



M.P. INDUSTRIES
MIDWEST PRECISION CASTINGS COMPANY

Safety Data Sheet

Stainless Steel

1. Product and company identification

Product name	Stainless Steel
Product type:	100 – 500 series Stainless Steel
Product use:	These materials are utilized in a wide variety of applications that involve assembly of pipe lines and the like offering corrosion, heat, wear and chemical resistance.
Manufacturer:	Midwest Precision Casting M.P. Industries 102 N. Cool Springs Road O'Fallon, MO 63366
Telephone:	636-272-6190
Print date:	February 17, 2016

2. Hazard(s) identification

No known hazard in solid as shipped condition. Edges can be sharp, use gloves when handling. Individuals with sensitivity to metals should use proper personal protection. ie protective clothing, respirator.

Iron	- as oxide, pulmonary effects, siderosis.
Chromium*	- dermatitis, upper respiratory tract inflammation and / or ulceration, and possibly cancer of nasal passages and lungs. Available information concludes that welding fumes exposure does not induce human cancer.
Nickel*	- dermatitis, upper respiratory tract inflammation and / or ulceration, and possibly cancer of nasal passages and lungs. Available information concludes that welding fumes exposure does not induce human cancer.
Manganese	- bronchitis, pneumonitis, loss of coordination.
Silicon	- may produce x-ray changes in the lungs without disability.

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Molybdenum	- irritation of the nose and throat, weight loss, and digestive disturbances in animals. No industrial poisoning has been reported.
Selenium	- nasal and bronchial irritation, gastro-intestinal disturbances, garlic breath odor.
Cobalt	- respiratory tract irritation, skin rash.
Copper	- “metal fume fever” – symptoms may include cough, headache, metallic taste in mouth, nausea, fever, chilling, pain in muscles and joints. This condition is transitory, usually lasting one (1) or less.
Titanium	- no chronic debilitating symptoms reported in humans.
Aluminum	- no known adverse health impacts on humans. Considered as nuisance dust in occupational settings.
Vanadium*	- common respiratory disease such as bronchitis, pneumonitis and allergic asthmatic reaction and lung cancer.
Tungsten	- some evidence of pulmonary discomfort such as cough.

* Considered as a carcinogen or potential human carcinogen.

3. Composition / Information on ingredients

Solid metal alloys are not hazardous as shipped. However, welding, grinding, brazing or machining can result in a generation of fumes and/or airborne dust (particulates) which may pose health hazards, personal protection measures must be taken.

INGREDIENT	CAS #	PERCENT	OSHA PEL (MG/M) 8-HOUR TWA	AOGHI TLV (MG/M) 8-HOUR TWA
Iron	7439-89-6	0-90	10.0 (Oxide Fume)	5.0 (Welding Fumes)
Chromium	7440-47-3	0-30	0.025 (Chrome)	0.5 CR (III) 0.05 CR (IV)
Nickel	7440-02-02	0-99.5	0.015 (Metal)	1.0 (Metal)
Manganese	7439-96-5	0-15	5.0 (Dust Ceiling)	5.0 (Dust Ceiling) 1 (Fume) 3 (Stel)

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INGREDIENT	CAS #	PERCENT	OSHA PEL (MG/M) 8-HOUR TWA	AOGHI TLV (MG/M) 8-HOUR TWA
Silicon	7440-21-3	0-3	5 (Respirable Dust) 15 (Total Dust)	5 (Respirable Dust) 10 (Total Dust)
Molybdenum	7439-98-7	0-5	5 (Soluble Compounds) 15 (Insoluble Compounds)	5 (Soluble Compounds) 15 (Insoluble Compounds)
Selenium	7782-49-2	0-1	0.2	0.2
Cobalt	7440-48-4	0-1	0.1 (Fume and Dust)	0.05 (Fume and Dust)
Copper	7440-50-8	0-5	0.1 (Fume) 1 (Dust and Mist)	0.2 (Fume) 1 (Dust and Mist)
Titanium	7440-32-6	0-6	N/A	10 (Oxide)
Aluminum	7429-90-5	0-4.25	5 (Welding Fume) 10 (Total Oxide Dust)	5 (Respirable Dust) 5 (Welding Dust)
Vanadium	7440-62-2	0-1.1	0.1 (Oxide Fume Ceiling) 0.5 (Respirable Dust)	0.05 (Respirable Dust) 0.05 (Respirable Fume)
Tungsten	7440-33-7	0-2	N/A	5 (Insoluable Compounds) 1 (Soluable Compounds)

*NOTE: LISTED BELOW ARE PERTINENT ABBREVIATIONS

CAS	=	Chemical Abstract Service Registry
OSHA	=	Occupational Safety and Health Administration
PEL	=	Permissible Exposure Limit
MG / M	=	Milligrams per Cubic Meter of Air
TWA	=	Time Weighted Average
ACGIH	=	American Conference of Governmental Industrial Hygienists
TLV	=	Threshold Exposure Limit
Stel	=	Short Term Exposure Limit

** = This table does not include all commercial available alloys. Depending on the grade of Stainless Steel, the percentage of ingredient may vary. Minute quantities of trace elements may also be present.

4. First-Aid Measures

Inhalation: Remove from exposure, get fresh air, if respiratory irritation persists, seek medical attention.

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- Skin:** Wash skin with soap and water to remove metallic particles. If a rash or burn develop, seek medical attention.
- Eyes:** Flush eyes with clean water for 15 minutes, if irritation persists, seek medical attention.
- Ingestion:** Seek medical attention.
- Cuts:** Wash wound with soap and water, apply antibiotic, cover with clean bandage.

5. Fire-fighting measures

As shipped, these products are non-flammable. However, if subject to welding, cutting, grinding sparks can ignite combustibles and cause fire and explosions.

NOTE: Before using these products be sure to read and understand the National Fire Protection Association Standard 51B for fire prevention in cutting and welding processes.

6. Accidental release measures

Material shipped in solid form
No release
No clean-up

7. Handling and storage

Handling precautions – use gloves when working with castings to avoid cuts from sharp edges.

Storage – Solid form poses no hazards.

8. Exposure controls / personal protection

Following personal protective equipment may be required while workers involve in welding, cutting, grinding, chipping, milling, or other works on stainless steel products. Levels of protection required is a function of alloy type, workplace environment, and potential hazards anticipated.

Respiratory Protection

Use NIOSH – approved particulate and / or acid fume respirator if the concentration of actual or potential airborne contaminant exceeds, or is anticipated to exceed, the exposure limits listed in Section 3.

Ventilation

Fumes and waste gases should be removed at source by means of local exhaust ventilation. If local exhaust ventilation is not adequate or cannot be provided, then a high level of powered ventilation will be required.

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Protective gloves, eye protection and other protective clothing or equipment.

Use safety goggles, glasses, boots, aprons, helmet, hand-shield, earplugs, and muffs as needed to protect workers from physical, electrical, radiation, and noise hazards.

9. Physical and chemical properties

Melting point: >2100 degrees f. <2600 degrees f	Vapor Density air = 1: N/A
Evaporation rate: N/A	Vapor PSI (MM HG) N/A
% Volatiles by volume: N/A	Odor: Odorless
Appearance: Silver	

10: Stability and reactivity

Stability: Solid cast metal is stable

Reactivity: May react in contact with strong acid. Be sure the acid is compatible with the grade of stainless steel used.

11: Toxicological information

As shipped these alloys have no known toxicological properties other than causing allergic reactions in individuals sensitive to the metal(s) contained in the alloys. Nickel, chromium, vanadium, cobalt are classified as carcinogens. The exposure route of concern is inhalation. Use recommended personal protection when welding and or grinding.

12. Ecological information

Not applicable

13. Disposal considerations

Recycle

14. Transportation information

Not applicable

15. Regulatory information

Not applicable

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16. Other information

Change: MSDS to SDS

Last Revision – February 2016

This SDS was prepared by MWPC / MPI technical personnel to be in compliance with OSHA's Hazard Communication Standard, 29 CFR 1910.1200 and is provided in good faith based upon the experience and knowledge of the company.

Since the conditions and methods of use is beyond our control, users should make their own assessment of workplace risks as required by other Health and Safety Legislation.

Compliance with all applicable federal, state and local laws and regulations remain the responsibility of the user.