                                                                                                                                                                                                                                |
| OSHA PEL TWA                                      | 1 mg/m <sup>3</sup> metal and insoluble compounds (as Ni)<br>1 mg/m <sup>3</sup> soluble compounds (as Ni)                                                                                                                                                                                                            |

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|                                                   |                                                                           |
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| <b>nickel (7440-02-0)</b>                         |                                                                           |
| Regulatory reference (US-OSHA)                    | OSHA Annotated Table Z-1                                                  |
| <b>tungsten carbide (12070-12-1)</b>              |                                                                           |
| <b>USA - ACGIH - Occupational Exposure Limits</b> |                                                                           |
| ACGIH OEL TWA                                     | 3 mg/m <sup>3</sup> (Respirable fraction)                                 |
| <b>Manganese (7439-96-5)</b>                      |                                                                           |
| <b>USA - ACGIH - Occupational Exposure Limits</b> |                                                                           |
| Local name                                        | Manganese                                                                 |
| ACGIH OEL TWA                                     | 0.02 mg/m <sup>3</sup>                                                    |
| Remark (ACGIH)                                    | CNS impair; A4                                                            |
| Regulatory reference                              | ACGIH 2024                                                                |
| <b>USA - OSHA - Occupational Exposure Limits</b>  |                                                                           |
| Local name                                        | Manganese                                                                 |
| OSHA PEL C                                        | 5 mg/m <sup>3</sup> compounds (as Mn)<br>5 mg/m <sup>3</sup> fume (as Mn) |
| Regulatory reference (US-OSHA)                    | OSHA Annotated Table Z-1                                                  |
| <b>red phosphorus (7723-14-0)</b>                 |                                                                           |
| <b>USA - OSHA - Occupational Exposure Limits</b>  |                                                                           |
| Local name                                        | Phosphorus (yellow)                                                       |
| OSHA PEL TWA                                      | 0.1 mg/m <sup>3</sup>                                                     |
| Regulatory reference (US-OSHA)                    | OSHA Annotated Table Z-1                                                  |
| <b>Tungsten (W) (7440-33-7)</b>                   |                                                                           |
| <b>USA - ACGIH - Occupational Exposure Limits</b> |                                                                           |
| Local name                                        | Tungsten and compounds, in the absence of Cobalt, as W                    |
| ACGIH OEL TWA                                     | 3 mg/m <sup>3</sup> (Respirable fraction)                                 |
| Remark (ACGIH)                                    | TLV® Basis: Lung dam                                                      |
| Regulatory reference                              | ACGIH 2024                                                                |

### 8.2. Appropriate engineering controls

Appropriate engineering controls

Ensure good ventilation of the work station. Use dust removal system, vacuum cleaner, air cleaner; cooling water cleaner (Hilti WMS system).

### 8.3. Individual protection measures/Personal protective equipment

#### Personal protective equipment:

Dust formation: dust mask. In case of dust production: protective goggles. Gloves. Protective clothing.

|                                           |                                     |
|-------------------------------------------|-------------------------------------|
| <b>Materials for protective clothing:</b> |                                     |
| <b>Condition</b>                          | <b>Material</b>                     |
|                                           | Flame retardant protective clothing |

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|                                                                                                       |                             |                   |                        |                    |
|-------------------------------------------------------------------------------------------------------|-----------------------------|-------------------|------------------------|--------------------|
| <b>Hand protection:</b>                                                                               |                             |                   |                        |                    |
| Wear leather gloves.                                                                                  |                             |                   |                        |                    |
| <b>Type</b>                                                                                           | <b>Material</b>             | <b>Permeation</b> | <b>Thickness (mm)</b>  | <b>Penetration</b> |
|                                                                                                       | leather gloves              |                   |                        |                    |
| <b>Eye protection:</b>                                                                                |                             |                   |                        |                    |
| Safety glasses                                                                                        |                             |                   |                        |                    |
| <b>Type</b>                                                                                           | <b>Field of application</b> |                   | <b>Characteristics</b> |                    |
| Safety glasses                                                                                        | Dust                        |                   |                        |                    |
| <b>Skin and body protection:</b>                                                                      |                             |                   |                        |                    |
| Wear suitable protective clothing                                                                     |                             |                   |                        |                    |
| <b>Respiratory protection:</b>                                                                        |                             |                   |                        |                    |
| Where exposure through inhalation may occur from use, respiratory protection equipment is recommended |                             |                   |                        |                    |
| <b>Device</b>                                                                                         | <b>Filter type</b>          |                   | <b>Condition</b>       |                    |
|                                                                                                       |                             |                   | Dust protection        |                    |

**Personal protective equipment symbol(s):**



**Other information:**

Hazardous dust of the workpiece material may be generated during grinding / drilling and / or sanding operations. National regulations for dust exposure limit values have to be taken into consideration as part of the job hazard assessment.

Most of the dust generated during grinding is from the base material being ground and the potential hazard from this exposure must be evaluated. This dust may present a fire or dust explosion hazard and may present a serious health hazard.

## SECTION 9: Physical and chemical properties

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

|                                            |                               |
|--------------------------------------------|-------------------------------|
| Physical state                             | Solid                         |
| Colour                                     | Silver-grey to copper-colored |
| Odour                                      | odourless                     |
| Odour threshold                            | No data available             |
| pH                                         | No data available             |
| Melting point                              | No data available             |
| Freezing point                             | No data available             |
| Boiling point                              | No data available             |
| Flash point                                | No data available             |
| Relative evaporation rate (butylacetate=1) | No data available             |
| Flammability (solid, gas)                  | No data available             |
| Vapour pressure                            | No data available             |
| Relative vapour density at 20°C            | No data available             |
| Relative density                           | No data available             |

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|                                                 |                     |
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| Solubility                                      | insoluble in water. |
| Partition coefficient n-octanol/water (Log Pow) | No data available   |
| Auto-ignition temperature                       | No data available   |
| Decomposition temperature                       | > 400 °C            |
| Viscosity, kinematic                            | No data available   |
| Viscosity, dynamic                              | No data available   |
| Explosive limits                                | No data available   |
| Explosive properties                            | No data available   |
| Oxidising properties                            | No data available   |

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport. Product is not explosive.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

No additional information available

### 10.5. Incompatible materials

No additional information available

### 10.6. Hazardous decomposition products

No additional information available

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

|                             |                |
|-----------------------------|----------------|
| Acute toxicity (oral)       | Not classified |
| Acute toxicity (dermal)     | Not classified |
| Acute toxicity (inhalation) | Not classified |

| Cobalt (7440-48-4)                |                                                                                                                            |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| LD50 oral rat                     | 550 mg/kg bodyweight (OECD 425 method)                                                                                     |
| LD50 oral                         | 550 mg/kg                                                                                                                  |
| LD50 dermal rat                   | > 2000 mg/kg bodyweight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Dermal, 15 day(s)) |
| copper (7440-50-8)                |                                                                                                                            |
| LC50 Inhalation - Rat (Dust/Mist) | > 5.11 mg/l/4h (OECD 436 method)                                                                                           |
| Tin (7440-31-5)                   |                                                                                                                            |
| LD50 oral rat                     | > 2000 mg/kg (OECD 423 method);No mortality with the given dose                                                            |
| LD50 dermal rat                   | > 2000 mg/kg (OECD 402 method);No mortality with the given dose                                                            |



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| <b>Tin (7440-31-5)</b>               |                                                                                                                                                                                                                                                                                         |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LC50 Inhalation - Rat                | > 4.75 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), Guideline: EU Method B.2 (Acute Toxicity (Inhalation)), Guideline: EPA OPPTS 870.1300 (Acute inhalation toxicity), Remarks on results: not determinable due to absence of adverse toxic effects |
| LC50 Inhalation - Rat (Dust/Mist)    | > 4.75 mg/l (OECD 403 method);No mortality with the given dose                                                                                                                                                                                                                          |
| <b>Iron (7439-89-6)</b>              |                                                                                                                                                                                                                                                                                         |
| LD50 oral rat                        | 98600 mg/kg bodyweight (Equivalent or similar to OECD 401, Rat, Male, Experimental value, Oral, 14 - 28 day(s))                                                                                                                                                                         |
| LC50 Inhalation - Rat                | > 0.25 mg/l (6 h, Rat, Male, Experimental value, Inhalation (dust), 28 day(s))                                                                                                                                                                                                          |
| <b>nickel (7440-02-0)</b>            |                                                                                                                                                                                                                                                                                         |
| LD50 oral rat                        | > 9000 mg/kg (OECD 401 method)                                                                                                                                                                                                                                                          |
| LD50 oral                            | 9000 mg/kg                                                                                                                                                                                                                                                                              |
| LC50 Inhalation - Rat                | ≥ 10.2 mg/l (1 h)                                                                                                                                                                                                                                                                       |
| <b>tungsten carbide (12070-12-1)</b> |                                                                                                                                                                                                                                                                                         |
| LD50 oral rat                        | > 2000 mg/kg bodyweight (OECD 401 method)                                                                                                                                                                                                                                               |
| LD50 dermal rat                      | > 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)                                                                                                                                                                                              |
| LD50 dermal rabbit                   | > 2000 mg/kg bodyweight (OECD 402 method)                                                                                                                                                                                                                                               |
| LC50 Inhalation - Rat                | > 5.3 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity)                                                                                                                                                                                                   |
| <b>Manganese (7439-96-5)</b>         |                                                                                                                                                                                                                                                                                         |
| LD50 oral rat                        | > 2000 mg/kg (OECD 420 method)                                                                                                                                                                                                                                                          |
| LD50 oral                            | 2500 mg/kg                                                                                                                                                                                                                                                                              |
| LC50 Inhalation - Rat                | > 5.14 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Inhalation (dust), 14 day(s))                                                                                                                                                            |
| LC50 Inhalation - Rat (Dust/Mist)    | > 5.14 mg/l/4h (OECD 403 method)                                                                                                                                                                                                                                                        |
| <b>red phosphorus (7723-14-0)</b>    |                                                                                                                                                                                                                                                                                         |
| LD50 oral                            | 15000 mg/kg                                                                                                                                                                                                                                                                             |
| <b>Tungsten (W) (7440-33-7)</b>      |                                                                                                                                                                                                                                                                                         |
| LD50 oral rat                        | > 2000 mg/kg (OECD 401 method)                                                                                                                                                                                                                                                          |
| LD50 dermal rat                      | > 2000 mg/kg (OECD 402 method)                                                                                                                                                                                                                                                          |
| LC50 Inhalation - Rat                | > 5.4 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity)                                                                                                                                                                                                   |
| LC50 Inhalation - Rat (Dust/Mist)    | > 5.4 mg/l/4h (OECD 403 method)                                                                                                                                                                                                                                                         |
| Skin corrosion/irritation            | Not classified                                                                                                                                                                                                                                                                          |
| Serious eye damage/irritation        | Not classified                                                                                                                                                                                                                                                                          |
| Respiratory or skin sensitisation    | Not classified                                                                                                                                                                                                                                                                          |
| Germ cell mutagenicity               | Not classified                                                                                                                                                                                                                                                                          |
| Carcinogenicity                      | Not classified                                                                                                                                                                                                                                                                          |

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|                                                     |                                                                                                          |
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| <b>Cobalt (7440-48-4)</b>                           |                                                                                                          |
| IARC group                                          | 2A - Probably carcinogenic to humans                                                                     |
| National Toxicology Program (NTP) Status            | Reasonably anticipated to be Human Carcinogen                                                            |
| <b>nickel (7440-02-0)</b>                           |                                                                                                          |
| IARC group                                          | 2B - Possibly carcinogenic to humans                                                                     |
| National Toxicology Program (NTP) Status            | Reasonably anticipated to be Human Carcinogen                                                            |
| <b>tungsten carbide (12070-12-1)</b>                |                                                                                                          |
| IARC group                                          | 2A - Probably carcinogenic to humans                                                                     |
| Reproductive toxicity                               | Not classified                                                                                           |
| STOT-single exposure                                | Not classified                                                                                           |
| STOT-repeated exposure                              | Not classified                                                                                           |
| <b>Tin (7440-31-5)</b>                              |                                                                                                          |
| NOAEL (subacute, oral, animal/female, 28 days)      | > 1000 mg/kg bodyweight/day (OECD 407 method)                                                            |
| <b>nickel (7440-02-0)</b>                           |                                                                                                          |
| LOAEC (inhalation, rat, dust/mist/fume, 90 days)    | 0.1 mg/m <sup>3</sup> (2 years; (OECD 451 method))                                                       |
| STOT-repeated exposure                              | Causes damage to organs through prolonged or repeated exposure.                                          |
| <b>tungsten carbide (12070-12-1)</b>                |                                                                                                          |
| STOT-repeated exposure                              | May cause damage to organs through prolonged or repeated exposure.                                       |
| <b>Tungsten (W) (7440-33-7)</b>                     |                                                                                                          |
| NOAEL (oral, rat, 90 days)                          | 1000 mg/kg bodyweight/day (OECD 422 method)                                                              |
| NOAEC (inhalation, rat, dust/mist/fume, 90 days)    | > 0.652 mg/l air Animal: rat, Guideline: OECD Guideline 412 (Subacute Inhalation Toxicity: 28-Day Study) |
| Aspiration hazard                                   | Not classified                                                                                           |
| Viscosity, kinematic                                | No data available                                                                                        |
| Likely routes of exposure                           | Inhalation.                                                                                              |
| Potential adverse human health effects and symptoms | Irritation: may cause irritation to the respiratory system.                                              |
| Symptoms/effects after inhalation                   | May cause respiratory irritation.                                                                        |
| Symptoms/effects after eye contact                  | May cause severe irritation.                                                                             |

## SECTION 12: Ecological information

### 12.1. Toxicity

|                           |                                             |
|---------------------------|---------------------------------------------|
| <b>Cobalt (7440-48-4)</b> |                                             |
| LC50 - Fish [1]           | > 100 (96h; Danio rerio; OECD 203)          |
| EC50 72h - Algae [1]      | 0.035 mg/l (Pseudokirchnerella subcapitata) |
| ErC50 algae               | 0.144 mg/l                                  |
| NOEC (acute)              | 3.2 mg/l (48h; Daphnia magna; OECD 202)     |
| NOEC chronic crustacea    | 0.00683 mg/l                                |

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| <b>Tin (7440-31-5)</b>               |                                                                                                                                                  |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| ErC50 algae                          | > 19.2 µg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Tin) |
| LOEC (chronic)                       | 0.2 mg/l (7d; Ceriodaphnia dubia; EPA 1002.0)                                                                                                    |
| <b>nickel (7440-02-0)</b>            |                                                                                                                                                  |
| LC50 - Fish [1]                      | 15.3 mg/l (96h; Oncorhynchus mykiss (Rainbow trout))                                                                                             |
| EC50 - Other aquatic organisms [1]   | 0.0276 mg/l (48h; Ceriodaphnia dubia)                                                                                                            |
| EC50 72h - Algae [1]                 | 0.0815 mg/l (72h; Pseudokirchneriella subcapitata; (OECD 201 method))                                                                            |
| NOEC chronic fish                    | 0.057 mg/l (32 d; Pimephales promelas)                                                                                                           |
| NOEC chronic crustacea               | 0.0037 mg/l (10 d; Ceriodaphnia dubia; (OECD 211 method))                                                                                        |
| <b>tungsten carbide (12070-12-1)</b> |                                                                                                                                                  |
| LC50 - Fish [1]                      | > 1000 mg/l (96 h; Danio rerio; (OECD 403 method))                                                                                               |
| EC50 - Crustacea [1]                 | > 1000 mg/l (48 h; Daphnia magna; (OECD 202 method))                                                                                             |
| EC50 72h - Algae [1]                 | > 1 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)                                              |
| ErC50 algae                          | ≥ 31 mg/l (Tungsten (W); 72 h; Raphidocelis subcapitata; (OECD 201 method))                                                                      |
| NOEC chronic fish                    | ≥ 9.8 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio) Duration: '38 d'                                             |
| <b>Manganese (7439-96-5)</b>         |                                                                                                                                                  |
| LC50 - Fish [1]                      | > 3.6 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value)                 |
| EC50 - Crustacea [1]                 | > 1.6 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value)                |
| ErC50 algae                          | 4.5 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Desmodesmus subspicatus, Static system, Fresh water, Experimental value)                 |
| <b>Tungsten (W) (7440-33-7)</b>      |                                                                                                                                                  |
| LC50 - Fish [1]                      | > 181 mg/l (96 h; Danio rerio; (OECD 203 method); <tx:KFT_READ-ACROSS>)                                                                          |
| EC50 - Crustacea [1]                 | > 163 mg/l (48 h; Daphnia magna; (OECD 202 method); <tx:KFT_READ-ACROSS>)                                                                        |
| ErC50 algae                          | 5.76 mg/l (72 h; Pseudokirchneriella subcapitata; (OECD 201 method); <tx:KFT_READ-ACROSS>)                                                       |

### 12.2. Persistence and degradability

| <b>Cobalt (7440-48-4)</b>     |                                          |
|-------------------------------|------------------------------------------|
| Persistence and degradability | Biodegradability: not applicable.        |
| Chemical oxygen demand (COD)  | Not applicable (inorganic)               |
| ThOD                          | Not applicable (inorganic)               |
| <b>copper (7440-50-8)</b>     |                                          |
| Persistence and degradability | Not applicable for inorganic substances. |

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| <b>copper (7440-50-8)</b>            |                                                                             |
|--------------------------------------|-----------------------------------------------------------------------------|
| Biochemical oxygen demand (BOD)      | Not applicable                                                              |
| Chemical oxygen demand (COD)         | Not applicable                                                              |
| ThOD                                 | Not applicable                                                              |
| BOD (% of ThOD)                      | Not applicable                                                              |
| <b>Tin (7440-31-5)</b>               |                                                                             |
| Persistence and degradability        | Not applicable for inorganic substances.                                    |
| Chemical oxygen demand (COD)         | Not applicable (inorganic)                                                  |
| ThOD                                 | Not applicable (inorganic)                                                  |
| <b>Iron (7439-89-6)</b>              |                                                                             |
| Persistence and degradability        | Biodegradability: not applicable.                                           |
| Chemical oxygen demand (COD)         | Not applicable (inorganic)                                                  |
| ThOD                                 | Not applicable (inorganic)                                                  |
| <b>nickel (7440-02-0)</b>            |                                                                             |
| Persistence and degradability        | Not applicable for inorganic substances.                                    |
| Chemical oxygen demand (COD)         | Not applicable (inorganic)                                                  |
| ThOD                                 | Not applicable (inorganic)                                                  |
| <b>tungsten carbide (12070-12-1)</b> |                                                                             |
| Persistence and degradability        | Biodegradability in soil: not applicable. Biodegradability: not applicable. |
| Chemical oxygen demand (COD)         | Not applicable                                                              |
| ThOD                                 | Not applicable                                                              |
| BOD (% of ThOD)                      | Not applicable                                                              |
| <b>Manganese (7439-96-5)</b>         |                                                                             |
| Persistence and degradability        | Biodegradability: not applicable.                                           |
| Chemical oxygen demand (COD)         | Not applicable                                                              |
| ThOD                                 | Not applicable                                                              |
| BOD (% of ThOD)                      | Not applicable                                                              |
| <b>red phosphorus (7723-14-0)</b>    |                                                                             |
| Persistence and degradability        | Biodegradability in soil: not applicable. Biodegradability: not applicable. |
| Chemical oxygen demand (COD)         | Not applicable (inorganic)                                                  |
| ThOD                                 | Not applicable (inorganic)                                                  |
| <b>Tungsten (W) (7440-33-7)</b>      |                                                                             |
| Persistence and degradability        | Not applicable for inorganic substances.                                    |
| Chemical oxygen demand (COD)         | Not applicable                                                              |

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| <b>Tungsten (W) (7440-33-7)</b> |                |
|---------------------------------|----------------|
| ThOD                            | Not applicable |
| BOD (% of ThOD)                 | Not applicable |

### 12.3. Bioaccumulative potential

| <b>Cobalt (7440-48-4)</b>         |                                                |
|-----------------------------------|------------------------------------------------|
| BCF - Fish [1]                    | < 10 (Pisces, Fresh water, Literature study)   |
| BCF - Other aquatic organisms [1] | < 300 (Invertebrata, Literature study)         |
| Bioaccumulative potential         | Low potential for bioaccumulation (BCF < 500). |

| <b>copper (7440-50-8)</b> |                                  |
|---------------------------|----------------------------------|
| Bioaccumulative potential | Bioaccumulation: not applicable. |

| <b>Tin (7440-31-5)</b>    |                                          |
|---------------------------|------------------------------------------|
| Bioaccumulative potential | Not applicable for inorganic substances. |

| <b>Iron (7439-89-6)</b>   |                      |
|---------------------------|----------------------|
| Bioaccumulative potential | Not bioaccumulative. |

| <b>nickel (7440-02-0)</b>         |                                                                                                        |
|-----------------------------------|--------------------------------------------------------------------------------------------------------|
| BCF - Other aquatic organisms [1] | 8 – 45 (≤ 4 week(s), Cambarus sp., Flow-through system, Fresh water, Experimental value, Fresh weight) |
| Bioaccumulative potential         | Not applicable for inorganic substances.                                                               |

| <b>tungsten carbide (12070-12-1)</b> |                                    |
|--------------------------------------|------------------------------------|
| Bioaccumulative potential            | No bioaccumulation data available. |

| <b>Manganese (7439-96-5)</b> |                     |
|------------------------------|---------------------|
| Bioaccumulative potential    | not bioaccumulable. |

| <b>red phosphorus (7723-14-0)</b> |                                                |
|-----------------------------------|------------------------------------------------|
| Bioaccumulative potential         | Low potential for bioaccumulation (BCF < 500). |

| <b>Tungsten (W) (7440-33-7)</b> |                                                                        |
|---------------------------------|------------------------------------------------------------------------|
| BCF - Fish [1]                  | 0 – 1.23 l/kg (pH 7.2; ca. 7.5 g/L; Poecilia reticulata; EPA OPP 72-6) |
| Bioaccumulative potential       | Not applicable for inorganic substances.                               |

### 12.4. Mobility in soil

| <b>Cobalt (7440-48-4)</b> |                                                       |
|---------------------------|-------------------------------------------------------|
| Ecology - soil            | No (test)data on mobility of the substance available. |

| <b>copper (7440-50-8)</b> |                        |
|---------------------------|------------------------|
| Ecology - soil            | Adsorbs into the soil. |

| <b>Tin (7440-31-5)</b> |                                            |
|------------------------|--------------------------------------------|
| Surface tension        | Not applicable (water solubility < 1 mg/l) |

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| Tin (7440-31-5)                                            |                                                                            |
|------------------------------------------------------------|----------------------------------------------------------------------------|
| Ecology - soil                                             | Adsorbs into the soil.                                                     |
| Iron (7439-89-6)                                           |                                                                            |
| Surface tension                                            | No data available in the literature                                        |
| Ecology - soil                                             | Low potential for mobility in soil.                                        |
| nickel (7440-02-0)                                         |                                                                            |
| Surface tension                                            | No data available in the literature                                        |
| Ecology - soil                                             | No (test)data on mobility of the substance available.                      |
| tungsten carbide (12070-12-1)                              |                                                                            |
| Ecology - soil                                             | Adsorbs into the soil.                                                     |
| Manganese (7439-96-5)                                      |                                                                            |
| Ecology - soil                                             | No (test)data on mobility of the substance available.                      |
| red phosphorus (7723-14-0)                                 |                                                                            |
| Ecology - soil                                             | No (test)data on mobility of the substance available. Not toxic to plants. |
| Tungsten (W) (7440-33-7)                                   |                                                                            |
| Surface tension                                            | Not required                                                               |
| Organic Carbon Normalized Adsorption Coefficient (Log Koc) | 0 (log Koc, Literature study)                                              |
| Ecology - soil                                             | Highly mobile in soil.                                                     |

### 12.5. Other adverse effects

Other information Do not allow the product, as is, to spread into the environment.

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Regional waste regulation Disposal must be done according to official regulations.  
 Product/Packaging disposal recommendations Dispose in a safe manner in accordance with local/national regulations. Avoid release to the environment.  
 Ecological information Avoid release to the environment. Hazardous waste due to toxicity.

## SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

| DOT                        | TDG            | IMDG          | IATA          |
|----------------------------|----------------|---------------|---------------|
| 14.1. UN number            |                |               |               |
| Not applicable             | Not applicable | Not regulated | Not regulated |
| 14.2. Proper Shipping Name |                |               |               |
| Not applicable             | Not applicable | Not regulated | Not regulated |

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| DOT                                     | TDG            | IMDG          | IATA          |
|-----------------------------------------|----------------|---------------|---------------|
| <b>14.3. Transport hazard class(es)</b> |                |               |               |
| Not applicable                          | Not applicable | Not regulated | Not regulated |
| <b>14.4. Packing group</b>              |                |               |               |
| Not applicable                          | Not applicable | Not regulated | Not regulated |
| <b>14.5. Environmental hazards</b>      |                |               |               |
| Not applicable                          | Not applicable | Not regulated | Not regulated |
| No supplementary information available  |                |               |               |

### 14.6. Special precautions for user

#### DOT

Not applicable

#### TDG

Not applicable

#### IMDG

Not regulated

#### IATA

Not regulated

### 14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

|                |                   |            |
|----------------|-------------------|------------|
| Cobalt         | CAS-No. 7440-48-4 | 3 – 13%    |
| copper         | CAS-No. 7440-50-8 | 10 – 30%   |
| nickel         | CAS-No. 7440-02-0 | 7 – 30%    |
| Manganese      | CAS-No. 7439-96-5 | 1 – 7%     |
| red phosphorus | CAS-No. 7723-14-0 | 0.1 – 1.5% |

#### copper (7440-50-8)

|           |         |
|-----------|---------|
| CERCLA RQ | 5000 lb |
|-----------|---------|

#### nickel (7440-02-0)

|           |        |
|-----------|--------|
| CERCLA RQ | 100 lb |
|-----------|--------|

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| red phosphorus (7723-14-0)                                   |        |
|--------------------------------------------------------------|--------|
| Listed on EPA Hazardous Air Pollutant (HAPS)                 |        |
| CERCLA RQ                                                    | 1 lb   |
| RQ (Reportable quantity, section 304 of EPA's List of Lists) | 1 lb   |
| SARA Section 302 Threshold Planning Quantity (TPQ)           | 100 lb |

### 15.2. International regulations

| Cobalt (7440-48-4)                                           |  |
|--------------------------------------------------------------|--|
| Listed on IARC (International Agency for Research on Cancer) |  |
| Listed as carcinogen on NTP (National Toxicology Program)    |  |

| nickel (7440-02-0)                                           |  |
|--------------------------------------------------------------|--|
| Listed on IARC (International Agency for Research on Cancer) |  |
| Listed as carcinogen on NTP (National Toxicology Program)    |  |

| tungsten carbide (12070-12-1)                                |  |
|--------------------------------------------------------------|--|
| Listed on IARC (International Agency for Research on Cancer) |  |

### 15.3. US State regulations

 **WARNING:** This product can expose you to Cobalt metal powder, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## SECTION 16: Other information

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Revision date 04/08/2025

| Full text of H-statements |                                                                            |
|---------------------------|----------------------------------------------------------------------------|
| H228                      | Flammable solid.                                                           |
| H302                      | Harmful if swallowed.                                                      |
| 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.                                                          |
| H351                      | Suspected of causing cancer.                                               |
| H360                      | May damage fertility or the unborn child.                                  |
| H372                      | Causes damage to organs through prolonged or repeated exposure.            |
| H373                      | May cause damage to organs through prolonged or repeated exposure.         |



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| Abbreviations and acronyms |                                                                                                   |
|----------------------------|---------------------------------------------------------------------------------------------------|
| CAS-No.                    | Chemical Abstract Service number                                                                  |
| ADN                        | European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways   |
| ADR                        | European Agreement concerning the International Carriage of Dangerous Goods by Road               |
| ATE                        | Acute Toxicity Estimate                                                                           |
| CLP                        | Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008                       |
| BCF                        | Bioconcentration factor                                                                           |
| BLV                        | Biological limit value                                                                            |
| BOD                        | Biochemical oxygen demand (BOD)                                                                   |
| COD                        | Chemical oxygen demand (COD)                                                                      |
| DMEL                       | Derived Minimal Effect level                                                                      |
| DNEL                       | Derived-No Effect Level                                                                           |
| EC-No.                     | European Community number                                                                         |
| EC50                       | Median effective concentration                                                                    |
| ED                         | Endocrine disrupting properties                                                                   |
| EN                         | European Standard                                                                                 |
| IARC                       | International Agency for Research on Cancer                                                       |
| IATA                       | International Air Transport Association                                                           |
| IMDG                       | International Maritime Dangerous Goods                                                            |
| IOELV                      | Indicative Occupational Exposure Limit Value                                                      |
| LC50                       | Median lethal concentration                                                                       |
| LD50                       | Median lethal dose                                                                                |
| LOAEL                      | Lowest Observed Adverse Effect Level                                                              |
| N.O.S.                     | Not Otherwise Specified                                                                           |
| NOAEC                      | No-Observed Adverse Effect Concentration                                                          |
| NOAEL                      | No-Observed Adverse Effect Level                                                                  |
| NOEC                       | No-Observed Effect Concentration                                                                  |
| OECD                       | Organisation for Economic Co-operation and Development                                            |
| OEL                        | Occupational Exposure Limit                                                                       |
| PBT                        | Persistent Bioaccumulative Toxic                                                                  |
| PNEC                       | Predicted No-Effect Concentration                                                                 |
| REACH                      | Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006 |
| RID                        | Regulations concerning the International Carriage of Dangerous Goods by Rail                      |
| SDS                        | Safety Data Sheet                                                                                 |

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| Abbreviations and acronyms |                                          |
|----------------------------|------------------------------------------|
| TRGS                       | Technical Rules for Hazardous Substances |
| ThOD                       | Theoretical oxygen demand (ThOD)         |
| TLM                        | Median Tolerance Limit                   |
| VOC                        | Volatile Organic Compounds               |
| WGK                        | Water Hazard Class                       |
| vPvB                       | Very Persistent and Very Bioaccumulative |

NFPA health hazard

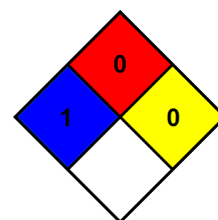
1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA fire hazard

0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity

0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating

Health

1 Slight Hazard - Irritation or minor reversible injury possible

Flammability

0 Minimal Hazard - Materials that will not burn

Physical

0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

| Indication of changes: |                              |          |          |
|------------------------|------------------------------|----------|----------|
| Section                | Changed item                 | Change   | Comments |
| 8.1                    | Occupational Exposure Limits | Modified |          |

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.