Iron Based Alloy

Safety Data Sheet

According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)
Issue date: 10/4/2024 Revision date: 2/12/2026 Supersedes: 10/4/2024 Version: 1.1

SECTION 1 Identification

1.1. Product identifier

Product form : Article
Trade name : Iron Based Alloy

1.2. Other means of identification

Other means of identification : 15-5, 17-4, 18CR-8NI, 303, 304, 304V, 304L, 309, 310, 316, 321, 347, 410, 4130, 4140, 416, 420, 422, 430, 431, 4320, 4330, 4340, 440A, 6150, 718, 8620, 8630, A2, A286, A6, ALLOY 20, ALLOY 904L, ALLOY 93, AM355, B STEEL, CA6NM, CD4MCU, CF3M-316L, D-2, GX23CRMOV121, H-11, HK-30, HK-40, JETHETE M190, M152, MARAGING, N155, S-2, S-5

1.3. Recommended use of the chemical and restrictions on use

Recommended use : Master melt alloy to be consumed within casting foundry manufacturing

1.4. Supplier's details

Certified Alloy Product, Inc
3245 Cherry Avenue
Long Beach, California 90807
T 565-595-6621

1.5. Emergency phone number

Emergency number : For Hazardous Materials or Dangerous Goods Incident Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night: 1-800-424-9300 (Toll Free, USA) / 703-527-3887 (Virginia, USA) CCN 796716
Back-up Emergency Number: +1 703-741-5970 (Washington, DC)

SECTION 2 Hazard Identification

2.1. Classification of the substance or mixture

GHS US classification

Acute toxicity (oral), Category 4	H302	Harmful if swallowed.
Serious eye damage/eye irritation, Category 2A	H319	Causes serious eye irritation.
Respiratory sensitization, Category 1	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin sensitization, 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 (Inhalation).
Reproductive toxicity, Category 1B	H360	May damage fertility or the unborn child.
Specific target organ toxicity — Repeated exposure, Category 1	H372	Causes damage to organs through prolonged or repeated exposure.

Full text of H statements : see section 16

2.2. Label elements

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US) : Danger

Hazard statements (GHS US) : 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 (Inhalation).
H360 - May damage fertility or the unborn child
H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary statements (GHS US) : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust.
Wash hands, forearms and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves, protective clothing, eye and face protection.
Wear respiratory protection.
If swallowed: Call a poison center or doctor if you feel unwell.
Rinse mouth.
If on skin: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice or attention.
Take off immediately all contaminated clothing and wash it before reuse.
If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms: Call a poison center or doctor.
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 or attention.
Get medical advice or attention if you feel unwell.
Store locked up.
Dispose of contents and/or container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulations.

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

Other hazards which do not result in classification : This product is not hazardous in the form in which it is shipped by the manufacturer. The hazards listed above are only present during processes which generate dust (cutting, grinding, polishing, demolishing, etc). Preventative exposure and necessary precautions to airborne particulates of dust must be taken.

2.5. Unknown acute toxicity

No additional information available

SECTION 3 Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
Iron	CAS-No.: 7439-89-6	50 – 100	Flam. Sol. 1, H228 Self-heat. 1, H251

Name	Product identifier	%	GHS US classification
Nickel	CAS-No.: 7440-02-0	0.1 – 50	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372
Cobalt	CAS-No.: 7440-48-4	0.1 – 50	Acute Tox. 4 (Oral), H302 Eye Irrit. 2A, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1B, H350 Repr. 1B, H360 STOT RE 1, H372 Aquatic Chronic 4, H413
Chromium	CAS-No.: 7440-47-3	0.1 – 35	Not classified
Silicon (Si)	CAS-No.: 7440-21-3	0.1 – 20	Not classified
Molybdenum	CAS-No.: 7439-98-7	0.1 – 10	Not classified
Niobium	CAS-No.: 7440-03-1	0.1 – 10	Not classified
Aluminum	CAS-No.: 7429-90-5	0.1 – 8	Aquatic Acute 1, H400
Tungsten	CAS-No.: 7440-33-7	0.1 – 8	Not classified
Titanium	CAS-No.: 7440-32-6	0.1 – 5	Not classified
Copper	CAS-No.: 7440-50-8	0.1 – 4	Not classified
Manganese	CAS-No.: 7439-96-5	0.1 – 3	Flam. Sol. 2, H228 Aquatic Chronic 2, H411
Vanadium	CAS-No.: 7440-62-2	0.1 – 3	Not classified
Tantalum	CAS-No.: 7440-25-7	0.1 – 1	Not classified

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

SECTION 4 First aid measures

4.1. Description of necessary first-aid measures

First-aid measures general : In the finished material form, no special first aid measures are required. The following first aid measures must be followed during any process generating dust. First aider: Pay attention to self-protection. Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention.

First-aid measures after inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If the victim is unconscious: Lay in a stable manner on victim's side. If experiencing respiratory symptoms: Call a poison center or a doctor.

First-aid measures after skin contact : Take off contaminated clothing. Wash skin with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

First-aid measures after eye contact : 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.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms/effects, acute and delayed

Symptoms/effects after inhalation : If dust are formed : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Symptoms/effects after skin contact : Not expected to present a significant skin hazard under anticipated conditions of normal use. If dust are formed : May cause an allergic skin reaction.

Symptoms/effects after eye contact	:	Not expected to present a significant eye contact hazard under anticipated conditions of normal use. If dust are formed : Stinging, redness, itching, tears, blurred vision, swelling.
Symptoms/effects after ingestion	:	Harmful if swallowed. If dust are formed : Ingestion may cause nausea and vomiting, Gastrointestinal disturbances.
Chronic symptoms	:	Suspected of causing genetic defects. May cause cancer. May damage fertility or the unborn child. Causes damage to organs through prolonged or repeated exposure.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Other medical advice or treatment	:	IF exposed or concerned: Get medical advice/attention.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	:	Metal fire powder. Sand.
Unsuitable extinguishing media	:	Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard	:	No fire hazard.
Explosion hazard	:	Warning. May form explosive dust-air mixture if small particles are generated during further processing, handling, or by other means.
Hazardous decomposition products in case of fire	:	Toxic fumes may be released. Metallic oxides.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	:	Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection. Move containers from fire area if it can be done without personal risk. Use extinguishing media appropriate for surrounding fire. Prevent fire-fighting water from entering environment.
Protection during firefighting	:	Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6 Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	:	Avoid all personal contact including breathing in the dust. Do not take actions involving personal risks. Absorb spillage to prevent material-damage. Notify authorities if product enters sewers or public waters.

For non-emergency personnel

Protective equipment	:	Wear recommended personal protective equipment.
Emergency procedures	:	Evacuate the danger area. If outdoors, move to an area upwind of the danger area. Do not breathe fume, dust. If possible without taking personal risks, remove ignition sources, ventilate area. Prevent other non-emergency personnel from entering the danger area.

For emergency responders

Protective equipment	:	Wear the recommended personal protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	:	Evacuate personnel to a safe area. Ventilate spillage area.
Environmental precautions	:	Avoid release to the environment. Notify authorities if product enters sewers or public waters.

6.2. Methods and materials for containment and cleaning up

For containment	:	Using a clean shovel, put the material in a dry container and cover without compressing it.

Methods for cleaning up	:	Take up mechanically (sweeping, shoveling) and collect in suitable container for disposal. Avoid creating or spreading dust. Contaminated absorbent material may pose the same hazard as the spilt product. Decontaminate surfaces and equipment with water and detergent. Until a sufficient level of dilution is achieved, the decontamination water may pose the same hazards as the product. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations. Notify authorities if product enters sewers or public waters.

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

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. Do not breathe dust. Avoid contact with skin, eyes and clothing. Avoid handling which leads to dust formation. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Take precautionary measures against static discharge.
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 incompatibilities

Storage conditions	:	Store in a cool, dry and well-ventilated area away from incompatible substances. Keep container tightly closed.
Incompatible materials	:	Strong acids. Strong bases. Strong oxidizing agents.
Packaging materials	:	Always store product in container of same material as original container.

SECTION 8 Exposure controls/personal protection

8.1. Control parameters

Nickel (7440-02-0)	
USA - ACGIH® - Threshold Limit Values	
Local name	Nickel, Elemental/Metal, as Ni
ACGIH® TLV® TWA	1.5 mg/m³ (I - Inhalable particulate matter)
Remark (ACGIH®)	TLV® Basis: Dermatitis; pneumoconiosis. Notations: A5 (Not Suspected as a Human Carcinogen)
Regulatory reference	ACGIH 2025
USA - ACGIH® - Biological Exposure Indices	
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 30 µg/l Parameter: Nickel - Medium: urine after exposure to soluble compounds - Sampling time: Post-shift at end of workweek
Regulatory reference	ACGIH 2025
USA - OSHA - Occupational Exposure Limits	
Local name	Nickel

Nickel (7440-02-0)	
OSHA PEL TWA	1 mg/m³ metal and insoluble compounds (as Ni) 1 mg/m³ soluble compounds (as Ni)
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - NIOSH - Occupational Exposure Limits	
Local name	Nickel
NIOSH REL 10h TWA	0.015 mg/m³ metal and insoluble compounds (as Ni) 0.015 mg/m³ soluble compounds (as Ni)
Remark (NIOSH)	Ca = Potential occupational carcinogens
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))
Chromium (7440-47-3)	
USA - ACGIH® - Threshold Limit Values	
Local name	Chromium, Metallic chromium, as Cr(0)
ACGIH® TLV® TWA	0.5 mg/m³ (I - Inhalable particulate matter)
Remark (ACGIH®)	TLV® Basis: Resp tract irr
Regulatory reference	ACGIH 2025
USA - ACGIH® - Biological Exposure Indices	
Local name	Chromium
BEI	0.7 µg/l Parameter: Total chromium - Medium: urine - Sampling time: End of shift, end of workweek - Notations: Pop
Regulatory reference	ACGIH 2025
USA - OSHA - Occupational Exposure Limits	
Local name	Chromium
OSHA PEL TWA	0.5 mg/m³ (II) compounds (as Cr) 0.5 mg/m³ (III) compounds (as Cr) 1 mg/m³ metal and insol. salts (as Cr)
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - NIOSH - Occupational Exposure Limits	
Local name	Chromium
NIOSH REL 10h TWA	0.5 mg/m³ (II) compounds (as Cr) 0.5 mg/m³ (III) compounds (as Cr) 0.5 mg/m³ metal and insol. salts (as Cr)
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))
Molybdenum (7439-98-7)	
USA - OSHA - Occupational Exposure Limits	
Local name	Molybdenum (as Mo)
OSHA PEL TWA	5 mg/m³ Soluble compounds 15 mg/m³ Insoluble Compounds - Total dust
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1

Molybdenum (7439-98-7)	
USA - NIOSH - Occupational Exposure Limits	
Local name	Molybdenum (soluble compounds as Mo)
NIOSH REL 10h TWA	5 mg/m³ (PELs proposed (Appendix D))
Remark (NIOSH)	Appendix D - Substances with No Established RELs
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))
Aluminum (7429-90-5)	
USA - ACGIH® - Threshold Limit Values	
Local name	Aluminum, metal and insoluble compounds
ACGIH® TLV® TWA	1 mg/m³ (R - Respirable particulate matter)
Remark (ACGIH®)	TLV® Basis: Pneumoconiosis; LRT irr; neurotoxicity. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2025
USA - OSHA - Occupational Exposure Limits	
Local name	Aluminum Metal (as Al)
OSHA PEL TWA	15 mg/m³ (Total dust) 5 mg/m³ (Respirable fraction)
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - NIOSH - Occupational Exposure Limits	
Local name	Aluminum Metal (as Al)
NIOSH REL 10h TWA	10 mg/m³ (Total dust) 5 mg/m³ (Respirable fraction)
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))
Manganese (7439-96-5)	
USA - ACGIH® - Threshold Limit Values	
Local name	Manganese, elemental and inorganic compounds, as Mn
ACGIH® TLV® TWA	0.02 mg/m³ (R - Respirable particulate matter) 0.1 mg/m³ (I - Inhalable particulate matter)
Remark (ACGIH®)	TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2025
USA - OSHA - Occupational Exposure Limits	
Local name	Manganese
OSHA PEL C	5 mg/m³ compounds (as Mn) 5 mg/m³ fume (as Mn)
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - NIOSH - Occupational Exposure Limits	
Local name	Manganese
NIOSH REL 10h TWA	1 mg/m³ compounds (as Mn) 1 mg/m³ fume (as Mn)

Manganese (7439-96-5)	
NIOSH REL STEL	3 mg/m³ compounds (as Mn) 3 mg/m³ fume (as Mn)
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))
Cobalt (7440-48-4)	
USA - ACGIH® - Threshold Limit Values	
Local name	Cobalt and inorganic compounds, as Co
ACGIH® TLV® TWA	0.02 mg/m³ (I - Inhalable particulate matter)
Remark (ACGIH®)	TLV® Basis: Pulm func change. Notations: DSEN; RSEN; A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans); BEI
Regulatory reference	ACGIH 2025
USA - OSHA - Occupational Exposure Limits	
Local name	Cobalt metal, dust, and fume (as Co)
OSHA PEL TWA	0.1 mg/m³
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - NIOSH - Occupational Exposure Limits	
Local name	Cobalt metal, dust, and fume (as Co)
NIOSH REL 10h TWA	0.005 mg/m³
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))
Silicon (Si) (7440-21-3)	
USA - OSHA - Occupational Exposure Limits	
Local name	Silicon
OSHA PEL TWA	15 mg/m³ (Total dust) 5 mg/m³ (Respirable fraction)
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - NIOSH - Occupational Exposure Limits	
Local name	Silicon
NIOSH REL 10h TWA	10 mg/m³ (Total dust) 5 mg/m³ (Respirable fraction)
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))
Copper (7440-50-8)	
USA - ACGIH® - Threshold Limit Values	
Local name	Copper, as Cu
ACGIH® TLV® TWA	0.2 mg/m³ (Fume) 1 mg/m³ (Dusts and mists)
Remark (ACGIH®)	TLV® Basis: Irr; GI; metal fume fever
Regulatory reference	ACGIH 2025

Copper (7440-50-8)	
USA - OSHA - Occupational Exposure Limits	
Local name	Copper
OSHA PEL TWA	0.1 mg/m³ (Fume (as Cu)) 1 mg/m³ (Dusts and mists (as Cu))
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - NIOSH - Occupational Exposure Limits	
Local name	Copper
NIOSH REL 10h TWA	0.1 mg/m³ (Fume (as Cu)) 1 mg/m³ (Dusts and mists (as Cu))
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))

Tungsten (7440-33-7)	
USA - ACGIH® - Threshold Limit Values	
Local name	Tungsten and compounds, in the absence of Cobalt, as W
ACGIH® TLV® TWA	3 mg/m³ (R - Respirable particulate matter)
Remark (ACGIH®)	TLV® Basis: Lung dam
Regulatory reference	ACGIH 2025

Tantalum (7440-25-7)	
USA - OSHA - Occupational Exposure Limits	
Local name	Tantalum, metal and oxide dust
OSHA PEL TWA	5 mg/m³
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - NIOSH - Occupational Exposure Limits	
Local name	Tantalum, metal and oxide dust
NIOSH REL 10h TWA	5 mg/m³
NIOSH REL STEL	10 mg/m³
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station. Use general ventilation, local exhaust ventilation, or process enclosure to keep the airborne concentrations below the permissible exposure limits.

Environmental exposure controls : Avoid release to the environment. Take measures to reduce or limit air emissions and releases to soil and the aquatic environment.

8.3. Individual protection measures, such as personal protective equipment

Personal protective equipment:
Personal protective equipment should be chosen according to national standards and in discussion with the supplier of the protective equipment. Wear recommended personal protective equipment.

Hand protection:
Hand protection should be chosen depending on activity. Wear protective gloves. Use insulated gloves when handling this material hot

Eye protection:
Safety glasses with side guards should be worn to prevent injury from airborne particles and/or other eye contact with this product

Skin and body protection:
Wear suitable protective clothing. Body protection should be chosen depending on activity and possible exposure

Respiratory protection:
If dust are formed : Use NIOSH approved respirator if ventilation is inadequate. SCBA for emergency responders. Must be used in accordance with an OSHA compliant respiratory protection program.

Personal protective equipment symbol(s):

SECTION 9 Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state	:	Solid
Appearance	:	Ingot.
Color	:	Nickel matte
Odor	:	No data available
Odor 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
Flammability (solid, gas)	:	Non flammable.
Vapor pressure	:	No data available
Relative vapor density at 20°C	:	No data available
Relative density	:	No data available
Solubility	:	No data available
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	No data available
Viscosity, kinematic	:	Not applicable
Explosion limits	:	Not applicable
Particle characteristics	:	No data available

9.2. Data relevant with regard to physical hazard classes (supplemental)

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.

10.2. Chemical stability

Stable under normal conditions of use.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid ignition sources. Incompatible materials.

10.5. Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition generates: Metallic oxides.

SECTION 11 Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Not classified.
Acute toxicity (inhalation) : Not classified

Iron Based Alloy	
ATE US (oral)	550 mg/kg body weight
Nickel	
LD50 oral rat	> 9000 mg/kg body weight
Chromium	
LC50 Inhalation - Rat	> 5.41 mg/l air
Iron	
LD50 oral rat	98.6 g/kg
Molybdenum	
LD50 dermal rat	> 2000 mg/kg body weight
Titanium	
LD50 oral rat	> 5000 mg/kg body weight
Aluminum	
LD50 oral rat	> 15900 mg/kg body weight
LC50 Inhalation - Rat	> 0.888 mg/l air
Manganese	
LD50 oral rat	> 2000 mg/kg body weight
LD50 oral	2500 mg/kg
LC50 Inhalation - Rat	> 5.14 mg/l air
LC50 Inhalation - Rat (Dust/Mist)	> 5.14 mg/l

Cobalt	
LD50 oral	550 mg/kg
LD50 dermal rat	> 2000 mg/kg body weight
Silicon (Si)	
LD50 oral rat	> 5000 mg/kg body weight
LD50 oral	3160 mg/kg
LD50 dermal rabbit	> 5000 mg/kg body weight
Copper	
LD50 dermal rat	> 2000 mg/kg body weight
LC50 Inhalation - Rat	> 5.11 mg/l air
Tungsten	
LD50 oral rat	> 2000 mg/kg body weight
LD50 dermal rat	> 2000 mg/kg body weight
LC50 Inhalation - Rat	> 5.4 mg/l air
LC50 Inhalation - Rat (Dust/Mist)	> 5.4 mg/l
Tantalum	
LD50 oral rat	> 2000 mg/kg body weight
LC50 Inhalation - Rat	> 5.18 mg/l air
Vanadium	
LD50 oral rat	> 2000 mg/kg body weight
LC50 Inhalation - Rat	> 5.05 mg/l air
Niobium	
LD50 oral rat	> 2000 mg/kg body weight
LD50 dermal rat	> 2000 mg/kg body weight

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Causes serious eye irritation.

Cobalt	
Serious eye damage/irritation, rabbit	Irritating to rabbits on ocular application

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 (Inhalation).

Nickel	
IARC group	2B - Possibly carcinogenic to humans
National Toxicity Program (NTP) Status	Reasonably anticipated to be Human Carcinogen.

Chromium	
IARC group	3 - Not classifiable

Cobalt	
IARC group	2A - Probably carcinogenic to humans
National Toxicity Program (NTP) Status	Reasonably anticipated to be Human Carcinogen.

Reproductive toxicity : May damage fertility or the unborn child.

Molybdenum	
LOAEL (animal/male, F0/P)	100 mg/kg body weight
NOAEL (animal/male, F0/P)	42.5 mg/kg body weight

Aluminum	
NOAEL (animal/male, F0/P)	1000 mg/kg body weight

Silicon (Si)	
NOAEL (animal/male, F0/P)	5000 mg/kg body weight

Tungsten	
NOAEL (animal/male, F1)	≈ 160 mg/kg body weight

STOT-single exposure : Not classified

STOT-repeated exposure : Causes damage to organs through prolonged or repeated exposure.

Nickel	
LOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.004 mg/l air
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.

Chromium	
LOAEC (inhalation, rat, dust/mist/fume, 90 days)	≥ 0.0044 mg/l air

Molybdenum	
NOAEC (inhalation,rat,dust/mist/fume,90 days)	> 0.1 mg/l air

Aluminum	
LOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.05 mg/l air
NOAEL (subchronic,oral,animal/male,90 days)	1034 mg/kg body weight
NOAEL (subchronic,oral,animal/female,90 days)	1087 mg/kg body weight

Cobalt	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.

Silicon (Si)	
NOAEL (oral,rat,90 days)	> 5000 mg/kg body weight

Tungsten	
NOAEC (inhalation,rat,dust/mist/fume,90 days)	> 0.652 mg/l air

Tantalum	
NOAEL (oral,rat,90 days)	1000 mg/kg body weight

Vanadium	
LOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.25 mg/l air
NOAEL (oral,rat,90 days)	≥ 1000 mg/kg body weight
NOAEC (inhalation,rat,dust/mist/fume,90 days)	0.022 mg/l air

Niobium	
NOAEL (oral,rat,90 days)	> 1000 mg/kg body weight

Aspiration hazard : Not classified

Iron Based Alloy	
Viscosity, kinematic	Not applicable

Symptoms/effects after inhalation : If dust are formed : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Symptoms/effects after skin contact : Not expected to present a significant skin hazard under anticipated conditions of normal use. If dust are formed : May cause an allergic skin reaction.

Symptoms/effects after eye contact : Not expected to present a significant eye contact hazard under anticipated conditions of normal use. If dust are formed : Stinging, redness, itching, tears, blurred vision, swelling.

Symptoms/effects after ingestion : Harmful if swallowed. If dust are formed : Ingestion may cause nausea and vomiting, Gastrointestinal disturbances.

Chronic symptoms : Suspected of causing genetic defects. May cause cancer. May damage fertility or the unborn child. Causes damage to organs through prolonged or repeated exposure.

SECTION 12 Ecological information

12.1. Ecotoxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Not classified

Chromium	
EC50 - Crustacea [1]	13.1 – 14.7 mg/l

Iron	
LC50 - Fish [1]	8.65 mg/l
LC50 - Other aquatic organisms [1]	106.3 mg/l
EC50 - Crustacea [1]	> 100 mg/l
EC50 - Crustacea [2]	> 10000 mg/l
EC50 72h - Algae [1]	18 mg/l

Titanium	
EC50 72h - Algae [1]	> 10000 mg/l

Aluminum	
EC50 72h - Algae [1]	1.05 mg/l

Aluminum	
EC50 72h - Algae [2]	0.2 mg/l
Manganese	
LC50 - Fish [1]	> 3.6 mg/l
EC50 - Crustacea [1]	> 1.6 mg/l
EC50 72h - Algae [1]	4.5 mg/l
EC50 72h - Algae [2]	2.8 mg/l
ErC50 algae	4.5 mg/l
NOEC (chronic)	1.7 mg/l
Cobalt	
LC50 - Fish [1]	100 mg/l
EC50 - Crustacea [1]	> 890 µg/l
EC50 - Crustacea [2]	5.89 mg/l
Silicon (Si)	
EC50 72h - Algae [1]	≈ 250 mg/l
Tungsten	
LC50 - Fish [1]	> 181 mg/l
EC50 - Crustacea [1]	> 163 mg/l
EC50 72h - Algae [1]	> 17.7 mg/l
NOEC chronic fish	≥ 9.8 mg/l
Tantalum	
LC50 - Fish [1]	> 1.76 µg/l

12.2. Persistence and degradability

Iron Based Alloy	
Persistence and degradability	Not rapidly degradable
Nickel	
Persistence and degradability	Not rapidly degradable
Chromium	
Persistence and degradability	Not rapidly degradable
Iron	
Persistence and degradability	Not rapidly degradable
Molybdenum	
Persistence and degradability	Not rapidly degradable

Titanium	
Persistence and degradability	Not rapidly degradable
Aluminum	
Persistence and degradability	Not rapidly degradable
Manganese	
Persistence and degradability	Not rapidly degradable
Cobalt	
Persistence and degradability	Not rapidly degradable
Silicon (Si)	
Persistence and degradability	Not rapidly degradable
Copper	
Persistence and degradability	Not rapidly degradable
Tungsten	
Persistence and degradability	Not rapidly degradable
Tantalum	
Persistence and degradability	Not rapidly degradable
Vanadium	
Persistence and degradability	Not rapidly degradable
Niobium	
Persistence and degradability	Not rapidly degradable

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Ozone : Not classified
Fluorinated greenhouse gases : No

SECTION 13 Disposal considerations

Regional waste regulation : Disposal must be done according to official regulations.
Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations : Disposal must be done according to official regulations.
Product/Packaging disposal recommendations : Comply with applicable regulations for solid waste disposal. Disposal must be done according to official regulations. Dispose of this material and its container at hazardous or special waste collection point. Refer to all applicable national, international and local regulations or provisions.
Additional information : Do not re-use empty containers.
Ecological waste information : Avoid release to the environment.

SECTION 14 Transport information

In accordance with DOT / IMDG / IATA

DOT	IMDG	IATA
14.1. UN number		
Not regulated for transport		
14.2. Proper Shipping Name		
Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)		
Not regulated	Not regulated	Not regulated
14.4. Packing group		
Not regulated	Not regulated	Not regulated
14.5. Environmental hazards		
	Not regulated	
No supplementary information available		

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

DOT
Not regulated

IMDG
Not regulated

IATA
Not regulated

SECTION 15 Regulatory information

15.1. 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.

Nickel	CAS-No. 7440-02-0	0.1 – 50%
Chromium	CAS-No. 7440-47-3	0.1 – 35%
Aluminum	CAS-No. 7429-90-5	0.1 – 8%
Manganese	CAS-No. 7439-96-5	0.1 – 3%
Cobalt	CAS-No. 7440-48-4	0.1 – 50%
Copper	CAS-No. 7440-50-8	0.1 – 4%

Vanadium	CAS-No. 7440-62-2	0.1 – 3%

Nickel (7440-02-0)	
CERCLA RQ	100 lb

Chromium (7440-47-3)	
Listed on EPA Hazardous Air Pollutant (HAPS) Listed on EPA HAPs Acute Dose Response Assessment List – Exposure limits	
CERCLA RQ	5000 lb

Cobalt (7440-48-4)
Listed on EPA Hazardous Air Pollutant (HAPS) Listed on EPA HAPs Chronic Dose Response Assessment List - Carcinogens Listed on EPA HAPs Acute Dose Response Assessment List – Exposure limits

Copper (7440-50-8)	
CERCLA RQ	5000 lb

15.2. International regulations

CANADA

Nickel (7440-02-0)
Listed on the Canadian DSL (Domestic Substances List)

Chromium (7440-47-3)
Listed on the Canadian DSL (Domestic Substances List)

Iron (7439-89-6)
Listed on the Canadian DSL (Domestic Substances List)

Molybdenum (7439-98-7)
Listed on the Canadian DSL (Domestic Substances List)

Titanium (7440-32-6)
Listed on the Canadian DSL (Domestic Substances List)

Aluminum (7429-90-5)
Listed on the Canadian DSL (Domestic Substances List)

Manganese (7439-96-5)
Listed on the Canadian DSL (Domestic Substances List)

Cobalt (7440-48-4)

Listed on the Canadian DSL (Domestic Substances List)

Silicon (Si) (7440-21-3)

Listed on the Canadian DSL (Domestic Substances List)

Copper (7440-50-8)

Listed on the Canadian DSL (Domestic Substances List)

Tungsten (7440-33-7)

Listed on the Canadian DSL (Domestic Substances List)

Tantalum (7440-25-7)

Listed on the Canadian DSL (Domestic Substances List)

Vanadium (7440-62-2)

Listed on the Canadian DSL (Domestic Substances List)

Niobium (7440-03-1)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

Nickel (7440-02-0)

Listed on IARC (International Agency for Research on Cancer)
Listed as carcinogen on NTP (National Toxicology Program)
Listed on INSQ (Mexican National Inventory of Chemical Substances)

Chromium (7440-47-3)

Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on EPA HAPs Acute Dose Response Assessment List – Exposure limits

Iron (7439-89-6)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Molybdenum (7439-98-7)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Titanium (7440-32-6)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Aluminum (7429-90-5)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Manganese (7439-96-5)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Cobalt (7440-48-4)

Listed on IARC (International Agency for Research on Cancer)
Listed as carcinogen on NTP (National Toxicology Program)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on EPA HAPs Chronic Dose Response Assessment List - Carcinogens
Listed on EPA HAPs Acute Dose Response Assessment List – Exposure limits

Silicon (Si) (7440-21-3)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Copper (7440-50-8)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Tungsten (7440-33-7)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Tantalum (7440-25-7)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Vanadium (7440-62-2)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. State regulations

WARNING: This product can expose you to Nickel (Metallic), which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Component	State or local regulations
Nickel(7440-02-0)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
Chromium(7440-47-3)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
Molybdenum(7439-98-7)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List

Component	State or local regulations
Titanium(7440-32-6)	U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List
Aluminum(7429-90-5)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
Manganese(7439-96-5)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
Cobalt(7440-48-4)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
Silicon (Si)(7440-21-3)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List
Copper(7440-50-8)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
Tungsten(7440-33-7)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
Tantalum(7440-25-7)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
Vanadium(7440-62-2)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16 Other information

According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)
Revision date : 2/12/2026
Issue date : 10/4/2024

Full text of hazard classes and H-statements	
H228	Flammable solid
H251	Self-heating; 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.
H351	Suspected of causing cancer.
H360	May damage fertility or the unborn child

Full text of hazard classes and H-statements	
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H411	Toxic to aquatic life with long lasting effects
H413	May cause long lasting harmful effects to aquatic life

Indication of changes:
Modified. Exposure controls/personal protection. Regulatory information.

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.