

SAFETY DATA SHEET

Issuing Date: 9/11/2024 Revision Date: 9/11/2024 Revision: 1

01 SUBSTANCE AND GENERAL IDENTIFICATION

GHS product identifier: Angel Hair® Stainless Steel

Other means of identification: 304/316 Stainless Steel Sheet

Recommended use and restrictions of use: Solid stainless steel products, various forms, and uses

Manufacturer's details: A. Zahner Co.
1400 East Ninth Street
Kansas City, MO 64106
+1 (816) 474-8882

Phone number and emergency contact information: +1 (816) 474-8882

02 HAZARDS IDENTIFICATION

Classification:

This chemical is not considered hazardous according to the OSHA Hazard Communication Standard 2012 (29 CFR 1910.1200). Solid metallic products are generally classified as “articles” and do not constitute hazardous materials in solid form. However, downstream use of the article could result in some hazardous elements contained in these products to be emitted under certain processing conditions such as but not limited to : burning, melting, cutting, sawing, brazing, grinding, machining, milling, and welding.

GHS label elements, including precautionary statements:

No labeling applicable

Hazard Not Otherwise Classified (HNOC)

Not applicable

Other information

No other information

03 COMPOSITION/INFORMATION ON INGREDIENTS

All values are expressed as a weight percent and are approximate. The percent composition reflects the range that is possible within this group of products. These are not the technical specification for a particular product. All grades do not include all hazardous ingredients.

Component	CAS Number	Weight %
Iron	7439-89-6	Balance
Chromium	7440-47-3	16-28
Nickel	7440-02-0	2.5-23
Molybdenum	7439-98-7	1-6.5
Manganese	7439-96-5	0-2
Silicon	7440-21-3	0-1
Copper	7440-50-8	0-1
Titanium	7440-32-6	0-0.7
Cobalt	7440-48-4	0-0.6

04 FIRST AID MEASURES

Description of necessary first-aid measures

General Advice

In its solid form stainless steel does not present an inhalation, absorption, or ingestion hazard. Grinding, polishing, abrasive blasting, hot rolling, hot forging, thermal cutting, or welding may produce stainless steel dust or fumes containing complex or mixed oxides (spinel) of its components. Metal dust particles may cause eye, skin and/or respiratory system irritation. The below information is for these instances.

Eye Contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Skin Contact

Wash off immediately with soap and plenty of water. In the case of skin irritation or allergic reactions see a physician.

Inhalation

Move to fresh air. If breathing is difficult, give oxygen. Consult a physician.

Ingestion

Not an expected route of exposure. If swallowed: Get medical attention.

Most important symptoms/effects, acute and delayed

During processing: Coughing and/ or wheezing. Difficulty in breathing. Irritation. May cause allergic skin reaction.

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

Notes to physician

May cause sensitization by inhalation and skin contact. Treat symptomatically.

05 FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Unsuitable Extinguishing Media

None.

Specific Hazards Arising from the Chemical

Avoid dust formation. Dust can form an explosive mixture in air. May cause sensitization by inhalation and skin contact.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

06 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions

Avoid dust formation. Avoid inhalation of dust. Ensure adequate ventilation. In case of insufficient ventilation wear suitable respiratory equipment. Use personal protective equipment. Avoid contact with skin, eyes and clothing.

Environmental Precautions

Not applicable to steel in solid state. Follow applicable federal, state and local regulations

Methods and materials for containment and cleaning up

Methods for Containment

Prevent further leakage or spillage if safe to do so. Cover dust spill with plastic sheet or tarp to minimize spreading.

Methods for Cleaning Up

Take up mechanically and collect in suitable container for disposal. Avoid dust formation. Clean contaminated surface thoroughly

07 HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Avoid dust formation. Avoid breathing dust. Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities**Storage**

Store in accordance with local regulations.

Incompatible Products

May react in contact with strong acids to release gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen. Use of strong oxidizers (high pH) on stainless steel may cause Cr(VI) compounds to form at ambient temperatures. Decomposition: Fumes generated during welding, brazing, or thermal cutting may contain: chromium compounds, including hexavalent chromium Cr(VI); nickel; manganese; iron; molybdenum; and silicon compounds.

08 EXPOSURE CONTROLS / PERSONAL PROTECTION**Control Parameters****Exposure Guidelines**

There are no occupational exposure limits for stainless steels. Occupational exposure limits apply to some components resulting from grinding, polishing, abrasive blasting, hot rolling, hot forging, thermal cutting, or welding which may produce stainless steel dust or fumes.

Appropriate Engineering Controls**Engineering Measures**

Ensure adequate ventilation, especially in confined area (i.e. showers, eyewash stations, etc.).

Individual protection measures, such as personal protective equipment**Eye/Face Protection**

When processing the metal alloy wear: Tightly fitting safety goggles.

Skin and Body Protection

When processing the metal alloy: Wear protective gloves/clothing.

Respiratory Protection

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.

09 PHYSICAL AND CHEMICAL PROPERTIES**Physical State**

Solid

Appearance

Varying from dull very light grey, to shiny metallic light grey to bright mirror finish.

Odor

Odorless

Odor Threshold

No information available

Property	Values	Remarks
pH	No data available	None
Melting Point	1370-1520 °C (2498-2798 °F)	None
Boiling Point	No data available	None
Flash Point	No data available	None
Evaporation Rate	No data available	None
Flammability (solid, gas)	No data available	None
Flammability Limits in Air		
Upper Limit	No data available	None
Lower Limit	No data available	None
Vapor Pressure	No data available	None
Vapor Density	No data available	None
Relative Density	No data available	None
Specific Gravity	No data available	None
Water Solubility	No data available	None
Solubility in Other Solvents	No data available	None
Partition Coefficient	No data available	None
n-octanol/water	No data available	None
Autoignition Temperature	No data available	None
Decomposition Temperature	No data available	None
Viscosity	No data available	None
Flammable Properties	Not flammable	None
Explosive Properties	No data available	None
Oxidizing Properties	No data available	None
VOC Content (%)	No data available	None

10 STABILITY AND REACTIVITY

Reactivity

No data available.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to Avoid

Dust formation.

Incompatible Materials

May react in contact with strong acids to release gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen. Use of strong oxidizers (high pH) on stainless steel may cause Cr(VI) compounds to form at ambient temperatures. Decomposition: Fumes generated during welding, brazing, or thermal cutting may contain: chromium compounds, including hexavalent chromium Cr(VI); nickel; manganese; iron; molybdenum; and silicon compounds.

Hazardous Decomposition Products

None known based on information supplied.

11 TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure**Product Information**

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Inhalation

May cause irritation of respiratory tract. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Eye Contact

Contact with eyes may cause irritation.

Skin Contact

Contact with dust can cause mechanical irritation or drying of the skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Ingestion

May cause irritation.

Chemical Name	LD50 Oral	LD50 Dermal	LD50 Inhalation
Iron	= 984 mg/kg (Rat)	-	-
Nickel	> 9000 mg/kg (Rat)	-	-
Manganese	= 9 g/kg (Rat)	-	-
Silicon	= 3160 mg/kg (Rat)	-	-
Cobalt	= 6170 mg/kg (Rat)	-	> 10mg/L (Rat) 1h

Symptoms related to the physical, chemical and toxicological characteristics

No information available.

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

During processing: May cause sensitization by inhalation and skin contact.

Mutagenic Effects

No information available.

Carcinogenicity

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Chromium		Group 3		
Nickel		Group 1 Group 2B	Reasonably Anticipated	X
Cobalt	A3	Group 2A Group 2B		X

Reproductive Toxicity

No information available.

STOT - Single Exposure

No information available.

STOT - Repeated Exposure

No information available.

Chronic Toxicity

Elevated temperature processing such as welding and plasma arc cutting may release hazardous fumes. Overexposure to metal fumes may cause pulmonary edema (fluid in the lungs) and methemoglobinemia. May also cause pulmonary fibrosis and lung cancer. Chronic exposure to manganese may cause impairment to the central nervous system including sluggishness, sleepiness, muscle weakness, loss of facial muscle control, edema, emotional disturbances, spastic gait, and falling.

Target Organ Effects

Respiratory system. Skin.

Aspiration Hazard

No information available.

Numerical Measures of Toxicity

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

LD50 Oral 495 mg/kg; acute toxicity estimate 7500

12 ECOLOGICAL INFORMATION

Ecotoxicity

The environmental impact of this product has not been fully investigated.

Chemical Name	Algae	Fish
Iron	-	LC50 96 h: = 0.56 mg/L semi-static (Cyprinus carpio) LC50 96 h: = 13.6 mg/L static (Morone saxatilis)
Nickel	EC50 96 h: 0.174 - 0.311 mg/L static (Pseudokirchneriella subcapitata) EC50 72 h: = 0.18 mg/L (Pseudokirchnerie)	LC50 96 h: = 1.3 mg/L semi-static (Cyprinus carpio) LC50 96 h: = 10.4 mg/L static (Cyprinus carpio) LC50 96 h: > 100 mg/L (Brachydanio rerio)
Copper	EC50 96 h: 0.031 - 0.054 mg/L static (Pseudokirchneriella subcapitata) EC50 72 h: 0.0426 - 0.0535 mg/L static (Pseudokirchneriella subcapitata)	LC50 96 h: 0.0068 - 0.0156 mg/L (Pimephales promelas) LC50 96 h: < 0.3 mg/L static (Pimephales promelas) LC50 96 h: = 0.052 mg/L flow-through (Oncorhynchus mykiss) LC50 96 h: = 0.112 mg/L flow-through (Poecilia reticulata) LC50 96 h: = 0.2 mg/L flow-through (Pimephales promelas) LC50 96 h: = 0.3 mg/L semistatic (Cyprinus carpio) LC50 96 h: = 0.8 mg/L static (Cyprinus carpio) LC50 96 h: = 1.25 mg/L static (Lepomis macrochirus)
Cobalt	-	LC50 96 h: > 100 mg/L static (Brachydanio rerio)

Persistence and Degradability

No information available.

Bioaccumulation

No information available.

Other Adversse Effects

No information available.

13 DISPOSAL CONSIDERATIONS

Waste Disposal Methods

Recover or recycle if possible. Dispose of in accordance with federal, state, and local regulations

Contaminated Packaging

Dispose of in accordance with federal, state, and local regulations.

Chemical Name	RCRA	RCRA Basis for Listing	RCRA D Series Wastes	RCRA U Series Wastes
Chromium (7440-47-3)	-	Included in waste streams: F032, F034, F035, F037, F038, F039	5.0 mg/L regulatory level	-
Nickel (7440-02-0)	(hazardous constituent - no waste number)	Included in waste streams: F006, F039		-

California Hazardous Waste

Chemical Name	Toxic	Corrosive	Ignitable Powder
Chromium	x	x	x
Nickel	x (powder)		x
Molybdenum			x
Manganese			x
Copper	x		
Titanium			x
Cobalt	x (powder)		x

14 TRANSPORTATION INFORMATION

DOT

Not regulated

15 REGULATORY INFORMATION

International Inventories

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

Complies

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

Complies

US Federal Regulations

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS No.	Weight %	SARA 313 - Threshold Values %
Chromium	7440-47-3	16-28	1.0
Nickel	7440-02-0	2.5-23	0.1
Manganese	7439-96-5	0-2	1.0
Copper	7440-50-8	0-1	1.0
Cobalt	7440-48-4	0-0.6	0.1

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
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):

Chemical Name	Reportable Quantities	Toxic Pollutants	Priority Pollutants	Hazardous Substances
Nickel	-	x	x	-
Copper	-	x	x	-

CERCLA

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):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Chromium			RQ 5000 lb final RQ RQ 2270 kg final RQ
Nickel	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ
Copper	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

This product contains one of the following Proposition 65 chemicals:

Chemical Name	CAS No.	California Prop 65
Nickel	7440-02-0	Carcinogen
Cobalt	7440-48-4	Carcinogen

US State Right-to-Know Regulations

Chemical Name	NJ	MA	PA	IL	RI
Chromium		x			x
Nickel	x	x	x	x	x
Molybdenum	x	x	x		x
Manganese	x	x	x	x	x
Silicon	x	x	x		x
Copper	x	x	x	x	x
Titanium	x				
Cobalt	x	x	x	x	x

US EPA Label Information**EPA Pesticide Registration Number**

Not Applicable.

16 OTHER INFORMATION

NFPA

Health Hazard	0
Flammability	0
Instability	0
Physical and Chemical Hazards	-

HMIS

Health Hazard	0
Flammability	0
Physical Hazard	0
Personal Protection	X

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General Disclaimer

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet