



MSDS (Material Safety Data Sheet)

SECTION 1: Identification

1.1. Identification

Product Name: Stainless Steel

Product Grade: 304L (1.4307)

Product Forms: Coil, Plate

Deliver Status: Hot Rolled

1.2. Recommended use and restrictions on use

Use of the substance / mixture:

- Various stainless-steel products for masonry construction
- In heavy gauge components for improved weldability

Restrictions on use: None known

1.3. Importer

Company name: Nam Avaran Azar

Company brand name: Arax Chemi

Number 28, Ata complex, West Janbazan street, Nabovvat square, Narmak, Tehran, Iran

Email: info@araxchemi.com

Website: www.araxchemi.com

Phone number: 021-71333331, 021-35000015, 021-78528

National Emergency phone number: 115

SECTION 2: Hazard(s) identification

Dust and fumes may be generated during working, e.g., during welding, cutting or grinding. Long term over-exposure to air pollutants in the form of dust or fumes may affect health and cause, for instance, chronic bronchitis.

A thin coat of anti-corrosion oil is applied to certain materials. This should be taken into account during handling and working. Heating and working of materials that have been coated with anti-corrosion oil may cause irritating and hygienically harmful fumes. Skin irritation may be caused by repeated or extended contact with anti-corrosion oil.

SECTION 3: Composition/Information on Ingredients

Material / Component	CAS Number	% weight
Alloying Elements		
Carbon (C)	7440-44-0	0.08 max
Manganese (Mn)	7439-96-5	2.0 max
Phosphorous (P)	7723-14-0	0.045 max
Sulfur (S)	7704-34-9	0.030 max
Silicon (Si)	7440-21-3	2.0 max



Chromium (Cr)	7440-47-3	18.0-20.0
Nickel (Ni)	7440-02-0	8.0-12.0
Molybdenum (Mo)	7439-98-7	0.0
Nitrogen (N)	7727-37-9	0.10 max
Base Metal		
Iron (Fe)	7439-89-6	Balance

NOTE: The above listing is a summary of elements used to alloy stainless steel. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts.

SECTION 4: First – aid measures

4.1. Description of first aid measures

Eye contact: Flush eyes with plenty of water for at least 15 minutes. Seek medical attention if eye irritation persists.

Skin contact: Maintain good personal hygiene. Wash affected area with mild soap and water. Seek medical attention if skin irritation persists.

Inhalation: Remove to fresh air. Check for clear airway, breathing and presence of pulse. If necessary, administer CPR. Consult a physician immediately.

Ingestion: Rare in industry. Dust may irritate mouth and gastrointestinal tract. If ingested, seek medical attention promptly.

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

Stainless steel as sold and shipped is not likely to present an acute or chronic health effects. However, during processing (cutting, milling, grinding, melting or welding) emitted byproducts may cause irritations, difficulty in breathing, coughing or wheezing. May cause allergic skin reactions.

4.3. immediate medical attention and special treatment, if necessary

Notes to physician: May cause sensitization by skin contact or inhalation. Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

Non-flammable. Will not support combustion. Not applicable for solid product. Use extinguishers appropriate for surrounding materials. Do not use water on molten metal.

5.2. Specific hazards arising from material

Not applicable for solid product

5.3. Hazardous combustion products

At temperatures above the melting point, fumes containing metal oxides and other alloying elements may be liberated.

5.4. Special protective equipment and precautions for fire-fighters



Firefighters should wear self-contained NIOSH-approved breathing apparatus and full protective clothing.

5.5. Explosion data

Sensitivity to mechanical impact: None

Sensitivity to static discharge: N/A

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Not applicable to stainless steel in solid state. Avoid dust formation. Ensure adequate ventilation. Clean-up personnel should be protected against contact with eyes and skin protection.

6.2. Environmental precautions

Not applicable to stainless steel in solid state.

6.3. Methods and material for containment and cleaning up

Not applicable to stainless steel in solid state. For spills involving fine dusts, remove by vacuuming or wet sweeping methods to prevent spreading of dust. Avoid inhalation of dusts.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Not applicable to stainless steel in solid state. Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Practice good housekeeping. Avoid breathing metal fumes and/or dust.

7.2. Conditions for safe storage

No special storage conditions for stainless steel in solid state.

7.3. Incompatible products

Store away from acids and incompatible materials.

SECTION 8: Exposure controls / personal protection

8.1. control parameters

There are no exposure limits for stainless steel.

The exposure limit for iron-containing fumes has been established at 5 mg/m³ with ACGIH's TWA. The individual complex compounds within the fume may have lower exposure limits than the general fume.

Material / Component	CAS Number	Exposure Limits	
		OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)



Alloying Elements			
Carbon (C)	7440-44-0	None Listed	None Listed
Manganese (Mn)	7439-96-5	5.0 as Mn	1.0 as Mn
Phosphorous (P)	7723-14-0	0.1 as P	0.1 as P
Sulfur (S)	7704-34-9	13 (Sulfur Dioxide)	5 (Sulfur Dioxide)
Silicon (Si)	7440-21-3	None Listed	None Listed
Chromium (Cr)	7440-47-3	1.0 as Cr	0.5 as Cr
Nickel (Ni)	7440-02-0	1.0 as Ni	1.0 as Ni
Molybdenum (Mo)	7439-98-7	5.0 Sol. Cmpds	5.0 Sol. Cmpds
Nitrogen (N)	7727-37-9	None Listed	Simple Asphyxiant
Base Metal			
Iron (Fe)	7439-89-6	(Fe ₂ O ₃ Fume)	5 (Fe ₂ O ₃ Fume)

Notes: Threshold Limit Values (TLV) established by the American Conference of Governmental Industrial Hygienists (AC-GIH 2011) are 8-hour Time Weighted Average concentrations unless otherwise noted.

8.2. Appropriate engineering controls

Provide general or local exhaust to minimize airborne concentrations during milling, grinding, melting and welding operations.

8.3. Individual protective measures

Dependent upon process being performed on material each operation must be addressed for suitable equipment.

Gloves (Specify): Wear gloves as required

Eyes (Specify): Safety glasses or goggles as required

Clothing (Specify): N/A

Footwear (Specify): N/A

Respirator (Specify): If concentrations exceed established limits use NIOSH/MSHA approved particulate respirators (dust & fume or high efficiency dust fume) when grinding or welding.

Other (Specify): N/A

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Solid

Appearance: Silver Grey Metallic (Steel)

Odor: Not Applicable

Odor threshold: Not Applicable

pH: Not Applicable

Melting point: 1530 °C (2786 °F)



Boiling point: Not Applicable

Flash point: N/A

Evaporation rate: Not Applicable

Flammability (solid, gas): Not flammable

Upper flammable limit %: Not Applicable

Lower flammable limit %: Not Applicable

Vapor pressure: Not Applicable

Vapor density: Not Applicable

Relative density: 7.86

Specific gravity: No data

Solubility: Not soluble

Partition coefficient: No data

Auto-ignition temperature: Not Applicable

Decomposition temperature: No data

Viscosity: Not Applicable

9.2. Other information

Not Applicable

SECTION 10: Stability and reactivity

10.1. Reactivity

Not determined for product in solid form.

10.2. Chemical stability

Yes. Steel products are stable under normal storage and handling conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerization cannot occur.

10.4. Conditions to avoid

Contact with mineral acids will release flammable hydrogen gas. Dust formation.

10.5. Incompatible materials

Yes, strong acids.

10.6. Hazardous decomposition products

Not Applicable



SECTION 11: Toxicological information

Information on toxicological effects

Likely routes of entry: None for stainless steel in its natural solid state.

Eyes: High concentrations of dust may cause irritation to the eyes.

Skin: Prolonged skin contact with coated steel may cause skin irritation in sensitive individuals.

Inhalation: Inhalation of metal particulate or elemental oxide fumes generated during welding, burning, grinding or machining may pose acute or chronic health effects.

Symptoms related to the physical, chemical and toxicological characteristics: None for stainless steel in its natural solid state.

Effects of acute exposure to material: Manganese & copper: Inhalation overexposure to manganese or copper (or zinc coated products) may cause metal fume fever characterized by fever and chills (i.e., flu-like symptoms) which appear 4-6 hours after exposure with no long-term effects.

Effects of chronic exposure to material:

Chromium: IARC lists certain hexavalent chromium compounds under its Group 1 category - "confirmed human carcinogens" and metallic chromium under its Group 3 category - "not classifiable as to their carcinogenicity to humans". Chromium metal is classified as arcinogenic by NTP.

Nickel: IARC lists metallic nickel under its Group 2B category - "possibly carcinogenic to humans". Nickel may cause skin sensitivity.

Cobalt: Cobalt dust may result in an asthma-like condition (cough, shortness of breath). IARC lists metallic cobalt under its Group 2B category - "possibly carcinogenic to humans".

Iron: Inhalation overexposures may cause a benign pneumoconiosis (siderosis) with few or no symptoms.

Manganese: Existing studies are inadequate to assess its carcinogenicity. Susceptible to Parkinson's disease, metal fume fever and kidney damage.

STOT (Single Exposure): No data

STOT (Repeated Exposures): Respiratory system. Allergic skin reactions.

Mutagenicity of material: N/A

Reproductive effects: N/A

Teratogenicity of material: N/A

Carcinogenicity of material:

Chromium: IARC lists certain hexavalent chromium compounds under its Group 1 category - "confirmed human carcinogens" and metallic chromium under its Group 3 category - "not classifiable as to their carcinogenicity to humans".

Nickel: IARC lists metallic nickel under its Group 2B category - "possibly carcinogenic to humans".

Cobalt: IARC lists metallic cobalt under its Group 2B category - "possibly carcinogenic to humans".

Synergistic materials: N/A



Aspiration hazard: No data

Sensitization of material: N/A

LD50 (of material): Not established

LC50 (of material): Not established

Notes:

- STOT – Specific Target Organ Toxicity
- International Agency for Research on Cancer (IARC) - Summaries & Evaluations (2008).
- 3rd Annual Report on Carcinogens as prepared by the National Toxicology Program (NTP).
- Iron containing welding fume has an exposure limit of 5 mg/m³ (ACGIH-TLV's 2011). Welding fume may also contain contaminants from fluxes or welding consumables. Prolonged skin contact may cause reddening and drying of skin or dermatitis in sensitive individuals due to nickel and/or chromium content in steel.

SECTION 12: Ecological information

12.1. Ecotoxicity

No data available for the stainless steel in its natural solid state. However, individual components of the material have been found to be toxic to the environment.

Component	Toxicity to fish	Toxicity to algae	Toxicity to microorganisms
Iron	LC50 Common Carp 96 hr. 0.56 mg/l	-	-
Chromium	LC50 Fathead minnow 96 hr. 10-100 mg/l	-	-
Nickel	LC50 Common Carp 96 hr. 1.3 mg/l	EC50 Freshwater Algae 72 hr. 0.18 mg/l	EC50 Water Flea 48 hr. 1.0 mg/l

12.2. Persistence and degradability

No data available

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available for stainless steel in its natural solid state. Individual metal dusts may migrate into soil and groundwater and be absorbed by plants.

12.5. Other adverse effects

None known

SECTION 13: Disposal considerations



Waste disposal methods: Steel scrap should be recycled whenever possible.

Container cleaning & disposal: Dispose of in accordance with applicable federal, provincial/state or local regulations.

SECTION 14: Transport information

General shipping information: Stainless steel not regulated for shipping.

Shipping and description: N/A

UN number: N/A

Hazard class: N/A

Packing group / risk group: N/A

SECTION 15: Other information

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