

**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  
**Address** 2400 Second Avenue  
 Pittsburgh, PA 15219  
**Telephone number** 412-464-5000  
**Fax** 412-464-2019  
**E-mail** info@thetechs.com  
**Emergency telephone number** 412-464-5000

**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<br>1.5 mg/m3 | Respirable fraction.<br>Inhalable fraction. |

## US. NIOSH: Pocket Guide to Chemical Hazards

| Components                                                            | Type                                                                                                                                                                                                                                                               | Value       | Form  |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------|
| Manganese (CAS 7439-96-5)                                             | STEL                                                                                                                                                                                                                                                               | 3 mg/m3     | Fume. |
|                                                                       | TWA                                                                                                                                                                                                                                                                | 1 mg/m3     | Fume. |
| Nickel (CAS 7440-02-0)                                                | 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

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

## 10. Stability and reactivity

|                   |                                                                                               |
|-------------------|-----------------------------------------------------------------------------------------------|
| <b>Reactivity</b> | The product is stable and non-reactive under normal conditions of use, storage and transport. |
|-------------------|-----------------------------------------------------------------------------------------------|

|                                           |                                                                       |
|-------------------------------------------|-----------------------------------------------------------------------|
| <b>Chemical stability</b>                 | Stable at normal conditions.                                          |
| <b>Possibility of hazardous reactions</b> | Contact with strong acids will release highly flammable hydrogen gas. |
| <b>Conditions to avoid</b>                | Contact with incompatible materials.                                  |
| <b>Incompatible materials</b>             | Strong acids.                                                         |
| <b>Hazardous decomposition products</b>   | Metal oxides.                                                         |

## 11. Toxicological information

### Information on likely routes of exposure

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ingestion</b>    | Solid steel: Not relevant, due to the form of the product. However, ingestion of dusts generated during working operations may cause nausea and vomiting.                                                                                                                                                                                                                                                                                                           |
| <b>Inhalation</b>   | 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. |
| <b>Skin contact</b> | 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.                                                                                                                                                                                                                                                              |
| <b>Eye contact</b>  | 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.                                                                                                                                                                                                     |

|                                                                                     |                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Symptoms related to the physical, chemical and toxicological characteristics</b> | 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

|                       |                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Acute toxicity</b> | Welding, cutting and metalizing can generate ozone. Ozone can cause irritation of eyes, nose and respiratory tract. |
|-----------------------|---------------------------------------------------------------------------------------------------------------------|

| Components                                                    | Species                                                                                                                                                                                                                                                             | Test Results                                     |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Iron (CAS 7439-89-6)                                          |                                                                                                                                                                                                                                                                     |                                                  |
| <b>Acute</b>                                                  |                                                                                                                                                                                                                                                                     |                                                  |
| <i>Oral</i>                                                   |                                                                                                                                                                                                                                                                     |                                                  |
| LD50                                                          | Rat                                                                                                                                                                                                                                                                 | 30 g/kg                                          |
| Manganese (CAS 7439-96-5)                                     |                                                                                                                                                                                                                                                                     |                                                  |
| <b>Acute</b>                                                  |                                                                                                                                                                                                                                                                     |                                                  |
| <i>Oral</i>                                                   |                                                                                                                                                                                                                                                                     |                                                  |
| LD50                                                          | Rat                                                                                                                                                                                                                                                                 | 9000 mg/kg                                       |
| <b>Skin corrosion/irritation</b>                              | Not classified.                                                                                                                                                                                                                                                     |                                                  |
| <b>Serious eye damage/eye irritation</b>                      | Not classified.                                                                                                                                                                                                                                                     |                                                  |
| <b>Respiratory or skin sensitization</b>                      |                                                                                                                                                                                                                                                                     |                                                  |
| <b>Respiratory sensitization</b>                              | No data available.                                                                                                                                                                                                                                                  |                                                  |
| <b>Skin sensitization</b>                                     | Contains nickel: May cause an allergic skin reaction.                                                                                                                                                                                                               |                                                  |
| <b>Germ cell mutagenicity</b>                                 | No data available.                                                                                                                                                                                                                                                  |                                                  |
| <b>Carcinogenicity</b>                                        | For solid product: The product is not classified as carcinogen.                                                                                                                                                                                                     |                                                  |
| <b>IARC Monographs. Overall Evaluation of Carcinogenicity</b> |                                                                                                                                                                                                                                                                     |                                                  |
| Nickel (CAS 7440-02-0)                                        |                                                                                                                                                                                                                                                                     | 2B Possibly carcinogenic to humans.              |
| <b>NTP Report on Carcinogens</b>                              |                                                                                                                                                                                                                                                                     |                                                  |
| Nickel (CAS 7440-02-0)                                        |                                                                                                                                                                                                                                                                     | Reasonably Anticipated to be a Human Carcinogen. |
| <b>Reproductive toxicity</b>                                  | No data available.                                                                                                                                                                                                                                                  |                                                  |
| <b>Specific target organ toxicity - single exposure</b>       | Not classified.                                                                                                                                                                                                                                                     |                                                  |
| <b>Specific target organ toxicity - repeated exposure</b>     | Not classified.                                                                                                                                                                                                                                                     |                                                  |
| <b>Aspiration hazard</b>                                      | Not applicable for solids.                                                                                                                                                                                                                                          |                                                  |
| <b>Chronic effects</b>                                        | Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.<br>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)<br><b>Aquatic</b>   |                                                                    |                      |
| Fish                                     | LC50 Channel catfish ( <i>Ictalurus punctatus</i> )                | > 500 mg/l, 96 hours |
| Nickel (CAS 7440-02-0)<br><b>Aquatic</b> |                                                                    |                      |
| Fish                                     | LC50 Fathead minnow ( <i>Pimephales promelas</i> )                 | 2.916 mg/l, 96 hours |
| Zinc (CAS 7440-66-6)<br><b>Aquatic</b>   |                                                                    |                      |
| 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**

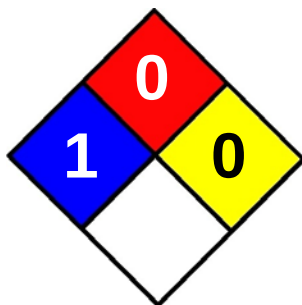
Nickel (CAS 7440-02-0)

**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.