



# Safety Data Sheet for STEEL

## Section 1 – Identification

**Variations:** Galvanized Steel, Hot/Cold Rolled Steel, Carbon Steel, Structural Steel, High Strength Low Alloy Steel

**Recommended Use:** Construction, machine parts and finished goods

**Name, Address, and Telephone Number:**

Hanna Steel Corporation 4527 Southlake Pkwy  
Hoover, AL 35244

Phone number : (800)633-8252 (8:00 am to 5:00 pm)

**Emergency Phone Number:** 1-800-262-8200 (CHEMTREC)

## Section 2 – Hazard(s) Identification

**Classification of the Chemical:** Steel products manufactured by HANNA steel ARE NOT HAZARDOUS PER OSHA GHS, 29 CFR 1910.1200. However, individual customer processes, (such as welding, sawing, brazing, grinding, abrasive blasting, and machining) may result in the formation of fumes, dust (combustible or otherwise), and/or particulate that may present the following hazards:

**Signal Word, Hazard Statement(s), Symbols and Precautionary Statement(s):**

Hazard Symbol	Hazard Classification	Hazard Statement(s)	Precautionary Statement(s)
	Carcinogenicity - 2	Dust/Fumes suspected of causing cancer via inhalation.	Avoid breathing dust and fumes
	Skin Sensitization - 1	Dust/Fumes may cause an allergic skin reaction	Use personal protective equipment as required
	Target Organ Toxicity (Repeated Exposure) - 1	Repeated/prolonged exposure to dust/fumes may cause damage to respiratory system	

- **Eye Contact:** Dusts may cause mechanical irritation or scratching of the cornea. Fumes may irritate the eyes.
- **Skin Contact:** Dusts may cause mechanical irritation. Some components are capable of causing an allergic reaction. Heated can cause burns.
- **Inhalation:** Dusts may irritate the nose, throat and lungs. Excessive exposure to metal fumes can cause metal fume fever. Symptoms typically subside within 12- 48 hours.
- **Ingestion:** Not expected to be acutely toxic via ingestion.
- **Chronic Effects:** Repeated exposure to dusts may cause changes to the nose, throat and lungs. Repeated welding fume exposure is associated with adverse health effects. Contains substances that may cause cancer and have reproductive effects. The following ingredients are listed by NTP, IARC, and OSHA as carcinogens: Nickel, chromium, cobalt, lead, antimony, cadmium, arsenic, and beryllium. See section 11 for more.
- **Target Organs:** Overexposure to dusts and fumes may affect the following systems: eyes, skin, liver, kidney, central nervous system, cardiovascular and respiratory.

## Section 3 – Composition/Information on Ingredients

Component	CAS #	% Weight	OSHA PEL (mg/m3)	ACGIH TLV (mg/m3)
Iron	7439-89-6	Balance	10	5
Aluminum (Al)	7429-90-5	0.1 max	15/5	10 / 5
Carbon (C)	7440-44-0	0.5 max	Not Established	Not Established
Chromium (Cr)	7440-47-3	1.2 max	1	0.5
Copper (Cu)	7440-50-8	0.5 max	1 /0.1	1/0.2
Manganese (Mn)	7439-96-5	< 2.0	5 (c)	0.2
Nickel (Ni)	7440-02-0	1.5 max	1	1.5
Phosphorous (P)	7723-14-0	.05 max	0.1	0.1
Silicon (Si)	7440-21-3	1.0 max	15	10
Sulfur (S)	7704-34-9	.05 max	13 SO2	0.65 SO2
Vanadium (V)	7440-62-2	0.1 max	0.5	0.05
Zinc (Zn)	1314-13-2	10 max	5	5/10

**Section 3** is a summary of elements used in alloy steel. Various grades of steel will contain different combinations of these elements. Trace elements of other compounds may also be present. There is no PEL or TLV for Steel. The occupational exposure limits are given as a reference. The values given are not product specifications.

#### Section 4 – First-Aid Measures

- **Eye Contact**- In case of overexposure to dusts or fumes, immediately flush eyes with plenty of water for at least 15 minutes occasionally lifting the eye lids. Get medical attention if irritation persists. Thermal burns should be treated as medical emergencies.
- **Skin Contact** - In case of overexposure to dusts or particulates, wash with soap and plenty of water. Get medical attention if irritation develops or persists. If thermal burn occurs, flush area with cold water and get immediate medical attention.
- **Inhalation** - In case of overexposure to dusts or fumes, remove to fresh air. Get immediate medical attention if symptoms described in this SDS develop.
- **Ingestion** - Not considered an ingestion hazard. However, if excessive amounts of dust or particulates are swallowed, treat symptomatically and supportively. Get medical attention.
- **Notes to Physician** - Inhalation of metal fume or metal oxides may produce an acute febrile state, with cough, chills, weakness, and general malaise, nausea, vomiting, muscle cramps, and remarkable leukocytosis. Treatment is symptomatic, and condition is self-limited in 24-48 hours. Chronic exposure to dusts may result in pneumoconiosis of mixed type.

#### Section 5 – Fire-fighting Measures

- **Flash Point (Method)** - Not applicable
- **Flammable Limits (% volume in air)** - Not applicable
- **Auto ignition Temperature** - Not applicable
- **Extinguishing Media** - For molten metal, use dry powder or sand. For steel dust use or dry sand, water, foam, argon or nitrogen.
- **Special Fire Fighting Procedures** - Do not use water on molten metal. Do not use Carbon Dioxide (CO<sub>2</sub>). Firefighters should not enter confined spaces without wearing NIOSH/MSHA approved positive pressure breathing apparatus (SCBA) with full face mask and full protective equipment.
- **Unusual Fire or Explosion Hazards** - Steel products do not present fire or explosion hazards under normal conditions. Any non-oxidized fine metal particles/ dust generated by grinding, sawing, abrasive blasting, or individual customer processes may produce materials that the customer should test for combustibility and other hazards in accordance with applicable regulations. High concentrations of combustible metallic fines in the air may present an explosion hazard.

#### Section 6 - Accidental Release Measures

- **Precautions if Material is Spilled or Released** - Emergency response is unlikely unless in the form of combustible dust. Avoid inhalation, eye, or skin contact of dusts by using appropriate precautions outlined in this SDS (see section 8). Fine turnings and small chips should be swept or vacuumed and placed into appropriate disposable containers. Keep fine dust or powder away from sources of ignition. Scrap should be reclaimed for recycling. Prevent materials from entering drains, sewers, or waterways.
- **Fire and Explosion Hazards** - Some customer processes may generate combustible dust that may require specific precautions when cleaning spills or releases of dust.
- **Environmental Precautions** - Some grades of steel may contain reportable quantities of alloying elements. See Section 15 for additional information.
- **Waste Disposal Methods** - Dispose used or unused product in accordance with applicable Federal, State, and Local regulations. Please recycle.

#### Section 7 - Handling and Storage

- **Storage Temperatures** - Stable under normal temperatures and pressures.
- **Precautions in Handling and Storing** - Store away from strong oxidizers. Dusts and/or powders, alone, or combined with process specific fluids, may form explosive mixtures with air. Applicable Federal, state and local laws and regulations may require testing dust generated from processing of steel products to determine if it represents a fire or explosion hazard and to determine appropriate protection methods. Avoid breathing dusts or fumes.

## Section 8 - Exposure Controls / Personal Protection

Operations with potential for generating high concentrations of airborne particulates or fumes should be evaluated and controlled as necessary.

- **Eye Protection** - Use safety glasses. Dust resistant safety goggles are recommended under circumstances where particles could cause mechanical injury such as grinding or cutting. Face shield should be used when welding or cutting.
- **Skin** - Appropriate protective gloves should be worn as necessary. Good personal hygiene practices should be followed including cleansing exposed skin several times daily with soap and water, and laundering or dry cleaning soiled work clothing.
- **Respiratory Protection** - NIOSH/MSHA approved dust/fume/mist respirator should be used to avoid excessive exposure. See Section 3 for component material information exposure limits. If such concentrations are sufficiently high that this respirator is inadequate, or high enough to cause oxygen deficiency, use a positive pressure self-contained breathing apparatus (SCBA). Follow all applicable respirator use, fitting, and training standards and regulations.
- **Ventilation** - Provide general and/or local exhaust ventilation to control airborne levels of dust or fumes below exposure limits.
- **Exposure Guidelines** - No permissible exposure limits (PEL) or threshold limit values (TLV) exist for steel. See Section 3 for component materials. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts.

## Section 9 - Physical and Chemical Properties

- **Appearance and Odor** – Silver grey to grey black with metallic luster.
- **Boiling Point** - Not applicable
- **Melting Point** - Approximately 2800° F
- **pH** - Not applicable
- **Specific Gravity (at 15.6° C)** - Not applicable
- **Density (at 15.6° C)** - Not applicable
- **Vapor Pressure** - Not applicable
- **Vapor Density (air = 1)** - Not applicable
- **% Volatile, by Volume** - Not applicable
- **Solubility in Water** - Insoluble.
- **Evaporation Rate (Butyl Acetate = 1)** - Not applicable
- **Other Physical and Chemical Data** - None

## Section 10 - Stability and Reactivity

- **Stability** - Stable
- **Conditions to Avoid** - Steel at temperatures above the melting point may liberate fumes containing oxides of iron and alloying elements. Avoid generation of airborne fume.
- **Hazardous Polymerization** - Will not occur.
- **Incompatibility (Materials to Avoid)** - Reacts with strong acids to form hydrogen gas. Do not store near strong oxidizers.
- **Hazardous Decomposition Products** - Metallic fumes may be produced during welding, burning, grinding, and possibly machining or any situation with the potential for thermal decomposition. Refer to ANSI Z49.1

## Section 11 - Toxicological Information

- The primary component of this product is iron. Long-term exposure to iron dusts or fumes can result in a condition called siderosis which is considered to be a benign pneumoconiosis. Symptoms may include chronic bronchitis, emphysema, and shortness of breath upon exertion. Penetration of iron particles in the skin or eye may cause an exogenous or ocular siderosis which may be characterized by a red-brown pigmentation of the affected area. Ingestion overexposures to iron may affect the gastrointestinal, nervous, and hematopoietic system and the liver. Iron and steel founding, but not iron or iron oxide, has been listed as carcinogenic (Group 1) by IARC.
- When this product is welded, fumes are generated. Welding fumes may be different in composition from the original welding product, with the chief component being ordinary oxides of the metal being welded. Chronic health effects (including cancer) have been associated with the fumes and dusts of individual component metals (see above), and welding fumes as a general category have been listed by IARC as a carcinogen (Group 2B). There is also limited evidence that welding fumes may cause adverse reproductive and fetal effects. Evidence is stronger where welding materials contain known reproductive toxins, e.g., lead which may be present in the coating material of this product.
- Breathing fumes or dusts of this product may result in metal fume fever, which is an illness produced by inhaling metal oxides. These oxides are produced by heating various metals including cadmium, zinc, magnesium, copper, antimony, nickel, cobalt, manganese, tin, lead, beryllium, silver, chromium, aluminum, selenium, iron, and arsenic. The most common agents involved are zinc and copper.
- This product may contain small amounts of manganese. Prolonged exposure to manganese dusts or fumes is associated with "manganism", a Parkinson-like syndrome characterized by a variety of neurological symptoms including muscle spasms, gait disturbances, tremors, and psychoses.
- This product may contain small amounts of cadmium. Primary target organs for cadmium overexposure are the lung and the kidney. Because of its cumulative nature, chronic cadmium poisoning can cause serious disease which takes many years to develop and may continue to progress despite cessation of exposure. Progression of the disease may not reflect current exposure conditions. It is also capable of causing a painful osteomalacia called "Itai-Itai" in postmenopausal women, and has caused developmental effects and/or reproductive effects in male and female animals. Cadmium is a listed carcinogen by NTP, OSHA, and IARC (Group 1).
- This product may contain small amounts of chromium. Prolonged and repeated overexposure to chromium dusts or fumes may cause skin ulcers, nasal irritation and ulceration, kidney damage and cancer of the respiratory system. Chromium is skin sensitizer. Cancer is generally attributed to the hexavalent (+6) form of chromium which is listed as a carcinogen by NTP and IARC (Group 1).
- This product may contain small amounts of nickel. Prolonged and repeated contact with nickel may cause sensitization dermatitis. Inhalation of nickel compounds has caused lung damage as well as sinus, nasal and lung cancer in laboratory animals. Nickel is a listed carcinogen by NTP and IARC (Group 1).
- This product may contain small amounts of vanadium. Adverse effects from dermal, inhalation or parenteral exposure to various vanadium compounds have been reported. The major target for vanadium pentoxide toxicity is the respiratory tract. Fumes or dust can cause severe eye and respiratory irritation, and systemic effects. Chronic bronchitis, green tongue, conjunctivitis, pharyngitis, rhinitis, rales, chronic productive cough, and tightness of the chest have been reported following overexposure. Allergic reactions resulting from skin and inhalation exposures have also been reported. A statistical association between vanadium air levels and lung cancer has been suggested, but vanadium currently is not regarded as a human carcinogen.
- This product may contain small amounts of lead. Lead can accumulate in the body. Consequently, exposure to fumes or dust may produce signs of polyneuritis, diminished vision and peripheral neuropathy, such as tingling and loss of feeling in fingers, arms and legs. Lead is a known reproductive and developmental toxin.
- It is also associated with central nervous system disorders, anemia, kidney dysfunction, and neurobehavioral abnormalities. The brain is a major target organ for lead exposure. Elemental lead is listed as an IARC 2B carcinogen.
- The product may contain small amounts of copper. Copper dust and fumes can irritate the eyes, nose and throat causing coughing, wheezing, nosebleeds, ulcers and metal fume fever. Other effects from repeated inhalation of copper fumes include a metallic or sweet taste, and discoloration of skin, teeth or hair. Copper also may cause an allergic skin reaction. Overexposure to copper can affect the liver.

## Section 12 - Ecological Information

- **Other Adverse Effects:** None Known
- **Additional Information:**
- **Hazard Category:** No Category **Signal Word:** No Signal Word
- **Hazard** No Hazard Symbol
- **Hazard Statement:** No Hazard Statement

## Section 13 - Disposal Considerations

- **Disposal:** Dispose of in accordance with local/regional/international regulations.

## Section 14 - Transport Information

- **DOT Proper Shipping Name** - Not regulated
- **DOT Hazard Classification** - Not regulated
- **UN/NA Number** - Not applicable
- **DOT Packing Group** - Not applicable
- **Labeling Requirements** - Not applicable
- **Placards** - Not applicable
- **DOT Hazardous Substance** - Not applicable
- **DOT Marine Pollutant** - Not applicable

## Section 15 – Regulatory Information

This product is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200. However, dusts and fumes from this product may be combustible or hazardous and require protection to comply with applicable Federal, state and local laws and regulations.

- **California Proposition 65:** This product contains chemicals (antimony [oxide], arsenic, beryllium, chromium [hexavalent], cobalt, cadmium, lead, nickel) known to the State of California to cause cancer and chemicals (cadmium, lead) known to the State of California to cause birth defects or other reproductive harm.
- **Massachusetts Substance List:** Aluminum, Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Hydrochloric acid, Lead, Magnesium, Manganese, Molybdenum, Nickel, Nitrogen, Phosphorus, Selenium, Silicon, Sulfur, Tin, Titanium, Tungsten, Vanadium, Zinc
- **Pennsylvania Hazardous Substance List:** Aluminum, Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Hydrochloric acid, Lead, Magnesium, Manganese, Molybdenum, Nickel, Nitrogen, Phosphorus, Selenium, Silicon, Sulfur, Tin, Titanium, Tungsten, Vanadium, Zinc
- **New Jersey Hazardous Substance List:** Aluminum, Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Hydrochloric acid, Lead, Magnesium, Manganese, Molybdenum, Nickel, Nitrogen, Phosphorus, Selenium, Silicon, Sulfur, Tin, Titanium, Tungsten, Vanadium, Zinc
- **Toxic Substances Control Act (TSCA)** - Components of this product are listed on the TSCA Inventory.

## Section 15 – Regulatory Information (Continued)

### Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

Steel is not reportable, however, it contains hazardous substances that may be reportable if released in pieces with diameters less than or equal to 0.004 inches (RQ marked with a “\*”)

<u>Chemical Name</u>	<u>Reportable Quantity (in lb.)</u>
Chromium	5000*
Copper	5000*
Nickel	100*
Phosphorus	1
Zinc	1000*

### Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III

#### SECTION 311/312 HAZARD CATEGORIES: Immediate Health Effect, Delayed Health Effect

This product contains the following **EPCRA Section 313** chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right – To – Know Act of 1986 (40 CFR 372):

#### SECTION 313 REPORTABLE INGREDIENTS:

Chemical Name	CAS Number	Concentration (% by weight)	Reportable
Aluminum	7429-90-5	0.0-0.1	No – Less than 1%
Chromium	7440-47-3	0.01-1.2	Yes – Greater than 0.1%
Cobalt	7440-48-4	<0.09	No – Less than 0.1%
Copper	7440-50-8	<0.5	No – Less than 1%
Manganese	7439-96-5	< 2	Yes – Greater than 1%
Nickel	7440-02-0	< 1.5	Yes – Greater than 0.1%
Phosphorus	7723-14-0	<0.05	No – Less than 1%
Vanadium	7440-62-2	<0.1	No – Less than 1%
Zinc	7440-66-6	<10	Yes - Greater than 1%

Concentrations based on analytical data and process knowledge of typical products made in the industry.

## Section 16 – Other Information

This SDS was prepared internally and covers products delivered from the HANNA steel facilities. This SDS does not include chemicals that may be applied by subsequent distributors of our products. HANNA steel manufactures products with coatings, therefore, the paint suppliers have been included in this section for reference in the event that information is needed concerning the paint coatings. Also, the suppliers of rust preventatives have been included since these materials are found in our product as part of the manufacturing process.

### Suppliers of Coatings and Paints

#### **Titan Coatings**

2025 Exchange Place  
Bessemer, AL 35023  
(205) 426-8149

#### **Valspar Corporation**

PO Box 741667  
Atlanta, GA 30374-1067  
(815) 933-5561

### Suppliers of Rust Preventatives

#### **Henkel Corporation**

PO Box 28166  
Atlanta, GA 30384-1666

#### **Fuchs Lubricants Company**

Suite 1147  
75 Remittance Dr.

#### **Chemetall**

22040 Network Place  
Chicago, IL 60673-1220  
(800) 526-4473