

SEVERSTAL WARREN

Severstal Warren, Inc.
999 Pine Ave., SE
Warren, Ohio 44483
Phone: (330) 841-8219

For additional information
Contact:
Severstal Warren, Inc.
Safety Department
Phone: (330) 841-8248

Material Safety Data Sheet

Severstal Warren, Inc.

1. <u>Chemical Product and Company Identification</u>
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Product Name **Alloy Steel**
Product Code..... **Alloy Steel (See table for Grades)**

SAE 1330 - 1345 (MnSi)
SAE 4012 - 4068 (Mo)
SAE 4118 - 4161 (CrMo)
SAE 4320 - 4340 (NiCrMo)
SAE 4419 - 4427 (Mo)
SAE 4615 - 4640 (NiMo)
SAE 4718 - 4720 (NiCrMo)
SAE 4815 - 4820 (NiMo)
SAE 5015 - 5060 (Cr)
SAE 5115 - 5160 (Cr)
SAE 6115 - 6150 (CrV)
SAE 8115 - 8822 (NiCrMo)
SAE 9250 - 9260 (CrSi)
SAE 9415 - 9447 (NiCrMo)
SNA Grades (WK, WF)

*List is representative of available grades.
Some applicable grades may not be listed.*

Chemical Family.....N/A
Chemical Name.....N/A
Formula.....N/A

Manufacturer:
Severstal Warren, Inc.
999 Pine Avenue, SE
Warren, Ohio 44483-6528

Telephone Numbers:
Information.....(330) 841-8219
Emergency (330) 841-8248

2. Hazardous Ingredients

Concentrations for ingredients are expressed as % by weight.

Ingredient / CAS #	Alloy Steels
Iron 7439-89-6	85 - 98
Carbon 7440-44-0	1.10 maximum
Manganese 7439-96-5	2.00 maximum
Phosphorous 7723-14-0	0.030 maximum
Sulfur 7704-34-9	0.040 maximum
Silicon 7440-21-3	2.50 maximum
Aluminum 7429-90-5	0.15 maximum
Boron 7440-42-8	0.005 maximum
Chromium 7440-47-3	1.75 maximum (1)
Copper 7440-50-8	0.40 maximum (1)
Molybdenum 7439-98-7	1.20 maximum (1)
Nickel 7440-02-0	4.00 maximum (1)
Titanium 7440-32-6	0.50 maximum (1)
Vanadium 7440-62-2	0.50 maximum (1)

1. If required, by grade

The chemistries are provided for industrial hygiene and environmental purposes and are not intended to represent product specification. This information has been completed from data believed to be reliable. Elements such as arsenic, boron, calcium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, tin, titanium, tungsten, vanadium, and zirconium may be present in trace amounts. Steel products may be coated with petroleum oils to meet customer specifications. Information relative to specific coatings may be obtained from Severstal Warren, Inc. Steel products as shipped do not present an exposure hazard.

NOTE: Use gloves when handling this product to prevent skin irritation

3. Physical Characteristics

Physical Form	Solid
Color	Brown-Grey
Odor	None
Boiling Point	Not Applicable
Melting Point	2400-2800 F
pH	Not Applicable
Solubility in Water	Insoluble
Specific Gravity	7.5-8.5
Vapor Pressure	Not Applicable
Vapor Density	Not Applicable

4. Fire and Explosion Data

Steel products in the solid state present no fire or explosion hazard, However, the particulate generated may present a dust explosion hazard.

5. Reactivity

Stability	Stable
Hazardous Polymerization	Does not occur
Incompatibilities	None
Hazardous Decomposition/Byproducts	None

6. Accidental Release Measures

Spill or Leak Procedures.....Product is a solid material as shipped, no potential for spill or leak.
Waste Disposal.....Follow Federal, state, and local regulations.

7. Exposure Controls / Personal Protection

Protective Equipment.....The appropriate protective equipment (eye, face, hand) should be worn when burning, welding, brazing, grinding, or machining this product.

Respiratory Protection.....Use NIOSH/MSHA approved dust/mist respirators when generating particulates or fumes in accordance with 29CFR 1910.134.

Ventilation.....If your operation generates particulates when processing this product, local and general ventilation may be necessary to control employee exposures to within applicable limits.

8. Health Hazard Data

Routes of Entry: Inhalation

Symptoms of Overexposure:

Iron (Iron Oxide): Prolonged or repeated exposure to high concentrations may cause lung changes considered to be a benign pneumoconiosis (siderosis). Inhalation of iron oxide may cause irritation of eyes, nose, and throat, and metal fume fever.

Carbon: Primarily a nuisance dust. May cause mild irritation to the eyes and mucous membranes.

Manganese: Exposure may cause irritation of the eyes, nose, and throat, metallic taste in mouth, and metal fume fever. Advanced exposure symptoms may include weakness, sleepiness, nervousness, lack of coordination, uncontrollable laughter, mental confusion, speech disturbances, and aggressiveness. Manganese exposure may cause bronchitis, pneumonitis and central nervous system disturbances.

Silicon: Primarily a nuisance dust. May cause mild irritation to the eyes and mucous membranes.

Aluminum: Generally considered to be a nuisance particulate. May cause irritation to the upper respiratory tract, skin and eyes. Inhalation of fine particles may cause a pulmonary fibrosis known as Shaver's disease. Symptoms may include dyspnea, cough and fatigue. May be implicated in Alzheimer's disease.

Boron: May cause irritation of the eye, nose, and skin. Affects the central nervous, circulatory, and digestive systems. May cause circulatory depression, vomiting and diarrhea, followed by shock and coma. Body temperature may become subnormal and a erythematous rash may cover the entire body.

Chromium: Certain forms of chromium have been associated with cancer of the lungs and nasal passage. Elemental, divalent and trivalent chromium compounds, i.e. as in steel, have not been found to cause cancer in humans. Chromium has been found to cause adverse skin and respiratory reactions including dermatitis, bronchitis, ulceration and perforation of the nasal septum, coughing, wheezing and dyspnea.

Cobalt: Mild irritant to the eyes and skin and mucous membranes.

Copper: Irritation of the eyes, nose, throat and a metallic taste in the mouth. Exposures to high concentration may cause metal fume fever. Symptoms may include metallic taste in the mouth, dryness and irritation of the throat, cough, feeling of weakness, fatigue with fever, chills and profuse sweating. Symptoms generally occur 12-14 hours after exposure.

Molybdenum: Slight irritation of the eyes, nose, and throat. Animal studies suggest the possibility of digestive disturbances such as: colic, diarrhea, weight loss, and the development of pneumoconiosis, anemia, and gout.

Nickel: Prolonged or repeated exposures to high concentrations of various nickel compounds may cause lung and nasal sinus cancers. Nickel has been identified by the International Agency for Research on Cancer and or the National Toxicology Program as a potential cancer-causing agent.

Titanium: Primarily a nuisance dust. May cause mild irritation to the eyes and mucous membranes.

Tungsten: Primarily a nuisance dust. May cause mild irritation to the eyes and mucous membranes. Exposures to high concentrations may cause nervous system disturbance, diarrhea, and respiratory distress.

Vanadium: Irritation of the respiratory tract and conjunctivae. Excessive exposure may result in skin pallor, greenish discoloration of the tongue, eczematous skin lesions, cough, bronchitis and chest pains. Long term exposure may cause pulmonary edema, pneumonia, chronic bronchitis, anemia, albuminuria and nervous complaints.

Coating Oils: Steel coated with an oil may result in a mild skin irritation upon prolonged and repeated contact.

Carcinogenicity: Nickel, and chromium and some of their compounds are listed as carcinogens or potential carcinogens.

Medical Conditions Aggravated by Exposure: Current respiratory conditions can be aggravated by exposure.

Exposure limits:

<i>Exposure Limits</i>		
Name	OSHA PEL / STEL	ACGIH TLV / STEL
Iron	10 mg/m ³	5 mg.m ³
Carbon	15 mg/m ³	10 mg/m ³
Manganese	0.2 mg/m ³	5 mg/m ³ ceiling
Phosphorous	0.1 mg/m ³	0.1 mg/m ³
Sulfur	15 mg/m ³	10 mg/m ³
Silicon	15 mg/m ³ total particulate 5 mg/m ³ respirable particulate	10 mg/m ³
Aluminum	15 mg/m ³ Total fraction 5 mg/m ³ respirable fraction	10.0 mg/m ³
Boron	15 mg/m ³ (as total dust)	10 mg/m ³
Chromium	1 mg/m ³ (as Cr metal)	0.5 mg/m ³ (as Cr metal)
Copper	1 mg/m ³	1 mg/m ³
Molybdenum	5 mg/m ³ (soluble compounds)	0.5 mg/m ³ (soluble compounds)
Nickel	1 mg/m ³	0.1 mg.m ³ (soluble compounds) 0.2 mg/m ³ (insoluble compounds)
Titanium	15 mg/m ³ (as titanium dioxide)	10 mg/m ³ (as titanium dioxide)
Vanadium	NE	NE

- OSHA – U.S. Department of Labor Occupational Safety and Health Administration
- ACGIH – American Conference of Governmental Industrial Hygienists
- PEL – OSHA Permissible Exposure Limit (8-hour Time Weighted Average)
- STEL – OSHA and ACGIH Short term Exposure limit (15 minute exposure)
- TLV – ACGIH Threshold Limit Value (8-hour Time Weighted Average)
- Ceiling Limit – OSHA and ACGIH instantaneous exposure limit
- NE – No Exposure Limit Established

9. First Aid Measures

Eyes:...Flush eyes thoroughly with clean, lukewarm water for 15 minutes. Seek medical attention.

Skin:...Wash affected area with soap and water.

Inhalation:...Remove to fresh air. Restore/support breathing as necessary. Seek medical attention.

Notes to Physician: Respiratory disorders may be aggravated by exposure to metallic and/or organic/inorganic coating dusts or fumes. If steel contains lead consult OSHA Lead Standard 1910.1025.

10. SPECIAL PRECAUTIONS

None

11. S.A.R.A. Information

Chromium, Nickel, Manganese, Vanadium and Copper compounds in this product are subject to the reporting requirements of section 313 of the Title III of the S.A.R.A. Act of 1986 and CFR 40 372.

12. Ecological Information

No ecological concerns identified.

14. Disposal Considerations

Dispose of waste in accordance with federal, state, provincial, and local regulations. Material can be disposed of in a regular manner.

14. Transportation Information

No special transportation classifications.

15. Regulatory Information

WHIMMS Classification (Canada):

Not classified, labeling required summarizing handling requirements.

OSHA Status:

This product may contain compounds whose exposures are regulated under the Department of Labor Occupational Health and Safety Administrations code of federal regulations concerning general industry activities and construction activities.

US EPA Status:

This product is not listed on TSCA 8(b) inventory.

This product is not listed on the TSCA export notification 12(b) list.

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- MSDS prepared October 2002
- Re-approved May 2008
- Update company name September 2008