

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product Type Welding rods, Coated rod (electrode), Welding wire
Product Name **T800 Part/Rod/Wire/Electrode**
Product Code T-800

Type Base metals and alloys, > 1x1x1 mm

Other means of identification

Synonyms No information available

Recommended use of the chemical and restrictions on use

Recommended use Service life, cobalt and/or nickel containing alloys, steels, prefabricated parts and tools, Metallurgical Products, Wear and Corrosion Resistant Welding Consumable, Wear and Corrosion Resistant Components, For use in industrial installations only

Uses advised against Consumer use.

Details of the supplier of the safety data sheet

Supplier Identification Aimtek, Inc.
 201 Washington Street
 Auburn, MA 01501
 USA

Prepared By Aimtek
E-mail sales@aimtek.com
Company Phone Number 508-832-5035

Emergency telephone number

Emergency telephone number CHEMTREC: +1-703-527-3887 (INTERNATIONAL)
 1-800-424-9300 (NORTH AMERICA)

2. HAZARDS IDENTIFICATION

Classification

This product does not require a hazard communication label as it does not pose a hazard in the form delivered. Hazards can occur while using this product. Please read and follow the instructions of this SDS.

| | |
|---------------------------|-------------|
| Acute toxicity - Oral | Category 4 |
| Respiratory Sensitization | Category 1B |
| Skin Sensitization | Category 1 |
| carcinogenicity | Category 1B |
| Reproductive toxicity | Category 2 |

Label elements

EMERGENCY OVERVIEW

Danger

hazard statements

HARMFUL IF SWALLOWED. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause cancer by inhalation. May cause an allergic skin reaction. May damage fertility. Causes damage to organs through prolonged or repeated exposure. May cause long lasting harmful effects to aquatic life.
Heating may cause a fire.

Precautionary Statements - Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Wear respiratory protection. In case of inadequate ventilation wear respiratory protection. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention Specific treatment is urgent (see supplemental first aid instructions on this label) **EYES** IF IN EYES: 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. **skin** IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. **INHALATION** IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. **INGESTION** IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.

Precautionary Statements - Storage

Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant.

appearance Solid Metallic

Physical State @20°C Solid

Odor Odorless

Hazards Not Otherwise Classified (HNOC)

Welding Hazards

CAUTION. Welding will create fumes which may be toxic. If welding is performed on plated or coated materials such as galvanised or painted steel, excessive fume may be produced which contains additional hazardous components, and may result in metal fume fever or other health effects. The product and work surface will be hot during and after welding. Electric shock can kill. Arc Rays can injure eyes and burn skin.

Other hazards

MAY BE HARMFUL IF SWALLOWED. Causes mild skin irritation. Very toxic to aquatic life with long lasting effects. Very toxic to aquatic life.

Unknown Aquatic Toxicity

37.65% of the mixture consists of ingredient(s) of unknown toxicity

3. Composition/information on Ingredients

| Chemical Name | Formula | CAS-No | Weight-% | GHS Classification |
|---------------|---------|-----------|----------|-------------------------------------------------------------------------------------------------|
| Cobalt | Co | 7440-48-4 | 25 - 50 | Acute Oral 4 (H302) Acute dust/mist 1 (H330) Eye damage 2 (H319) Resp. Sens. 1B (H334) |

| | | | | |
|---------------|----|-----------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | Skin Sens. 1 (H317) Carc. 1B (H350) Inhalation Repr. tox 2 (H361)Fertility Aquatic Acute 1 M=10(H400) Aquatic Chronic 1 M=1(H410) |
| Molybdenum | Mo | 7439-98-7 | 25 - 50 | Not classified |
| Chromium | Cr | 7440-47-3 | 10 - 25 | Not classified |
| Silicon Metal | Si | 7440-21-3 | 3 - 5 | Not classified |
| Iron | Fe | 7439-89-6 | 0.1 - 1 | Not classified |
| Nickel | Ni | 7440-02-0 | 0.1 - 1 | STOT RE 1 (H372) Resp. tract, inhalation Carc. 2 (H351) Inhalation Skin Sens. 1 (H317) S,7 Aquatic Chronic 3 (H412) |

* The exact percentage (concentration) of composition has been withheld as a trade secret.

Full text of H-Statements referred to under sections 2 and 3

H302 - Harmful if swallowed
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H330 - Fatal if inhaled
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
H350i - May cause cancer by inhalation
H351 - Suspected of causing cancer if inhaled
H361f - Suspected of damaging fertility
H372 - Causes damage to the following organs through prolonged or repeated exposure if inhaled:
Lungs
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
H412 - Harmful to aquatic life with long lasting effects

4. FIRST AID MEASURES

First Aid Measures

General Advice If symptoms persist, call a physician. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Eye contact Keep eye wide open while rinsing. If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact Consult a physician if necessary. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash off immediately with soap and plenty of water.

INHALATION Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Oxygen or artificial respiration if needed. Get medical attention. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

INGESTION Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician. Rinse mouth.

Self-Protection of the First Aider Self-Protection of the First Aider. Wear suitable gloves.

Most Important Symptoms and Effects, Both Acute and Delayed

4.2. Most important symptoms and effects, both acute and delayed May cause allergy or asthma symptoms or breathing difficulties if inhaled. CNS and psychiatric effects, Parkinson-like symptoms. Languor, sleepiness and weakness in legs. A stolid masklike appearance of face, emotional disturbances such as uncontrollable laughter

and spastic gait with tendency to fall in walking and findings in more advanced cases. Persons with a history of asthma, allergies, chronic or recurrent respiratory disease should not be exposed to any process in which this product is used.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to physician Treat symptomatically. May cause sensitization by inhalation and skin contact. May cause sensitization of susceptible persons.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Extinguishing Media Which Must Not Be Used For Safety Reasons None.

Specific Hazards Arising from the Chemical Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes Thermal decomposition can lead to release of irritating and toxic gases and vapors May cause sensitization by inhalation and skin contact
Carbon oxides

Protective Equipment and Precautions for Firefighters Use personal protective equipment as required In the event of fire, wear self-contained breathing apparatus

Component information

| Chemical Name | Extuinguishing Media for Fires (Suitable) | Extinguishing Media for Fires (Unsuitable) |
|---------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Chromium | Use extinguishing media appropriate for surrounding fire. | Do not use carbon dioxide, which may form an explosive mixture with powdered chromium. |
| Silicon Metal | SMALL FIRES: Dry chemical, sand, water spray, foam.; LARGE FIRES: Water spray, fog, foam | - |

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions See section 12 for additional ecological information.
Environmental Precautions Avoid release to the environment.
Methods and material for containment and cleaning up Pick up and transfer to properly labeled containers. Avoid generation of dust. Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust.

7. HANDLING AND STORAGE

Precautions for Safe Handling Do not eat, drink or smoke when using this product. Use personal protective equipment as required. Avoid contact with eyes, skin and clothing. Wash contaminated clothing before reuse. Do not breathe dust/fume/gas/mist/vapors/spray.

Conditions for safe storage, including any incompatibilities

Storage Keep out of the reach of children. Keep container tightly closed in a dry and well-ventilated place. Keep containers tightly closed in a cool, well-ventilated place.

Incompatible Products None known based on information supplied.

Specific Use(s) Welding. .

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Exposure guidelines

Exposure guidelines

| Chemical Name | USA - ACGIH TLV | USA - OSHA PEL | USA - NIOSH IDLH | Argentina | Brazil |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cobalt | 0.02 mg/m ³ TWA 0.02 mg/m ³ TWA (inhalable particulate matter); skin; dermal and respiratory sensitizer; A3 - confirmed animal carcinogen with unknown relevance to humans; BEI; TLV basis: pulmonary function | 0.1 mg/m ³ TWA (dust and fume) | 20 mg/m ³ IDLH (dust and fume) | TWA: 0.02 mg/m ³ | - |
| Molybdenum | 10 mg/m ³ TWA (inhalable particulate matter); 3 mg/m ³ TWA (respirable particulate matter) | Not Listed | 5000 mg/m ³ IDLH | TWA: 10 mg/m ³ TWA: 3 mg/m ³ | - |
| Chromium | 0.5 mg/m ³ TWA | 1 mg/m ³ TWA | 250 mg/m ³ IDLH | TWA: 0.5 mg/m ³ | - |
| Silicon Metal | - | 15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction) | Not Listed | TWA: 10 mg/m ³ | - |
| Nickel | 1.5 mg/m ³ TWA (inhalable particulate matter) | 1 mg/m ³ TWA | 10 mg/m ³ IDLH | TWA: 1.5 mg/m ³ | - |
| Chemical Name | Canada - Alberta | Canada - British Columbia | Canada - Ontario | Canada - Quebec | Canada - Manitoba |
| Cobalt | 0.02 mg/m ³ TWA | 0.02 mg/m ³ TWA | 0.02 mg/m ³ TWA | 0.02 mg/m ³ TWAEV | 0.02 mg/m ³ TWA 0.02 mg/m ³ TWA (as Co) |
| Molybdenum | 10 mg/m ³ TWA (total); 3 mg/m ³ TWA (respirable) | 3 mg/m ³ TWA (respirable); 10 mg/m ³ TWA (inhalable) | 10 mg/m ³ TWA (metal, inhalable); 3 mg/m ³ TWA (metal, respirable) | - | 3 mg/m ³ TWA (respirable particulate matter); 10 mg/m ³ TWA (inhalable particulate matter) 3 mg/m ³ TWA (respirable particulate matter, as Mo); 10 mg/m ³ TWA (inhalable particulate matter, as Mo) |
| Chromium | 0.5 mg/m ³ TWA | 0.5 mg/m ³ TWA | 0.5 mg/m ³ TWA | 0.5 mg/m ³ TWAEV | 0.5 mg/m ³ TWA |
| Silicon Metal | - | 10 mg/m ³ TWA (total dust); 3 mg/m ³ TWA (respirable fraction) | - | 10 mg/m ³ TWAEV (containing no Asbestos and <1% Crystalline silica, total dust) | - |
| Nickel | 1.5 mg/m ³ TWA | 0.05 mg/m ³ TWA | 1 mg/m ³ TWA (inhalable) | 1 mg/m ³ TWAEV | 1.5 mg/m ³ TWA (inhalable particulate matter) |
| Chemical Name | Chile | Colombia - OEL | Mexico OEL (TWA) | Nicaragua | Peru |
| Cobalt | TWA: 0.018 mg/m ³ | 0.02 mg/m ³ TWA 0.02 mg/m ³ TWA (as Co) | 0.1 mg/m ³ TWA LMPE-PPT (dust and fume, as Co) | 0.02 mg/m ³ TWA 0.02 mg/m ³ TWA (as Co) | 0.02 mg/m ³ TWA |
| Molybdenum | TWA: 8 mg/m ³ | 10 mg/m ³ TWA (inhalable fraction); 3 mg/m ³ TWA (respirable fraction) 10 mg/m ³ TWA (inhalable fraction, as Mo); 3 mg/m ³ TWA | - | 10 mg/m ³ TWA (inhalable particulate matter); 3 mg/m ³ TWA (respirable particulate matter) 10 mg/m ³ TWA (inhalable particulate matter, as Mo); 3 | - |

| | | | | | |
|----------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| | | (respirable fraction, as Mo) | | mg/m ³ TWA (respirable particulate matter, as Mo) | |
| Chromium | TWA: 0.4 mg/m ³ | 0.5 mg/m ³ TWA | 0.5 mg/m ³ TWA LMPE-PPT | 0.5 mg/m ³ TWA | - |
| Silicon Metal | - | - | 10 mg/m ³ TWA LMPE-PPT (inhalable fraction) | - | 10 mg/m ³ TWA (inhalable fraction); 4 mg/m ³ TWA (respirable fraction); 5 mg/m ³ TWA (welding fumes) |
| Nickel | TWA: 0.8 mg/m ³ | 1.5 mg/m ³ TWA (inhalable fraction) | 1 mg/m ³ TWA LMPE-PPT | 1.5 mg/m ³ TWA (inhalable particulate matter) | 1.5 mg/m ³ TWA |
| Chemical Name | Uruguay | Venezuela | ... | ... | ... |
| Cobalt | 0.02 mg/m ³ TWA | TWA: 0.02 mg/m ³ | - | - | - |
| Molybdenum | 10 mg/m ³ TWA (inhalable particulate matter); 3 mg/m ³ TWA (respirable particulate matter) | TWA: 10 mg/m ³ TWA: 3 mg/m ³ | - | - | - |
| Chromium | 0.5 mg/m ³ TWA | TWA: 0.5 mg/m ³ | - | - | - |
| Silicon Metal | - | TWA: 10 mg/m ³ TWA: 4 mg/m ³ TWA: 5 mg/m ³ | - | - | - |
| Nickel | 1.5 mg/m ³ TWA (inhalable particulate matter) | TWA: 1.5 mg/m ³ | - | - | - |

Other Exposure Guidelines Hexavalent Chrome may be formed during welding.

| Chemical Name | Derived No Effect Level (DNEL) | Predicted No Effect Concentration (PNEC) |
|---------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Cobalt | 0.04 mg/m ³ long term local inhalation | 2.36 µg Co/l (AF 3) marine water; 0.74 µg/l (AF 3) fresh water |
| Molybdenum | 11.17 mg/m ³ longterm local inhalation | - |
| Chromium | 0.5 mg/m ³ local inhalation | - |
| Iron | 3 mg/m ³ local inhalation | - |
| Nickel | 0.05 mg/m ³ local inhalation; 0.05 mg/m ³ systemic inhalation | 0.0035-0.0218 mg/l freshwater; 0.0023 mg/l marine water |

Appropriate Engineering Controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye protection Use suitable eye protection to guard against the effects of welding. Wear safety glasses with side shields (or goggles). Eye-irrigation bottle with pure water.

Skin protection Long sleeved clothing. Wear fire/flammable resistant/retardant clothing. Wear impervious gloves and/or clothing if needed to prevent contact with the material. Gloves should be replaced regularly and if there is any sign of damage to the glove material.

Hand protection Protective gloves. The product and work surface will be hot during and after welding. Ensure adequate protection is in place to stop individuals from burning themselves.

Respiratory Protection Use only with adequate ventilation. If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local

regulations.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Regular cleaning of equipment, work area and clothing is recommended. Keep away from food, drink and animal feeding stuffs. Avoid contact with skin, eyes and clothing. Wash hands before breaks and at the end of workday.

Biological standards

| Chemical Name | USA ACGIH -BEI | Argentina - Occupational Exposure Limits - Biological Exposure Indices (BEIs) | Chile - Occupational Exposure Limits - Biological Exposure Indices (BEIs) |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Cobalt | 15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (nonspecific) | 15 µg/L urine end of shift on the last day of workweek Co (Background); 1 µg/L blood end of shift on the last day of workweek Co (Background, semi-quantitative) | - |
| Chromium | - | - | 30 µg/g Creatinine Medium: urine Time: end of shift and at end of workweek Parameter: Chromium |
| Nickel | - | <5 µg/g Creatinine urine Ni | - |
| Chemical Name | Mexico - Occupational Exposure Limits - BEIs (IBE) | Venezuela - Biological Exposure Indices (BEIs) | ... |
| Cobalt | 15 µg/L Medium: urine Time: end of shift at end of work week Parameter: Cobalt (background); 1 µg/L Medium: blood Time: end of shift at end of work week Parameter: Cobalt (background, semi-quantitative) | 15 µg/L urine end of shift at end of workweek Cobalt (F); 1 µg/L urine end of shift at end of workweek Cobalt (F,Sc) | - |

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| | | | |
|-----------------------------|----------------|--------------------------------------|-----------------------------|
| Physical State @20°C | Solid | appearance | Solid, Metallic |
| Odor | Odorless | Melting Point / Melting Range | 1285-1395 °C / 2340-2540 °F |
| Flash Point | Not applicable | vapor pressure | Not applicable |
| vapor density | Not applicable | Water Solubility | Insoluble in water |
| Dynamic Viscosity | Solid | Density VALUE | 8.44 g/cm3 |

9.2. Other information

VOC content (%) Not applicable

Component information

| Chemical Name | Mol. Weight | Water Solub. | Vap. Press. | Vap. Dens. | pH Val. | Autoign. Temp. | Evap. Rate | Boil. Temp. |
|---------------|---------------|-----------------|------------------------|------------|------------|----------------|------------|----------------------|
| Cobalt | 58.93 g/mol | - | 0.00007 hPa at 1050 °C | - | - | - | - | 2870 °C |
| Molybdenum | 95.95 g/mol | 0 mg/L at 20 °C | - | - | - | - | - | 4612 °C at 101.3 hPa |
| Chromium | 51.99 g/mol | - | - | - | - | - | - | 2642 °C |
| Silicon Metal | 28.08 g/mol | <1 mg/L | - | - | - | - | - | - |
| Iron | 55.84 g/mol | - | 0.000001 hPa at 25 °C | - | - | >100 °C | - | - |
| Nickel | 58.69 g/mol | - | 1 mmHg at 1810 °C | - | - | - | - | - |
| Chemical Name | Density VALUE | Melt. Temp. | flash point | Water Sol. | Bulk Dens. | Odor | State | Color |
| Cobalt | 8.85 - 8.9 | <1495 °C | - | insoluble | - | - | - | - |

| | g/cm ³ at 20 °C | | | | | | | |
|---------------|---------------------------------|--------------------|---|-----------|-------------------------------|---|---|-----------------------|
| Molybdenum | 10.2 g/cm ³ at 20 °C | 2617 °C (sublimes) | - | insoluble | - | - | - | - |
| Chromium | 7.19 g/cm ³ at 20 °C | 1900 °C | - | insoluble | - | - | - | grey |
| Silicon Metal | 2.33 g/cm ³ at 25 °C | 1410 °C | - | - | - | - | - | dark grey; dark brown |
| Iron | 7.87 g/cm ³ at 25 °C | 1539 °C | - | insoluble | 3000 - 4000 kg/m ³ | - | - | - |
| Nickel | 8.9 g/cm ³ at 25 °C | - | - | insoluble | - | - | - | - |

10. STABILITY AND REACTIVITY

| | |
|-------------------------------------------|--------------------------------------------------------------------------------|
| Reactivity | Stable under normal conditions |
| Chemical Stability | Stable under normal conditions. |
| Possibility of hazardous reactions | None under normal processing. |
| Conditions to Avoid | Keep away from sources of heat (e.g. hot surfaces), sparks and open flames. |
| Incompatible Materials | Acids. Strong oxidizing agents. |
| Hazardous Decomposition Products | Thermal decomposition can lead to release of toxic/corrosive gases and vapors. |

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Product information

| | |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| INHALATION | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| Eye contact | May cause eye irritation with susceptible persons. |
| Skin Contact | Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. Prolonged contact may cause redness and irritation. Prolonged skin contact may defat the skin and produce dermatitis. May cause sensitization by skin contact. |
| INGESTION | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion may cause irritation to mucous membranes. |

| Chemical Name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|---------------|---------------------|-------------------------------------------------|----------------------------------|
| Cobalt | 550 mg/kg bw | >2000 mg/kg bw | 0.05 mg/L |
| Molybdenum | LD50 >2000 mg/kg bw | Not Classified | LC50 >3.92 mg/L air |
| Chromium | LD50 >5000 mg/kg bw | Data waiving - Study Scientifically Unjustified | LC50 >5.41 mg/L air (analytical) |
| Silicon Metal | LD50 >3160 mg/kg bw | LD50 >5000 mg/kg bw | Acutely Non Toxic |
| Iron | = 984 mg/kg (Rat) | - | - |
| Nickel | >9000 mg/kg bw | Data waiving - Other Justification | NOAEC >=10.2 mg/L air |

Information on Toxicological Effects

| Chemical Name | US ACGIH - Critical effects |
|---------------|------------------------------------------------|
| Cobalt | asthma; myocardial effects; pulmonary function |
| Chromium | skin and upper respiratory tract irritation |
| Nickel | dermatitis; pneumoconiosis |

Delayed and immediate effects as well as chronic effects from short and long-term exposure

irritation Repeated exposure may cause skin dryness or cracking.

sensitization May cause sensitization of susceptible persons.

Mutagenic effects None known.

carcinogenicity This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

| Chemical Name | ACGIH | IARC | NTP: (National Toxicity Program) | OSHA |
|---------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Cobalt | A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans | Group 2B - Possible Human Carcinogen | Printed Long-Term and Short-Term Study Reports: Long-Term Studies 16 Male Rat - Clear Evidence; Female Rat - Clear Evidence; Male Mice - Clear Evidence; Female Mice - Clear Evidence (TR-581) Reasonably Anticipated To Be A Human Carcinogen | Not Listed |
| Chromium | A4 - Not Classifiable as a Human Carcinogen | Group 3 - Not Classified as a Human Carcinogen | Long-Term Exposure Studies for Which Technical Reports Were Not Prepared 17 | Not Listed |
| Iron | - | - | Present (excess or overload) | - |
| Nickel | A5 - Not Suspected as a Human Carcinogen | Nickel Compounds: Group 1 - Known Human Carcinogen - Nickel, Metallic & Alloy: Group 2B - Possible Human Carcinogen | Reasonably Anticipated To Be A Human Carcinogen (listed under Nickel compounds and metallic nickel) Present (nanoparticles) | Not Listed |
| Chemical Name | Chile | Argentina | Venezuela | Peru |
| Cobalt | A3 - Animal Carcinogen | A3 - Confirmed animal carcinogen with unknown relevance to humans | Present | - |
| Chromium | A4 - Not Classifiable as a Human Carcinogen | A4 - Not classifiable as a human carcinogen | Present | - |
| Nickel | A1 - Confirmed Human Carcinogen | A5 - Not Suspected as a human carcinogen | Present | A1 - Confirmed Human Carcinogen |
| Chemical Name | Canada Alberta | Canada British Columbia | Canada Manitoba | Canada Quebec |
| Cobalt | - | IARC Category 2B - Possible Human Carcinogen | A3 Confirmed Animal Carcinogen with Unknown Relevance to Humans | C3 carcinogen - effect detected in animals |
| Chromium | - | - | A4 Not Classifiable as a Human Carcinogen | - |
| Nickel | - | IARC Category 2B - Possible Human Carcinogen | A5 Not Suspected as a Human Carcinogen | - |

Reproductive Toxicity Contains a known or suspected reproductive toxin.

Chronic Toxicity Prolonged exposure may cause chronic effects. CNS and psychiatric effects, Parkinson-like symptoms. Languor, sleepiness and weakness in legs. A stolid masklike appearance of face, emotional disturbances such as uncontrollable laughter and spastic gait with tendency to fall in walking and findings in more advanced cases. Repeated contact may cause allergic reactions in very susceptible persons. Avoid repeated exposure. Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons. Repeated or prolonged exposure may cause central nervous system damage. Contains a known or suspected reproductive toxin. This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

Target Organ Effects Blood, Central Nervous System (CNS), Central Vascular System (CVS), EYES, Kidney, Liver, Lungs, Nasal cavities, Respiratory system, skin.

Neurological Effects Repeated or prolonged exposure may cause central nervous system damage. Prolonged or excessive exposure to manganese in dust or fume may cause irreversible central nervous system damage (Manganism). Symptoms resemble Parkinson's disease and include tremors, impaired speech, mask like face and impaired movement.

Numerical Measures of Toxicity no data available

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 508 mg/kg
 ATEmix (dermal) 5 mg/kg
 ATEmix (inhalation-gas) 10 mg/l

12. ECOLOGICAL INFORMATION

This product contains a chemical which is listed as a marine pollutant according to DOT.

12.1. Ecotoxicity 96% of the mixture consists of components(s) of unknown hazards to the aquatic environment

| Chemical Name | Algae Toxicity | Acute Fish Toxicity | Toxicity to microorganisms | Toxicity to daphnia and other aquatic invertebrates |
|---------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Cobalt | LC50-144 ug/L (fresh water); LC50-24.1 µg/l (sea water); NOEC-4.9 µg/l (fresh water); NOEC-1.23 µg/l (sea water) | LC50-1.5 mg/l (fresh water); NOEC-351.4 mg/L | Not available | LC50-0.61 mg/l (fresh water); LC50-2.32 mg/l (sea water); NOEC-5.47 µg/L (fresh water); NOEC-206 µg/L (sea water) |
| Molybdenum | EC10 - 150 mg/L, NOEL - 169.9 ,h/L | LC50 - 609 mg/L | Not available | EC50 - 2847.5 mg/L |
| Chromium | Data Waiving - Study Scientifically Unjustified | Data Waiving - Study Scientifically Unjustified | Not available | Data Waiving - Study Scientifically Unjustified |
| Silicon Metal | Data Waiving - Study Scientifically Unjustified | Data Waiving - Other Justification | Not available | Data Waiving - Study Scientifically Unjustified |
| Iron | NOEC - 1.4 mg/L | Data Waiving - Study Scientifically Unjustified | Not available | Data Waiving - Study Scientifically Unjustified |
| Nickel | EC10 - 316.5 ug/L | LC50 - 15.3 mg/L | Not available | LC50 >200ug/L (@6-6.5 pH), 13ug/L (@8-8.5pH) |

12.2 Persistence and degradability Product/Substance is inorganic. Not applicable.

12.3 Bioaccumulative potential No information available.

12.5 Results of PBT and vPvB assessment The components in this formulation do not meet the criteria for classification as PBT or vPvB

12.6 Other adverse effects None known

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.



SAFETY DATA SHEET

Waste from Residues/Unused Products Reuse or recycle. Recover or recycle if possible. Dispose of in accordance with local regulations.

Contaminated Packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

| Chemical Name | RCRA | RCRA - Basis for Listing | RCRA - D Series Wastes | RCRA - U Series Wastes |
|---------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------------|------------------------|
| Cobalt | Present (total) | - | - | - |
| Chromium | Included in waste streams: F032, F034, F035, F037, F038, F039 hazardous constituent - no waste number Present (total) | - | - | - |
| Nickel | Included in waste streams: F006, F039 hazardous constituent - no waste number Present (total) | - | - | - |

California Waste Status This product contains one or more substances that are listed with the State of California as a hazardous waste.

| Chemical Name | California Hazardous Waste Status |
|---------------|-----------------------------------|
| Cobalt | Toxic Ignitable |
| Molybdenum | Ignitable |
| Chromium | Toxic Corrosive Ignitable |
| Nickel | Toxic Ignitable |

14. TRANSPORT INFORMATION

DOT NOT REGULATED

| Chemical Name | U.S. - DOT Reportable Quantities | DOT Marine Pollutant | DOT Severe Marine pollutant |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------|
| Chromium | 5000 lbs RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100 µm (0.004 inches).); 2270 kg RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100 µm (0.004 inches).) | - | - |
| Nickel | 100 lbs RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100 µm (0.004 inches).); 45.4 kg RQ (The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100 µm (0.004 inches).) | - | - |

TDG NOT REGULATED

MEX NOT REGULATED

IMO / IMDG NOT REGULATED

ICAO / IATA-DGR NOT REGULATED

15. REGULATORY INFORMATION

| Chemical Name | TSCA |
|---------------|-----------------------------------------------------------------------------------------------------------------------------|
| Cobalt | Present (ACTIVE) Effective 06/01/1987, Sunset 06/01/1997 Added 2012 |
| Molybdenum | Present Added 2014 |
| Chromium | Present Added 2012 |
| Silicon Metal | Present |
| Iron | Present |
| Nickel | Present Added 2012 |
| Chemical Name | RCRA |
| Cobalt | Present (total) |
| Chromium | Included in waste streams: F032, F034, F035, F037, F038, F039 hazardous constituent - no waste number Present (total) |
| Nickel | Included in waste streams: F006, F039 hazardous constituent - no waste number Present (total) |
| Chemical Name | Bolivia - hazardous substances regulated under Bolivia's Environmental Regulations for the Industrial Manufacturing Sector |
| Cobalt | Toxic ([13]) |
| Nickel | Present |
| Chemical Name | Bolivia - hazardous substances regulated under Bolivia's Environmental Regulations for the Industrial Manufacturing Sector |
| Cobalt | Toxic ([13]) |
| Nickel | Present |
| Chemical Name | Chile - Chemical substances identified as dangerous to health by the Government of Chile |
| Cobalt | Present |
| Silicon Metal | Present (amorphous, dust) |
| Nickel | Present |

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. FEDERAL REGULATIONS

| Chemical Name | CAS-No | Weight-% | SARA 313 - Threshold Values % |
|---------------|-----------|----------|-------------------------------|
| Cobalt | 7440-48-4 | 25 - 50 | Present |
| Molybdenum | 7439-98-7 | 25 - 50 | - |
| Chromium | 7440-47-3 | 10 - 25 | Present |
| Silicon Metal | 7440-21-3 | 3 - 5 | - |
| Iron | 7439-89-6 | 0.1 - 1 | - |
| Nickel | 7440-02-0 | 0.1 - 1 | - |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic health hazard | Yes |
| Fire hazard | NO |
| Sudden Release of Pressure Hazard | NO |
| Reactive hazard | NO |

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)



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| Chemical Name | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---------------|-----------------------------|------------------------|---------------------------|----------------------------|
| Chromium | Not Applicable | Present | Present | Not Applicable |
| Nickel | Not Applicable | Present | Present | Not Applicable |

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs | RQ |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chromium | 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm) | - | 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm) |
| Nickel | 100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm) | - | 100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm) |

U.S. STATE REGULATIONS

California Proposition 65

This product contains the following Proposition 65 chemicals:

| Chemical Name | California - Proposition 65 - Carcinogens List | California - Proposition 65 - Developmental Toxicity | California - Proposition 65 - Reproductive Toxicity | California - 22 CCR - Toxic and Extremely Hazardous Carcinogenic Wastes |
|---------------|------------------------------------------------|------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------|
| Cobalt | carcinogen, 7/1/1992 (powder) | - | - | - |
| Nickel | carcinogen, 10/1/1989 (metallic) | - | - | - |

California Prop. 65

. Warning. This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm. Additional information available from: www.P65Warnings.ca.gov.

U.S. State Right-to-Know Regulations

| Chemical Name | New Jersey | Massachusetts | Pennsylvania |
|---------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Cobalt | sn 0520 | Present, | Environmental hazard; Present (fume) Present |
| Molybdenum | sn 1309 | Present, | Present |
| Chromium | sn 0432 | Carcinogen; Extraordinarily hazardous | Environmental hazard; Special hazardous substance Present |
| Silicon Metal | sn 3125 | Present (dust, exempt when encapsulated or if particulates are not present and cannot be substantially generated through use of the product) | Present |
| Nickel | sn 1341 | Carcinogen; Extraordinarily hazardous | Environmental hazard; Special hazardous substance Present |

Canada



SAFETY DATA SHEET

WHMIS Statement

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

| Chemical Name | WHMIS Classifications of Components |
|---------------|-----------------------------------------------------------------|
| Cobalt | D2A, D2B |
| Molybdenum | Uncontrolled product according to WHMIS classification criteria |
| Chromium | Uncontrolled product according to WHMIS classification criteria |
| Silicon Metal | B4 |
| Iron | Uncontrolled product according to WHMIS classification criteria |
| Nickel | D2A, D2B; B6, D2A (Raney) |

16. OTHER INFORMATION

Global Automotive Declarable Substance List Classifications

| Chemical Name | Global Automotive Declarable Substance List Classifications | Global Automotive Declarable Substance List Thresholds |
|---------------|-------------------------------------------------------------|--------------------------------------------------------|
| Cobalt | Declarable Substance (FI) | 0.1 % |
| Nickel | Declarable Substance (FI) | 0.1 % |

| | | | | |
|-------------|-----------------|----------------|--------------------|---------------------------------|
| NFPA | Health Hazard 2 | flammability 0 | Instability 0 | Physical and chemical hazards - |
| HMIS | Health Hazard 2 | flammability 0 | Physical Hazards 0 | Personal Precautions - |

Issuing Date 2019-05-13

Revision date 2019-05-13

Revision note This SDS has been revised in the following section(s)
 Section 1: Identification: Product identifier and chemical identity
 Section 8: Exposure controls and personal protection
 Section 15: Regulatory information
 Section 16: Any other relevant information

Disclaimer

Aimtek urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific SDSs, we are not and cannot be responsible for SDS's obtained from any source other than ourselves. If you have obtained an SDS from another source or if you are not sure that the SDS you have is current, please contact us for the most current version.

End of Safety Data Sheet