

1. Identification

Product identifier Galvanized Steel-Low C and HSLA Steel (Hot Dipped)

Other means of identification

Product code TECHS 001

Synonyms Steel

Recommended use Construction Products, Finished Goods Components, Capital Goods Components.

Recommended restrictions None known.

Manufacturer / Importer / Supplier / Distributor information

Manufacturer/Supplier Steel Dynamics, Inc. - Flat Roll Group - The Techs Division

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Pittsburgh, PA 15219

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2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement None.

Precautionary statement

Prevention Observe good industrial hygiene practices.

Response Wash skin with soap and water.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Iron	7439-89-6	80-99.5
Zinc	7440-66-6	0.5-19.0
Manganese	7439-96-5	0.0-1.35
Nickel	7440-02-0	0-0.2

The product is an alloy. At temperatures above the melting point steel products may liberate fumes containing oxides of iron and alloying elements.

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
Product contains less than 0.004% cadmium and less than 0.01% lead, mercury, hexavalent chromium, antimony, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE). Some of these components are specifically regulated by OSHA.

4. First-aid measures

Inhalation	In case of inhalation of fumes from heated product: Move into fresh air and keep at rest. Get medical attention if symptoms persist. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration.
Skin contact	Contact with dust: Wash skin with soap and water. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area. In case of burns with hot metal, rinse with plenty of cold water. If burns are severe, consult a physician.
Eye contact	Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Do not rub eye. Get medical attention if irritation develops and persists.
Ingestion	Not likely, due to the form of the product. However, ingestion of dusts generated during working operations may cause nausea and vomiting.
Most important symptoms/effects, acute and delayed	Symptoms can include irritation, redness, scratching of the cornea, and tearing. Mechanical rubbing may increase skin irritation. Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain.
General Information	Processing may generate hazardous fumes and dusts.

5. Fire-fighting measures

Suitable extinguishing media	This material will not burn. Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable extinguishing media	None.
Specific hazards arising from the chemical	Metallic coating will begin to melt around 427°C (800°F) and the metal will begin to melt around 1510°C (2750°F). This product will proceed to a liquid and will form irritating and toxic gaseous metallic oxides at extremely high temperatures.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire-fighting equipment/instructions	Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Cold solid metal: No special precautions are necessary beyond normal good hygiene practices. See Section 8 of the SDS for additional personal protection advice when handling this product. Hot metal: Avoid contact with hot material. Wear protective clothing as described in Section 8 of this safety data sheet. Avoid generation and spreading of dust and fumes.
Methods and materials for containment and cleaning up	In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. Collect dust using a vacuum cleaner equipped with HEPA filter. Steel products may be recycled.
Environmental precautions	Metals in massive forms presents a limited hazard for the environment.

7. Handling and storage

Precautions for safe handling	Avoid generation and spreading of dust. Do not breathe fumes or dust from this material. Avoid contact with sharp edges and hot surfaces. Use appropriate gloves and tools to ensure safe handling. Follow the recommendations in ANSI Z49.1, Safety in welding and cutting (ANSI=American National Standard Institute).
Conditions for safe storage, including any incompatibilities	Store in a dry area.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Manganese (CAS 7439-96-5)	Ceiling	5 mg/m3	Fume.
Nickel (CAS 7440-02-0)	PEL	1 mg/m3	

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Manganese (CAS 7439-96-5)	TWA	0.1 mg/m3	Inhalable fraction.
Nickel (CAS 7440-02-0)	TWA	0.02 mg/m3 1.5 mg/m3	Respirable fraction. Inhalable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Manganese (CAS 7439-96-5)	STEL	3 mg/m3	Fume.
Nickel (CAS 7440-02-0)	TWA	1 mg/m3	Fume.
	TWA	0.015 mg/m3	
Biological limit values	No biological exposure limits noted for the ingredient(s).		
Appropriate engineering controls	Use local exhaust when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure. Inorganic lead and cadmium are specifically regulated material. Consult 29 CFR 1910 for other requirement if action level is attained.		
Individual protection measures, such as personal protective equipment			
Eye/face protection	Use of safety glasses or goggles is required for welding, burning, sawing, brazing, grinding or machining operations.		
Skin protection			
Hand protection	Wear suitable protective gloves to prevent contact, cuts and abrasions.		
Other	Risk of contact: Wear suitable protective clothing.		
Respiratory protection	Not normally needed. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.		
Thermal hazards	When material is heated, wear gloves to protect against thermal burns. Thermally protective apron and long sleeves are recommended when volume of hot material is significant.		
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.		

9. Physical and chemical properties

Appearance	Massive, solid metal.
Physical state	Solid.
Form	Solid.
Color	Metallic gray.
Odor	None.
Odor threshold	Not applicable.
pH	Not applicable.
Melting point/freezing point	2751.8 °F (1511 °C) Base metal, 798.8 - 899.6 °F (426 - 482 °C) Metallic Coating
Initial boiling point and boiling range	Not applicable.
Flash point	Not applicable.
Evaporation rate	Not applicable.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	Not applicable.
Vapor density	Not applicable.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Insoluble in water.
Partition coefficient (n-octanol/water)	Not applicable.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	Not applicable.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
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Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	Contact with strong acids will release highly flammable hydrogen gas.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong acids.
Hazardous decomposition products	Metal oxides.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Solid steel: Not relevant, due to the form of the product. However, ingestion of dusts generated during working operations may cause nausea and vomiting.
Inhalation	No inhalation hazard under normal conditions. Welding, burning, sawing, brazing, grinding or machining operations may generate fumes and dusts of metal oxides. High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. Typical symptoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness, and irritation of the throat, followed by weakness, muscle pain, fever, and chills.
Skin contact	Under normal conditions of intended use, this material does not pose a risk to health. Dust may irritate skin. Contact with hot material can cause thermal burns which may result in permanent damage.
Eye contact	Under normal conditions of intended use, this material does not pose a risk to health. Contact with hot material can cause thermal burns which may result in permanent damage. Grinding and sanding this product may generate dust. Dust may irritate the eyes.
Symptoms related to the physical, chemical and toxicological characteristics	Symptoms include itching, burning, redness, and tearing of eyes. Mechanical irritation of skin. Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain.

Information on toxicological effects

Acute toxicity	Welding, cutting and metalizing can generate ozone. Ozone can cause irritation of eyes, nose and respiratory tract.
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Components	Species	Test Results
Iron (CAS 7439-89-6)		
Acute		
Oral		
LD50	Rat	30 g/kg
Manganese (CAS 7439-96-5)		
Acute		
Oral		
LD50	Rat	9000 mg/kg
Skin corrosion/irritation	Not classified.	
Serious eye damage/eye irritation	Not classified.	
Respiratory or skin sensitization		
Respiratory sensitization	No data available.	
Skin sensitization	Contains nickel: May cause an allergic skin reaction.	
Germ cell mutagenicity	No data available.	
Carcinogenicity	For solid product: The product is not classified as carcinogen.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Nickel (CAS 7440-02-0)	2B Possibly carcinogenic to humans.	
NTP Report on Carcinogens		
Nickel (CAS 7440-02-0)	Reasonably Anticipated to be a Human Carcinogen.	
Reproductive toxicity	No data available.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	Not classified.	
Aspiration hazard	Not applicable for solids.	
Chronic effects	Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases. Exposure to manganese fume/dust can affect the central nervous system (apathy, drowsiness, weakness and other chronic symptoms such as postural tremors).	

Further information

The ingredients of the alloy are bound within the product and release is not expected under normal conditions. In its manufactured and shipped state, this product is considered non-hazardous. Processing may generate hazardous fumes and dusts.

12. Ecological information

Ecotoxicity Not expected to be harmful to aquatic organisms.

Components		Species	Test Results
Iron (CAS 7439-89-6)			
Aquatic			
Fish	LC50	Channel catfish (<i>Ictalurus punctatus</i>)	> 500 mg/l, 96 hours
Nickel (CAS 7440-02-0)			
Aquatic			
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>)	2.916 mg/l, 96 hours
Zinc (CAS 7440-66-6)			
Aquatic			
Fish	LC50	Rainbow trout, donaldson trout (<i>Oncorhynchus mykiss</i>)	0.24 mg/l, 96 hours

Persistence and degradability No data available.

Bioaccumulative potential No data available on bioaccumulation.

Mobility in soil Not available.

Mobility in general Not relevant, due to the form of the product.

Other adverse effects None known.

13. Disposal considerations

Disposal instructions Dispose waste and residues in accordance with applicable federal, state, and local regulations.

Hazardous waste code Not regulated.

Waste from residues / unused products Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal. Recover and recycle, if practical.

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information**DOT**

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations Under some use conditions, this material may be considered to be hazardous in accordance with OSHA 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Manganese (CAS 7439-96-5)	LISTED
Nickel (CAS 7440-02-0)	LISTED
Zinc (CAS 7440-66-6)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - No
 Delayed Hazard - No
 Fire Hazard - No
 Pressure Hazard - No
 Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No**SARA 313 (TRI reporting)**

Chemical name	CAS number	% by wt.
Zinc	7440-66-6	0.5-19.0
Manganese	7439-96-5	0.0-1.35
Nickel	7440-02-0	0-0.2

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Manganese (CAS 7439-96-5)

Nickel (CAS 7440-02-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.**US state regulations****US. Massachusetts RTK - Substance List**

Manganese (CAS 7439-96-5)

Nickel (CAS 7440-02-0)

Zinc (CAS 7440-66-6)

US. New Jersey Worker and Community Right-to-Know Act

Manganese (CAS 7439-96-5)

Nickel (CAS 7440-02-0)

Zinc (CAS 7440-66-6)

US. Pennsylvania Worker and Community Right-to-Know Law

Manganese (CAS 7439-96-5)

Nickel (CAS 7440-02-0)

Zinc (CAS 7440-66-6)

US. Rhode Island RTK

Manganese (CAS 7439-96-5)

Nickel (CAS 7440-02-0)

Zinc (CAS 7440-66-6)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

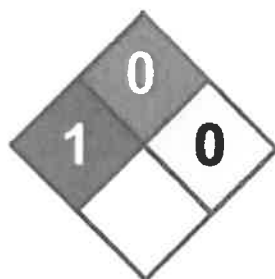
Nickel (CAS 7440-02-0)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision**Revision date** June 11, 2015**Version #** 02**NFPA Ratings****Disclaimer**

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment. SDS's for specific coatings are available upon request.