

SECTION 1: Identification

1.1. Product identifier

| | |
|----------------|---|
| Product form | : Mixture |
| Trade name | : Cobalt-Based Alloys Powder |
| Article number | : Fusion AM Powder 45 Modelstar S Powder Starbond CoS Powder Starbond Easy Powder i-ProMelt |

1.2. Recommended use and restrictions on use

| | |
|---------------------|------------------------------------|
| Recommended use | : Medical device |
| Restrictions on use | : Restricted to professional users |

1.3. Supplier

Manufacturer/Supplier

S&S Scheftner GmbH
Dekan-Laist-Str. 52
Mainz, 55129
Deutschland
T +49 (0) 6131 94 71 40
service@scheftner.dental

Email competent person

sds@kft.de

1.4. Emergency telephone number

| | |
|------------------|---|
| Emergency number | : For Hazardous Materials [or Dangerous Goods] Incidents Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300 Outside USA and Canada: +1 703-741-5970 (collect calls accepted) |
|------------------|---|

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Classification (GHS CA)

| | | |
|---|------|--|
| Acute toxicity (oral), Category 4 | H302 | Harmful if swallowed. |
| Serious eye damage/eye irritation, Category 2 | H319 | Causes serious eye irritation. |
| Respiratory sensitisation, Category 1 | H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| Skin sensitisation, Category 1 | H317 | May cause an allergic skin reaction. |
| Germ cell mutagenicity, Category 2 | H341 | Suspected of causing genetic defects. |
| Carcinogenicity, Category 1B | H350 | May cause cancer. |
| Reproductive toxicity, Category 1B | H360 | May damage fertility or the unborn child. |
| Combustible Dust | | May form combustible dust concentrations in air |
| Full text of H-statements: see section 16 | | |

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2.2. GHS Label elements, including precautionary statements

GHS CA labelling

Hazard pictograms (GHS CA)



Signal word (GHS CA)

: Danger

Hazard statements (GHS CA)

: May form combustible dust concentrations in air
H302 - Harmful if swallowed.
H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341 - Suspected of causing genetic defects.
H350 - May cause cancer.
H360 - May damage fertility or the unborn child.

Precautionary statements (GHS CA)

: P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P261 - Avoid breathing dust.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P280 - Wear protective clothing, eye protection, face protection.
P284 - [In case of inadequate ventilation] wear respiratory protection.
P301+P312 - IF SWALLOWED: Call a POISON CENTER, a doctor if you feel unwell.
P302+P352 - IF ON SKIN: Wash with plenty of water.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - IF exposed or concerned: Get medical advice/attention.
P330 - Rinse mouth.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P342+P311 - If experiencing respiratory symptoms: Call a POISON CENTER, a doctor.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS CA)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

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3.2. Mixtures

| Name | Chemical name / Synonyms | Product identifier | % | Classification (GHS CA) |
|--------------|--------------------------|--------------------|---------|---|
| cobalt | cobalt | CAS-No.: 7440-48-4 | 50 – 70 | Acute Tox. 4 (Oral), H302 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1B, H350 Repr. 1B, H360 |
| Chromium | Chromium | CAS-No.: 7440-47-3 | 10 – 40 | Not classified |
| Tungsten (W) | Tungsten (W) | CAS-No.: 7440-33-7 | 0 – 10 | Flam. Sol. 1, H228 Self-heat. 2, H252 Comb. Dust |
| Molybdenum | Molybdenum | CAS-No.: 7439-98-7 | 0 – 10 | Not classified |
| Silicon | Silicon | CAS-No.: 7440-21-3 | 0 – 2.5 | Not classified |
| Manganese | Manganese | CAS-No.: 7439-96-5 | 0 – 2.5 | Not classified |

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

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. If experiencing respiratory symptoms: Call a poison center or a doctor. |
| First-aid measures after eye contact | : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. |
| First-aid measures after ingestion | : Rinse mouth. Call a poison center or a doctor if you feel unwell. |
| First-aid measures general | : IF exposed or concerned: Get medical advice/attention. |

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

| | |
|-------------------------------------|--|
| Symptoms/effects after inhalation | : May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| Symptoms/effects after skin contact | : May cause an allergic skin reaction. |
| Symptoms/effects after eye contact | : Eye irritation. |

4.3. Immediate medical attention and special treatment, if necessary

| | |
|-----------------------------------|--------------------------|
| Other medical advice or treatment | : Treat symptomatically. |
|-----------------------------------|--------------------------|

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

| | |
|------------------------------|-------------------|
| Suitable extinguishing media | : D powder. Sand. |
|------------------------------|-------------------|

5.2. Unsuitable extinguishing media

| | |
|--------------------------------|--|
| Unsuitable extinguishing media | : Water. Carbon dioxide (CO ₂). Foam. Chemical powder. |
|--------------------------------|--|

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5.3. Specific hazards arising from the hazardous product

- Explosion hazard : Avoid formation of dust. Potential dust explosion hazard.
Hazardous decomposition products in case of fire : Toxic fumes may be released. Metal oxides.

5.4. Special protective equipment and precautions for fire-fighters

- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
Other information : Do not allow run-off from fire fighting to enter drains or water courses. Disposal must be done according to official regulations. In case of fire and/or explosion do not breathe fumes.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Avoid dust formation. Do not breathe dust.
Personal Precautions, Protective Equipment and Emergency Procedures : Do not attempt to take action without suitable protective equipment.

6.2. Methods and materials for containment and cleaning up

- Methods for cleaning up : Take up mechanically (sweeping, shovelling) and collect in suitable container for disposal. Notify authorities if product enters sewers or public waters.
Other information : Disposal must be done according to official regulations.

6.3. Reference to other sections

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

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Floors, walls and other surfaces in the hazard area must be cleaned regularly. Avoid contact with skin and eyes. Avoid breathing dust.
Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Separate working clothes from town clothes. Launder separately. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : No specific measures are necessary. Store locked up.
Incompatible products : Strong acids. Oxidizing agent. Strong bases.
Information about storage in one common storage facility : Keep away from food, drink and animal feeding stuffs.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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| Chromium (7440-47-3) | |
|--|---|
| Canada (Alberta) - Occupational Exposure Limits | |
| Local name | Chromium and inorganic compounds, as Cr Metal and Cr III compounds |
| OEL TWA | 0.5 mg/m ³ |
| Notations and remarks | Occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required. |
| Regulatory reference | Alberta Regulation 191/2021 |
| Canada (Quebec) - Occupational Exposure Limits | |
| Local name | Chromium (metal) |
| VEMP (OEL TWA) | 0.5 mg/m ³ |
| Regulatory reference | S-2.1, r. 13 - Regulation respecting occupational health and safety |
| Canada (British Columbia) - Occupational Exposure Limits | |
| Local name | Chromium and inorganic compounds: Metallic chromium, as Cr(0) |
| OEL TWA | 0.5 mg/m ³ Total |
| Regulatory reference | OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC) |
| Canada (Manitoba) - Occupational Exposure Limits | |
| Local name | Metallic chromium, as Cr(0) |
| OEL TWA | 0.5 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: Resp tract irr |
| Regulatory reference | ACGIH 2022 |
| Canada (New Brunswick) - Occupational Exposure Limits | |
| OEL TWA | 0.5 mg/m ³ |
| Notations and remarks | URT & skin irr |
| Canada (Newfoundland and Labrador) - Occupational Exposure Limits | |
| Local name | Metallic chromium, as Cr(0) |
| OEL TWA | 0.5 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: Resp tract irr |
| Regulatory reference | ACGIH 2022 |
| Canada (Nova Scotia) - Occupational Exposure Limits | |
| Local name | Metallic chromium, as Cr(0) |
| OEL TWA | 0.5 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: Resp tract irr |
| Regulatory reference | ACGIH 2022 |
| Canada (Nunavut) - Occupational Exposure Limits | |
| Local name | Chromium metal and inorganic compounds, (as Cr): Metal and Cr (III) compounds |
| OEL TWA | 0.5 mg/m ³ |
| OEL STEL | 1.5 mg/m ³ |
| Regulatory reference | Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021) |

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| Canada (Northwest Territories) - Occupational Exposure Limits | |
|--|---|
| Local name | Chromium metal and inorganic compounds, (as Cr): Metal and Cr (III) compounds |
| OEL TWA | 0.5 mg/m ³ |
| OEL STEL | 1.5 mg/m ³ |
| Regulatory reference | Occupation Health and Safety Regulations R-039-2015 (R-013-2020) |
| Canada (Prince Edward Island) - Occupational Exposure Limits | |
| Local name | Metallic chromium, as Cr(0) |
| OEL TWA | 0.5 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: Resp tract irr |
| Regulatory reference | ACGIH 2022 |
| Canada (Saskatchewan) - Occupational Exposure Limits | |
| Local name | Chromium metal and inorganic compounds, (as Cr): Metal and Cr (III) compounds |
| OEL TWA | 0.5 mg/m ³ |
| OEL STEL | 1.5 mg/m ³ |
| Regulatory reference | The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10 |
| Tungsten (W) (7440-33-7) | |
| Canada (Alberta) - Occupational Exposure Limits | |
| Local name | Tungsten, as W Metal and insoluble compounds |
| OEL TWA | 5 mg/m ³ |
| OEL STEL | 10 mg/m ³ |
| Notations and remarks | Occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required. |
| Regulatory reference | Alberta Regulation 191/2021 |
| Canada (Quebec) - Occupational Exposure Limits | |
| Local name | Tungsten (as W) Insoluble compounds |
| VECD (OEL STEL) | 10 mg/m ³ |
| VEMP (OEL TWA) | 5 mg/m ³ |
| Regulatory reference | S-2.1, r. 13 - Regulation respecting occupational health and safety |
| Canada (British Columbia) - Occupational Exposure Limits | |
| Local name | Tungsten and compounds in the absence of Cobalt, as W |
| OEL TWA | 3 mg/m ³ |
| Regulatory reference | OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC) |
| Canada (Manitoba) - Occupational Exposure Limits | |
| Local name | Tungsten and compounds, in the absence of Cobalt, as W |
| OEL TWA | 3 mg/m ³ (R - Respirable particulate matter) |
| Notations and remarks | TLV® Basis: Lung dam |
| Regulatory reference | ACGIH 2022 |

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| Canada (New Brunswick) - Occupational Exposure Limits | |
|--|--|
| OEL TWA | 5 mg/m ³ |
| Canada (Newfoundland and Labrador) - Occupational Exposure Limits | |
| Local name | Tungsten and compounds, in the absence of Cobalt, as W |
| OEL TWA | 3 mg/m ³ (R - Respirable particulate matter) |
| Notations and remarks | TLV® Basis: Lung dam |
| Regulatory reference | ACGIH 2022 |
| Canada (Nova Scotia) - Occupational Exposure Limits | |
| Local name | Tungsten and compounds, in the absence of Cobalt, as W |
| OEL TWA | 3 mg/m ³ (R - Respirable particulate matter) |
| Notations and remarks | TLV® Basis: Lung dam |
| Regulatory reference | ACGIH 2022 |
| Canada (Nunavut) - Occupational Exposure Limits | |
| Local name | Tungsten, (as W): Metal and insoluble compounds |
| OEL TWA | 5 mg/m ³ |
| OEL STEL | 10 mg/m ³ |
| Regulatory reference | Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021) |
| Canada (Northwest Territories) - Occupational Exposure Limits | |
| Local name | Tungsten, (as W): Metal and insoluble compounds |
| OEL TWA | 5 mg/m ³ |
| OEL STEL | 10 mg/m ³ |
| Regulatory reference | Occupation Health and Safety Regulations R-039-2015 (R-013-2020) |
| Canada (Ontario) - Occupational Exposure Limits | |
| Local name | Tungsten , as W - Metal and insoluble compounds |
| OEL TWA | 5 mg/m ³ |
| OEL STEL | 10 mg/m ³ |
| Regulatory reference | Ontario Occupational Exposure Limits under Regulation 833 |
| Canada (Prince Edward Island) - Occupational Exposure Limits | |
| Local name | Tungsten and compounds, in the absence of Cobalt, as W |
| OEL TWA | 3 mg/m ³ (R - Respirable particulate matter) |
| Notations and remarks | TLV® Basis: Lung dam |
| Regulatory reference | ACGIH 2022 |
| Canada (Saskatchewan) - Occupational Exposure Limits | |
| Local name | Tungsten, (as W): metal and insoluble compounds |
| OEL TWA | 5 mg/m ³ |
| OEL STEL | 10 mg/m ³ |
| Regulatory reference | The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10 |

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| Molybdenum (7439-98-7) | |
|--|--|
| Canada (Alberta) - Occupational Exposure Limits | |
| Local name | Molybdenum, as Mo Metal and insoluble compounds |
| OEL TWA | 3 mg/m ³ Respirable 10 mg/m ³ Total |
| Regulatory reference | Alberta Regulation 191/2021 |
| Canada (Quebec) - Occupational Exposure Limits | |
| Local name | Molybdenum (as Mo) Metal and insoluble compounds |
| VEMP (OEL TWA) | 10 mg/m ³ Id 3 mg/m ³ Rd |
| Regulatory reference | S-2.1, r. 13 - Regulation respecting occupational health and safety |
| Canada (British Columbia) - Occupational Exposure Limits | |
| Local name | Molybdenum - Metal and insoluble compounds, as Mo |
| OEL TWA | 3 mg/m ³ Respirable 10 mg/m ³ Inhalable |
| Regulatory reference | OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC) |
| Canada (Manitoba) - Occupational Exposure Limits | |
| Local name | Molybdenum, metal and insoluble compounds, as Mo |
| OEL TWA | 10 mg/m ³ (I - Inhalable particulate matter) 3 mg/m ³ (R - Respirable particulate matter) |
| Notations and remarks | TLV® Basis: LRT irr |
| Regulatory reference | ACGIH 2022 |
| Canada (New Brunswick) - Occupational Exposure Limits | |
| OEL TWA | 3 mg/m ³ |
| Canada (Newfoundland and Labrador) - Occupational Exposure Limits | |
| Local name | Molybdenum, metal and insoluble compounds, as Mo |
| OEL TWA | 10 mg/m ³ (I - Inhalable particulate matter) 3 mg/m ³ (R - Respirable particulate matter) |
| Notations and remarks | TLV® Basis: LRT irr |
| Regulatory reference | ACGIH 2022 |
| Canada (Nova Scotia) - Occupational Exposure Limits | |
| Local name | Molybdenum, metal and insoluble compounds, as Mo |
| OEL TWA | 10 mg/m ³ (I - Inhalable particulate matter) 3 mg/m ³ (R - Respirable particulate matter) |
| Notations and remarks | TLV® Basis: LRT irr |
| Regulatory reference | ACGIH 2022 |
| Canada (Nunavut) - Occupational Exposure Limits | |
| Local name | Molybdenum, (as Mo): Metal and insoluble compounds |
| OEL TWA | 10 mg/m ³ (inhalable fraction) 3 mg/m ³ (respirable fraction) |

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|--|--|
| OEL STEL | 20 mg/m ³ (inhalable fraction) 6 mg/m ³ (respirable fraction) |
| Regulatory reference | Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021) |
| Canada (Northwest Territories) - Occupational Exposure Limits | |
| Local name | Molybdenum, (as Mo): Metal and insoluble compounds |
| OEL TWA | 10 mg/m ³ (inhalable fraction) 3 mg/m ³ (respirable fraction) |
| OEL STEL | 20 mg/m ³ (inhalable fraction) 6 mg/m ³ (respirable fraction) |
| Regulatory reference | Occupation Health and Safety Regulations R-039-2015 (R-013-2020) |
| Canada (Ontario) - Occupational Exposure Limits | |
| Local name | Molybdenum, as Mo - Metal and insoluble compounds |
| OEL TWA | 10 mg/m ³ (I - Inhalable fraction) 3 mg/m ³ (R - Respirable fraction) |
| Regulatory reference | Ontario Occupational Exposure Limits under Regulation 833 |
| Canada (Prince Edward Island) - Occupational Exposure Limits | |
| Local name | Molybdenum, metal and insoluble compounds, as Mo |
| OEL TWA | 10 mg/m ³ (I - Inhalable particulate matter) 3 mg/m ³ (R - Respirable particulate matter) |
| Notations and remarks | TLV® Basis: LRT irr |
| Regulatory reference | ACGIH 2022 |
| Canada (Saskatchewan) - Occupational Exposure Limits | |
| Local name | Molybdenum, (as Mo): Metal and insoluble compounds |
| OEL TWA | 10 mg/m ³ (inhalable fraction) 3 mg/m ³ (respirable fraction) |
| OEL STEL | 20 mg/m ³ (inhalable fraction) 6 mg/m ³ (respirable fraction) |
| Regulatory reference | The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10 |
| Silicon (7440-21-3) | |
| Canada (Quebec) - Occupational Exposure Limits | |
| Local name | Silicon |
| VEMP (OEL TWA) | 10 mg/m ³ Td |
| Notations and remarks | Note 1: The standard corresponds to dust containing no asbestos and the percentage in crystalline silica is less than 1% |
| Regulatory reference | S-2.1, r. 13 - Regulation respecting occupational health and safety |
| Canada (British Columbia) - Occupational Exposure Limits | |
| Local name | Silicon [Particles Not Otherwise Classified (PNOC)] |
| OEL TWA | 10 mg/m ³ Total dust 3 mg/m ³ Respirable fraction |
| Regulatory reference | OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC) |

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| Canada (Nunavut) - Occupational Exposure Limits | |
|--|--|
| Local name | Silicon |
| OEL TWA | 10 mg/m ³ |
| OEL STEL | 20 mg/m ³ |
| Regulatory reference | Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021) |
| Canada (Northwest Territories) - Occupational Exposure Limits | |
| Local name | Silicon |
| OEL TWA | 10 mg/m ³ |
| OEL STEL | 20 mg/m ³ |
| Regulatory reference | Occupation Health and Safety Regulations R-039-2015 (R-013-2020) |
| Canada (Saskatchewan) - Occupational Exposure Limits | |
| Local name | Silicon |
| OEL TWA | 10 mg/m ³ |
| OEL STEL | 20 mg/m ³ |
| Regulatory reference | The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10 |
| Manganese (7439-96-5) | |
| Canada (Alberta) - Occupational Exposure Limits | |
| Local name | Manganese, elemental & inorganic compounds, as Mn |
| OEL TWA | 0.2 mg/m ³ |
| Regulatory reference | Alberta Regulation 191/2021 |
| Canada (Quebec) - Occupational Exposure Limits | |
| Local name | Manganese Fume, dust and compounds(as Mn) |
| VEMP (OEL TWA) | 0.2 mg/m ³ Td |
| Regulatory reference | S-2.1, r. 13 - Regulation respecting occupational health and safety |
| Canada (British Columbia) - Occupational Exposure Limits | |
| Local name | Manganese - Elemental & inorganic compounds, as Mn |
| OEL TWA | 0.2 mg/m ³ Total 0.02 mg/m ³ Respirable |
| Notations and remarks | R (Adverse reproductive effect) |
| Regulatory reference | OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC) |
| Canada (Manitoba) - Occupational Exposure Limits | |
| Local name | Manganese, elemental and inorganic compounds, as Mn |
| OEL TWA | 0.02 mg/m ³ (R - Respirable particulate matter) 0.1 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen) |
| Regulatory reference | ACGIH 2022 |
| Canada (New Brunswick) - Occupational Exposure Limits | |
| OEL TWA | 0.02 mg/m ³ |
| Notations and remarks | CNS impair; A4 |

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| Canada (Newfoundland and Labrador) - Occupational Exposure Limits | |
|--|--|
| Local name | Manganese, elemental and inorganic compounds, as Mn |
| OEL TWA | 0.02 mg/m ³ (R - Respirable particulate matter) 0.1 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen) |
| Regulatory reference | ACGIH 2022 |
| Canada (Nova Scotia) - Occupational Exposure Limits | |
| Local name | Manganese, elemental and inorganic compounds, as Mn |
| OEL TWA | 0.02 mg/m ³ (R - Respirable particulate matter) 0.1 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen) |
| Regulatory reference | ACGIH 2022 |
| Canada (Nunavut) - Occupational Exposure Limits | |
| Local name | Manganese and inorganic compounds, (as Mn) |
| OEL TWA | 0.02 mg/m ³ |
| OEL STEL | 0.6 mg/m ³ |
| Regulatory reference | Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021) |
| Canada (Northwest Territories) - Occupational Exposure Limits | |
| Local name | Manganese and inorganic compounds, (as Mn) |
| OEL TWA | 0.2 mg/m ³ |
| OEL STEL | 0.6 mg/m ³ |
| Regulatory reference | Occupation Health and Safety Regulations R-039-2015 (R-013-2020) |
| Canada (Ontario) - Occupational Exposure Limits | |
| Local name | Manganese |
| OEL TWA | 0.2 mg/m ³ |
| Regulatory reference | Ontario Occupational Exposure Limits under Regulation 833 |
| Canada (Prince Edward Island) - Occupational Exposure Limits | |
| Local name | Manganese, elemental and inorganic compounds, as Mn |
| OEL TWA | 0.02 mg/m ³ (R - Respirable particulate matter) 0.1 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen) |
| Regulatory reference | ACGIH 2022 |
| Canada (Saskatchewan) - Occupational Exposure Limits | |
| Local name | Manganese and inorganic compounds, (as Mn) |
| OEL TWA | 0.2 mg/m ³ |
| OEL STEL | 0.6 mg/m ³ |
| Regulatory reference | The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10 |

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| cobalt (7440-48-4) | |
| Canada (Alberta) - Occupational Exposure Limits | |
| Local name | Cobalt, elemental inorganic compounds, as Co |
| OEL TWA | 0.02 mg/m ³ |
| Regulatory reference | Alberta Regulation 191/2021 |
| Canada (Quebec) - Occupational Exposure Limits | |
| Local name | Cobalt elemental, and inorganic compounds (as Co) |
| VEMP (OEL TWA) | 0.02 mg/m ³ |
| Notations and remarks | C3, S |
| Regulatory reference | S-2.1, r. 13 - Regulation respecting occupational health and safety |
| Canada (British Columbia) - Occupational Exposure Limits | |
| Local name | Cobalt and inorganic compounds, as Co |
| OEL TWA | 0.02 mg/m ³ Total |
| Notations and remarks | IARC group 2B carcinogen; S(D) (dermal sensitization); S(R) (respiratory sensitization) |
| Regulatory reference | OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC) |
| Canada (Manitoba) - Occupational Exposure Limits | |
| Local name | Cobalt and inorganic compounds, as Co |
| OEL TWA | 0.02 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: Pulm func changes. Notations: DSEN; RSEN; A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans); BEI |
| Regulatory reference | ACGIH 2022 |
| Canada (New Brunswick) - Occupational Exposure Limits | |
| OEL TWA | 0.02 mg/m ³ |
| Notations and remarks | Pneumonitis |
| Canada (Newfoundland and Labrador) - Occupational Exposure Limits | |
| Local name | Cobalt and inorganic compounds, as Co |
| OEL TWA | 0.02 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: Pulm func changes. Notations: DSEN; RSEN; A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans); BEI |
| Regulatory reference | ACGIH 2022 |
| Canada (Nova Scotia) - Occupational Exposure Limits | |
| Local name | Cobalt and inorganic compounds, as Co |
| OEL TWA | 0.02 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: Pulm func changes. Notations: DSEN; RSEN; A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans); BEI |
| Regulatory reference | ACGIH 2022 |
| Canada (Nunavut) - Occupational Exposure Limits | |
| Local name | Cobalt and inorganic compounds, (as Co) |
| OEL TWA | 0.02 mg/m ³ |

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| | |
|--|--|
| OEL STEL | 0.06 mg/m ³ |
| Notations and remarks | Designated substance |
| Regulatory reference | Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021) |
| Canada (Northwest Territories) - Occupational Exposure Limits | |
| Local name | Cobalt and inorganic compounds, (as Co) |
| OEL TWA | 0.02 mg/m ³ |
| OEL STEL | 0.06 mg/m ³ |
| Notations and remarks | Designated substance |
| Regulatory reference | Occupation Health and Safety Regulations R-039-2015 (R-013-2020) |
| Canada (Ontario) - Occupational Exposure Limits | |
| Local name | Cobalt and inorganic compounds, as Co |
| OEL TWA | 0.02 mg/m ³ |
| Regulatory reference | Ontario Occupational Exposure Limits under Regulation 833 |
| Canada (Prince Edward Island) - Occupational Exposure Limits | |
| Local name | Cobalt and inorganic compounds, as Co |
| OEL TWA | 0.02 mg/m ³ (I - Inhalable particulate matter) |
| Notations and remarks | TLV® Basis: Pulm func changes. Notations: DSEN; RSEN; A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans); BEI |
| Regulatory reference | ACGIH 2022 |
| Canada (Saskatchewan) - Occupational Exposure Limits | |
| Local name | Cobalt and inorganic compounds, (as Co) |
| OEL TWA | 0.02 mg/m ³ |
| OEL STEL | 0.06 mg/m ³ |
| Notations and remarks | Designated Chemical Substance |
| Regulatory reference | The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10 |

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station. Provide local exhaust or general room ventilation.
Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

| |
|--|
| Hand protection: |
| Chemically resistant protective gloves. EN 374. Choosing the proper glove is a decision that depends not only on the type of material, but also on other quality features, which differ for each manufacturer. Please follow the instructions related to the permeability and the penetration time provided by the manufacturer. Gloves must be replaced after each use and whenever signs of wear or perforation appear |

| |
|------------------------------------|
| Eye protection: |
| Wear closed safety glasses. EN 166 |

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Skin and body protection:

Wear suitable protective clothing. EN ISO 13688. EN 13034

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment. Dust formation: dust mask. P3. EN 143. . Breathing equipment is only to be used in order to handle the residual risk of short term jobs if all other risk minimizing measures have been carried out e.g. retention and/or local exhaust

Other information:

Do not eat, drink or smoke when using this product. Avoid contact with skin and eyes. Always wash hands after handling the product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|--|
| Physical state | : Solid |
| Appearance | : Powder. |
| Colour | : Grey |
| Odour | : odourless |
| Odour threshold | : No data available |
| pH | : No data available |
| Relative evaporation rate (butylacetate=1) | : Not applicable |
| Relative evaporation rate (ether=1) | : No data available |
| Melting point | : No data available |
| Freezing point | : Not applicable |
| Boiling point | : No data available |
| Flash point | : Not applicable |
| Auto-ignition temperature | : No data available |
| Decomposition temperature | : No data available |
| Flammability (solid, gas) | : Dust may form flammable mixture with air |
| Vapour pressure | : Not applicable |
| Relative vapour density at 20 °C | : Not applicable |
| Relative density | : No data available |
| Solubility | : No data available |
| Partition coefficient n-octanol/water (Log Pow) | : No data available |
| Viscosity, kinematic | : Not applicable |
| Viscosity, dynamic | : Not applicable |
| Explosive properties | : Product is not explosive. |
| Oxidising properties | : Non oxidizing. |
| Explosive limits | : No data available |

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

| | |
|------------------------------------|--|
| Reactivity | : The product is non-reactive under normal conditions of use, storage and transport. |
| Chemical stability | : Stable under normal conditions. |
| Possibility of hazardous reactions | : No dangerous reactions known under normal conditions of use. |
| Conditions to avoid | : Avoid dust formation. |
| Incompatible materials | : Strong acids. Oxidizing agent. Strong bases. |
| Hazardous decomposition products | : Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
| Hardening time: | : No additional information available |

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation) : Not classified (Based on available data, the classification criteria are not met)

| | |
|---------------|--------------------------|
| ATE CA (oral) | 828.441 mg/kg bodyweight |
|---------------|--------------------------|

Chromium (7440-47-3)

| | |
|-----------------------------------|---|
| LD50 oral rat | > 5000 mg/kg ((OECD 420 method); Read-across) |
| LC50 Inhalation - Rat (Dust/Mist) | > 5.41 mg/l/4h ((OECD 403 method); Read-across) |

Tungsten (W) (7440-33-7)

| | |
|-----------------------------------|---------------------------------|
| LD50 oral rat | > 2000 mg/kg (OECD 401 method) |
| LD50 dermal rat | > 2000 mg/kg (OECD 402 method) |
| LC50 Inhalation - Rat (Dust/Mist) | > 5.4 mg/l/4h (OECD 403 method) |

Molybdenum (7439-98-7)

| | |
|-----------------------------------|---|
| LD50 oral rat | 4233 mg/kg ((OECD 401 method); Read-across) |
| LD50 dermal rat | > 2000 mg/kg ((OECD 402 method); Read-across) |
| LC50 Inhalation - Rat (Dust/Mist) | > 1.93 mg/l/4h ((OECD 403 method); Read-across) |
| ATE CA (oral) | 4233 mg/kg bodyweight |

Silicon (7440-21-3)

| | |
|--------------------|--------------------------------|
| LD50 oral rat | > 5000 mg/kg (OECD 401 method) |
| LD50 dermal rabbit | > 5000 mg/kg |

cobalt (7440-48-4)

| | |
|-----------------------------------|--|
| LD50 oral rat | 550 mg/kg bodyweight (OECD 425 method) |
| LC50 Inhalation - Rat (Dust/Mist) | < 0.05 mg/l/4h (OECD 436 method) |
| ATE CA (oral) | 550 mg/kg bodyweight |

Skin corrosion/irritation : Not classified (Based on available data, the classification criteria are not met)
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitization : May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
Germ cell mutagenicity : Suspected of causing genetic defects.
Carcinogenicity : May cause cancer.
Reproductive toxicity : May damage fertility or the unborn child.
STOT-single exposure : Not classified (Based on available data, the classification criteria are not met)
STOT-repeated exposure : Not classified (Based on available data, the classification criteria are not met)

Tungsten (W) (7440-33-7)

| | |
|----------------------------|---|
| NOAEL (oral, rat, 90 days) | 1000 mg/kg bodyweight/day (OECD 422 method) |
|----------------------------|---|

Aspiration hazard : Not classified (Based on available data, the classification criteria are not met)

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| | |
|----------------------|----------------|
| Viscosity, kinematic | Not applicable |
|----------------------|----------------|

Symptoms/effects after inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Symptoms/effects after skin contact : May cause an allergic skin reaction.

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Symptoms/effects after eye contact : Eye irritation.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : May cause long lasting harmful effects to aquatic life.
Hazardous to the aquatic environment, short-term (acute) : Not classified (Based on available data, the classification criteria are not met)
Hazardous to the aquatic environment, long-term (chronic) : Not classified (Based on available data, the classification criteria are not met)

| Tungsten (W) (7440-33-7) | |
|---|---|
| LC50 - Fish [1] | > 181 mg/l (96 h; Danio rerio; (OECD 203 method)) |
| EC50 - Crustacea [1] | > 163 mg/l (48 h; Daphnia magna; (OECD 202 method)) |
| NOEC chronic fish | ≥ 9.8 mg/l (38 d; Danio rerio; (OECD 210 method)) |
| NOEC chronic crustacea | 44.2 mg/l (21 d; Daphnia magna; (OECD 211 method)) |
| Molybdenum (7439-98-7) | |
| LC50 - Fish [1] | 609 mg/l (96 h; Pimephales promelas; (OECD 203 method)) |
| EC50 - Crustacea [1] | 1680 mg/l (48 h; Daphnia magna; (OECD 202 method)) |
| NOEC chronic fish | 143 mg/l (32 d; Pimephales promelas) |
| NOEC chronic crustacea | 156 mg/l (21 d; Ceriodaphnia dubia) |
| Silicon (7440-21-3) | |
| Partition coefficient n-octanol/water (Log Pow) | 57 – 77 (25 °C, pH 7-8) |
| Manganese (7439-96-5) | |
| LC50 - Fish [1] | 3.6 mg/l (OECD 203 method) |
| EC50 - Crustacea [1] | 1.6 mg/l |
| ErC50 algae | 2.8 – 4.5 mg/l |
| NOEC chronic fish | 0.3 mg/l (28d, Oncorhynchus mykiss) |
| NOEC chronic crustacea | 1.7 mg/l |
| NOEC chronic algae | 2.5 mg/l (72 h) |
| cobalt (7440-48-4) | |
| LC50 - Fish [1] | > 100 (96h; Danio rerio; OECD 203) |
| EC50 - Crustacea [1] | > 100 mg/l (OECD 202 method) |
| ErC50 algae | 270 mg/l (70 h, Selenastrum capricornutum, (OECD 201 method)) |

12.2. Persistence and degradability

| Tungsten (W) (7440-33-7) | |
|---------------------------------|--|
| Persistence and degradability | Not applicable for inorganic substances. |
| Molybdenum (7439-98-7) | |
| Persistence and degradability | Not established. |

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according to the Hazardous Products Regulation (February 11, 2015)

| | |
|----------------------------|------------------------------|
| Silicon (7440-21-3) | |
| Biodegradation | 77 – 99 % (OECD 301A method) |

12.3. Bioaccumulative potential

| | |
|-------------------------------|------------------|
| Molybdenum (7439-98-7) | |
| Bioaccumulative potential | Not established. |

| | |
|---|-------------------------|
| Silicon (7440-21-3) | |
| Partition coefficient n-octanol/water (Log Pow) | 57 – 77 (25 °C, pH 7-8) |

| | |
|------------------------------|---------------------|
| Manganese (7439-96-5) | |
| Bioaccumulative potential | not bioaccumulable. |

12.4. Mobility in soil

| | |
|---|-------------------------|
| Silicon (7440-21-3) | |
| Partition coefficient n-octanol/water (Log Pow) | 57 – 77 (25 °C, pH 7-8) |

12.5. Other adverse effects

Ozone : Not classified

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Disposal must be done according to official regulations. Do not dispose of with domestic waste.
Do not discharge into drains or the environment.
Product/Packaging disposal recommendations : Recycle or dispose of in compliance with current legislation.

SECTION 14: Transport information

In accordance with DOT / IMDG / IATA

14.1. UN number

Not regulated for transport

14.2. UN proper shipping name

Proper Shipping Name (TDG) : Not applicable
Proper Shipping Name (DOT) : Not applicable
Proper Shipping Name (IMDG) : Not applicable
Proper Shipping Name (IATA) : Not applicable

14.3. Transport hazard class(es)

TDG
Transport hazard class(es) (TDG) : Not applicable

DOT
Transport hazard class(es) (DOT) : Not applicable

IMDG
Transport hazard class(es) (IMDG) : Not applicable

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IATA

Transport hazard class(es) (IATA) : Not applicable

14.4. Packing group

Packing group (TDG) : Not applicable

Packing group (DOT) : Not applicable

Packing group (IMDG) : Not applicable

Packing group (IATA) : Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

TDG

No data available

DOT

No data available

IMDG

No data available

IATA

No data available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. National regulations

Chromium (7440-47-3)

Listed on the Canadian DSL (Domestic Substances List)

Tungsten (W) (7440-33-7)

Listed on the Canadian DSL (Domestic Substances List)

Molybdenum (7439-98-7)

Listed on the Canadian DSL (Domestic Substances List)

Silicon (7440-21-3)

Listed on the Canadian DSL (Domestic Substances List)

Manganese (7439-96-5)

Listed on the Canadian DSL (Domestic Substances List)

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cobalt (7440-48-4)

Listed on the Canadian DSL (Domestic Substances List)

SECTION 16: Other information

Issue date : 09-09-2022

Revision date : 09-09-2022

Data sources : European Chemicals Agency, <http://echa.europa.eu/>. Supplier Safety Data Sheet.

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Other information : This safety data sheet is for informational purposes only and does not comply with national legal requirements without reference to a national distributor. The national distributor is responsible for a legally compliant safety data sheet.

Full text of H-statements:

| | |
|------|--|
| H228 | Flammable solid. |
| H252 | Self-heating in large quantities; may catch fire. |
| H302 | Harmful if swallowed. |
| H317 | May cause an allergic skin reaction. |
| H319 | Causes serious eye irritation. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H341 | Suspected of causing genetic defects. |
| H350 | May cause cancer. |
| H360 | May damage fertility or the unborn child. |

Abbreviations and acronyms:

| | |
|------|---|
| 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 |
| BCF | Bioconcentration factor |
| CLP | Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008 |
| DMEL | Derived Minimal Effect level |
| DNEL | Derived-No Effect Level |
| EC50 | Median effective concentration |
| IARC | International Agency for Research on Cancer |
| IATA | International Air Transport Association |
| IMDG | International Maritime Dangerous Goods |

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| | |
|-------|---|
| LC50 | Median lethal concentration |
| LD50 | Median lethal dose |
| LOAEL | Lowest Observed Adverse Effect Level |
| 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 |
| 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 |
| STP | Sewage treatment plant |
| TLM | Median Tolerance Limit |
| vPvB | Very Persistent and Very Bioaccumulative |

KFT SDS CA 00

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.