Section 1 – Identification

1(a) Product Identifier used on Label: Zinc-5% Aluminum Alloy-Coated Sheet Steel
1(b) Other means of identification: TECHS-002
1(c) Recommended use of the chemical and restrictions on use: Construction Products, Finished Goods Components, Capital Goods Components.
1(d) Name, address, and telephone number:
Steel Dynamics, Inc.
Flat Roll Group
The Techs Division
2400 Second Avenue
Pittsburgh, PA 15219
Phone: (877) 664-4258
1(e) Emergency Phone Number: (412) 464-5000

Section 2 – Hazard(s) Identification

2(a) Classification of the chemical: Zinc-5% Aluminum Alloy-Coated Sheet Steel is considered an article under Reach regulation (REACH REGULATION (EC) No 1907/2006) and is not subject to classification under CLP regulation (REGULATION (EC) No 1272/2008). However, Zinc-5% Aluminum Alloy-Coated Sheet Steel is not exempt as an article under OSHA's Hazard Communication Standard (29 CFR 1910.1200) due to its downstream use, thus this product is considered a mixture and a hazardous material. Therefore, the categories of Health Hazards as defined in “GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS), Third revised edition ST/SG/AC.10/30/Rev. 3” United Nations, New York and Geneva, 2009 have been evaluated. Refer to Section 3, 8 and 11 for additional information.
2(b) Signal word, hazard statement(s), symbols and precautionary statement(s):

<table>
<thead>
<tr>
<th>Hazard Symbol</th>
<th>Hazard Classification</th>
<th>Signal Word</th>
<th>Hazard Statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Carcinogenicity – 2</td>
<td>DANGER</td>
<td>Suspected of causing cancer.</td>
</tr>
<tr>
<td></td>
<td>Reproductive Toxicity - 2</td>
<td></td>
<td>Suspected of damaging fertility or the unborn child.</td>
</tr>
<tr>
<td></td>
<td>Specific Target Organ Toxicity (STOT)</td>
<td></td>
<td>Causes damage to lungs and brain through prolonged or repeated inhalation exposure.</td>
</tr>
<tr>
<td></td>
<td>Repeat Exposure - 1</td>
<td></td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td></td>
<td>Acute Toxicity-Oral – 4</td>
<td></td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td></td>
<td>Skin Sensitization - 1</td>
<td></td>
<td>Causes eye irritation.</td>
</tr>
<tr>
<td></td>
<td>STOT Single Exposure - 3</td>
<td></td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td></td>
<td>Eye Irritation - 2B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Precautionary Statement(s):

<table>
<thead>
<tr>
<th>Prevention</th>
<th>Response</th>
<th>Storage/Disposal</th>
</tr>
</thead>
</table>
| Do not breathe dusts / fume / gas / mist. | If exposed, concerned or feel unwell: Get medical advice/attention or call a poison center. | Dispose of contents in accordance with federal, state and local regulations.
| Wear protective gloves / protective clothing / eye protection / face protection. | If inhaled: Remove person to fresh air and keep comfortable for breathing. | Store locked up.
| Contaminated work clothing must not be allowed out of the workplace. | If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. | |
| Use only outdoors or in well ventilated areas. Wash thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product. | If on skin: Wash with plenty of water. If irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. If swallowed: Rinse mouth. | |

2(c) Hazards not otherwise classified: None Known
2(d) Unknown acute toxicity statement (mixture): None Known

Section 3 – Composition/Information on Ingredients

3(a-c) Chemical name, common name (synonyms), CAS number and other identifiers, and concentration:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>EC Number</th>
<th>% weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>231-096-4</td>
<td>80 - 99.5</td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>231-105-1</td>
<td>0 - 1.35</td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>231-111-4</td>
<td>0 - 0.2</td>
</tr>
<tr>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>231-072-3</td>
<td>0.2 – 0.95</td>
</tr>
</tbody>
</table>
**Section 4 – First-aid Measures**

4(a) Description of necessary measures:
- **Inhalation:** Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped is not a likely form of exposure. However, during further processing (welding, grinding, burning, etc.), if inhaled: Remove person to fresh air and keep comfortable for breathing. If exposed, concerned or feel unwell: Get medical advice/attention.
- **Eye Contact:** Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped is not a likely form of exposure. However, during further processing (welding, grinding, burning, etc.), if in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue Rinsing. If eye irritation persists: Get medical advice/attention. If exposed, concerned or feel unwell: Get medical advice/attention.
- **Skin Contact:** If on skin: Wash thoroughly after handling. Wash with plenty of water. If irritation or rash occurs: Get medical advice/attention. Take off and wash contaminated clothing before reuse. If exposed, concerned or feel unwell: Get medical advice/attention.
- **Ingestion:** Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped is not a likely form of exposure. However, during further processing (welding, grinding, burning, etc.), if exposed, concerned or feel unwell: Get medical advice/attention.

4(b) Most important symptoms/effects, acute and delayed (chronic):
- **Inhalation:** Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped is not likely to present an acute or chronic health effect.
- **Eye:** Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped is not likely to present an acute or chronic health effect.
- **Skin:** Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped is not likely to present an acute or chronic health effect.
- **Ingestion:** Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped is not likely to present an acute or chronic health effect. However, during further processing (welding, grinding, burning, etc.), individual components may illicit an acute or chronic health effect. Refer to Section 11-Toxicological Information.

4(c) Immediate Medical Attention and Special Treatment: None Known

**Section 5 – Fire-fighting Measures**

5(a) Suitable (and unsuitable) Extinguishing Media: Not Applicable for Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped. Use extinguishers appropriate for surrounding materials.

5(b) Specific Hazards arising from the chemical: Not Applicable for Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped. When burned, toxic smoke, fume and vapor may be emitted.

5(c) Special protective equipment and precautions for fire-fighters: Self-contained NIOSH approved respiratory protection and full protective clothing should be worn when fumes and/or smoke from fire are present. Heat and flames cause emittance of acrid smoke and fumes. Do not release runoff from fire control methods to sewers or waterways. Firefighters should wear full face-piece self-contained breathing apparatus and chemical protective clothing with thermal protection. Direct water stream will scatter and spread flames and, therefore, should not be used.

**Section 6 - Accidental Release Measures**

6(a) Personal Precautions, Protective Equipment and Emergency Procedures: Not Applicable for Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped. For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. If material is in a dry state, avoid inhalation of dust.

6(b) Methods and materials for containment and clean up: Not Applicable for Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped. Collect material in appropriate, labeled containers for recovery or disposal in accordance with federal, state, and local regulations. Follow applicable OSHA regulations (29 CFR 1910.120) and all other pertinent state and federal requirements.

**Section 7 - Handling and Storage**

7(a) Precautions for safe handling: Not Applicable for Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped, however further processing (welding, burning, grinding, etc.) with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in well ventilated areas. Practice good housekeeping. Avoid breathing metal fumes and/or dust. Do not eat, drink or smoke when using this product. Cut resistant gloves and sleeves should be worn when working with steel products.

7(b) Conditions for safe storage, including any incompatibilities: Store away from acids and incompatible materials.
Section 8 - Exposure Controls / Personal Protection

8(a) Occupational Exposure Limits (OELs): Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped in its physical form does not present an inhalation, ingestion or contact hazard, nor would any of the following exposure data apply. However, operations such as burning, welding (high temperature), sawing, brazing, machining, grinding, etc. may produce fumes and/or particulates. The following exposure limits are offered as reference for an experienced industrial hygienist to review.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>OSHA PEL ¹</th>
<th>ACGIH TLV ²</th>
<th>NIOSH REL ³</th>
<th>IDLH ⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>10 mg/m³ (as iron oxide fume)</td>
<td>5.0 mg/m³ (as iron oxide dust and fume)</td>
<td>5.0 mg/m³ (as iron oxide dust and fume)</td>
<td>2,500 mg Fe/m³</td>
</tr>
<tr>
<td>Zinc</td>
<td>5.0 mg/m³ (as zinc oxide fume)</td>
<td>2.0 mg/m³ (as zinc oxide)</td>
<td>10 mg/m³ (as total dust)</td>
<td>5.0 mg/m³ (as respirable dust)</td>
</tr>
<tr>
<td>Manganese</td>
<td>(C) 5.0 mg/m³ (as Fume &amp; Mn compounds)</td>
<td>0.2 mg/m³</td>
<td>(C) 5.0 mg/m³</td>
<td>1.0 mg/m³ (as fume) (STEL) 3.0 mg/m³</td>
</tr>
<tr>
<td>Nickel</td>
<td>1.0 mg/m³ (as Ni metal &amp; insoluble compounds)</td>
<td>1.5 mg/m³ (as inhalable fraction Ni metal)</td>
<td>0.2 mg/m³ (as inhalable fraction Ni inorganic only insoluble and soluble compounds)</td>
<td>0.015 mg/m³ (as Ni metal &amp; insoluble and soluble compounds)</td>
</tr>
<tr>
<td>Aluminum</td>
<td>15 mg/m³ (as total dust, PNOR)</td>
<td>10 mg/m³ (as metal dust)</td>
<td>10 mg/m³ (as total dust)</td>
<td>5.0 mg/m³ (as welding fume)</td>
</tr>
<tr>
<td></td>
<td>5.0 mg/m³ (as respirable fraction, PNOR)</td>
<td>5.0 mg/m³ (as welding fume)</td>
<td>5.0 mg/m³ (as respirable dust)</td>
<td></td>
</tr>
</tbody>
</table>

NE - None Established

1. OSHA Permissible Exposure Limits (PELs) are 8-hour TWA (time-weighted average) concentrations unless otherwise noted. A (C) designation denotes a ceiling limit, which should not be exceeded during any part of the working exposure unless otherwise noted. A Peak is defined as the acceptable maximum peak for a maximum duration above the ceiling concentration for an eight-hour shift. A skin notation refers to the potential significant contribution to the overall exposure by the cutaneous route, either by contact with vapors or, of probable greater significance, by direct skin contact with the substance. A Short Term Exposure Limit (STEL) is defined as a 15-minute exposure, which should not be exceeded at any time during a workday. An Action level (AL) is used by OSHA and NIOSH to express a health or physical hazard. They indicate the level of a harmful or toxic substance/activity, which requires medical surveillance, increased industrial hygiene monitoring, or biological monitoring. Action Levels are generally set at one half of the PEL but the actual level may vary from standard to standard. The intent is to identify a level at which the vast majority of randomly sampled exposures will be below the PEL.

2. Threshold Limit Values (TLVs) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted. A Short Term Exposure Limit (STEL) is defined as the maximum concentration to which workers can be exposed for a short period of time (15 minutes) for only four times throughout the day with at least one hour between exposures. A “skin” notation refers to the potential significant contribution to the overall exposure by the cutaneous route, either by contact with vapors or, of probable greater significance, by direct skin contact with the substance. ACGIH TLVs are only recommended guidelines based upon consensus agreement of the membership of the ACGIH. As such, the ACGIH TLVs are for guideline use purposes and are not legal regulatory standards for compliance purposes. The TLVs are designed for use by individuals trained in the discipline of industrial hygiene relative to the evaluation of exposure to various chemical or biological substances and physical agents that may be found in the workplace.

3. The National Institute for Occupational Safety and Health Recommended Exposure Limits (NIOSH-REL) - Compendium of Policy and Statements. NIOSH, Cincinnati, OH (1992). NIOSH is the federal agency designated to conduct research relative to occupational safety and health. As is the case with ACGIH TLVs, NIOSH RELs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes.

4. The “immediately dangerous to life or health air concentration values (IDLHs)” are used by NIOSH as part of the respirator selection criteria and were first developed in the mid-1970's by NIOSH. The Documentation for Immediately Dangerous to Life or Health Concentrations (IDLHs) is a compilation of the rationale and sources of information used by NIOSH during the original determination of 387 IDLHs and their subsequent review and revision on 1994.

5. Inhalable fraction. The concentration of inhalable particulate for the application of this TLV is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH 2015 TLVs® and BEIs® (Biological Exposure Indices) Appendix D, paragraph A.

8(b) Appropriate Engineering Controls: Use controls as appropriate to minimize exposure to metal fumes and dusts during handling operations. Provide general or local exhaust ventilation systems to minimize airborne concentrations. Local exhaust is necessary for use in enclosed or confined spaces. Provide sufficient general/local exhaust ventilation in pattern/volume to control inhalation exposures below current exposure limits.

8(c) Individual Protection Measures:

- **Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, use only a NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Protection by air-purifying negative-pressure and powered air respirators is limited. Use a positive-pressure-demand, full-face, supplied air respirator or self-contained breathing apparatus (SCBA) for concentrations above 50 times the exposure limit. If exposure is above the IDLH (Immediately dangerous to life or health) for any of the constituents, or there is a possibility of an uncontrolled release or exposure levels are unknown, then use a positive-pressure demand full-face supplied air respirator with escape bottle or SCBA.

  * **Warning!** Air-purifying respirators both negative-pressure, and powered-air do not protect workers in oxygen-deficient atmospheres.

- **Eyes:** Wear appropriate eye protection to prevent eye contact. For operations which result in elevating the temperature of the product to or above its melting point or result in the generation of airborne particulates, use safety glasses to prevent eye contact. Contact lenses should not be worn where industrial exposures to this material are likely. Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

- **Skin:** Wear appropriate personal protective clothing to prevent skin contact. Cut resistant gloves and sleeves should be worn when working with steel products. For operations which result in elevating the temperature of the product to or above its melting point or result in the …
**Section 9 - Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>9(a) Appearance (physical state, color, etc.):</td>
<td>Solid, metallic gray</td>
</tr>
<tr>
<td>9(b) Odor:</td>
<td>Odorless</td>
</tr>
<tr>
<td>9(c) Odor Threshold:</td>
<td>NA</td>
</tr>
<tr>
<td>9(d) pH:</td>
<td>NA</td>
</tr>
<tr>
<td>9(e) Melting Point/Freezing Point:</td>
<td>~2751.8 °F (1511 °C) Base metal, 798.8 - 899.6 °F (426 - 482 °C) Metallic Coating</td>
</tr>
<tr>
<td>9(f) Initial Boiling Point and Boiling Range:</td>
<td>ND</td>
</tr>
<tr>
<td>9(g) Flash Point:</td>
<td>NA</td>
</tr>
<tr>
<td>9(h) Evaporation Rate:</td>
<td>NA</td>
</tr>
<tr>
<td>9(i) Flammability (solid, gas):</td>
<td>Non-flammable, non-combustible</td>
</tr>
<tr>
<td>9(j) Upper/lower Flammability or Explosive Limits:</td>
<td>NA</td>
</tr>
<tr>
<td>9(k) Vapor Pressure:</td>
<td>NA</td>
</tr>
<tr>
<td>9(l) Vapor Density (Air = 1):</td>
<td>NA</td>
</tr>
<tr>
<td>9(m) Relative Density:</td>
<td>Not Available</td>
</tr>
<tr>
<td>9(n) Solubility(ies):</td>
<td>NA</td>
</tr>
<tr>
<td>9(o) Partition Coefficient n-octanol/water:</td>
<td>ND</td>
</tr>
<tr>
<td>9(p) Auto-ignition Temperature:</td>
<td>NA</td>
</tr>
<tr>
<td>9(q) Decomposition Temperature:</td>
<td>ND</td>
</tr>
<tr>
<td>9(r) Viscosity:</td>
<td>NA</td>
</tr>
</tbody>
</table>

NA - Not Applicable
ND - Not Determined for product as a whole

**Section 10 - Stability and Reactivity**

10(a) Reactivity: Not Determined (ND) for product in a solid form. Do not use water on molten metal.

10(b) Chemical Stability: Steel products are stable under normal storage and handling conditions.

10(c) Possibility of hazardous reaction: None Known

10(d) Conditions to Avoid: Storage with strong acids or calcium hypochlorite

10(e) Incompatible Materials: Will react with strong acids to form hydrogen. Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.

10(f) Hazardous Decomposition Products: Thermal oxidative decomposition of steel products can produce fumes containing oxides of iron and manganese as well as other alloying elements.

**Section 11 - Toxicological Information**

11 Information on toxicological effects: The following toxicity data has been determined for Zinc-5% Aluminum Alloy-Coated Sheet Steel when further processed using the information available for its components applied to the guidance on the preparation of an SDS under the GHS requirements of OSHA and the EU CPL.

<table>
<thead>
<tr>
<th>Hazard Classification</th>
<th>Hazard Category</th>
<th>Hazard Symbols</th>
<th>Signal Word</th>
<th>Hazard Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity - Oral (covers Categories 1, 2, 3 and 4)</td>
<td>NR*</td>
<td>4</td>
<td>Warning</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>Eye Damage/ Irritation (covers Categories 1, 2A and 2B)</td>
<td>NR*</td>
<td>2B</td>
<td>No Pictogram</td>
<td>Causes eye irritation.</td>
</tr>
<tr>
<td>Skin/Dermal Sensitization (covers Category 1)</td>
<td>NR*</td>
<td>1d</td>
<td>Warning</td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td>Carcinogenicity (covers Categories 1A, 1B and 2)</td>
<td>NR*</td>
<td>2e</td>
<td>Warning</td>
<td>Suspected of cause cancer.</td>
</tr>
<tr>
<td>Toxic Reproduction (covers Categories 1A, 1B and 2)</td>
<td>NR*</td>
<td>2b</td>
<td>Warning</td>
<td>Suspected of damaging fertility or the unborn child.</td>
</tr>
<tr>
<td>Specific Target Organ Toxicity (STOT) Following Single Exposure (covers Categories 1-3)</td>
<td>NR*</td>
<td>3i</td>
<td>Warning</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>STOT following Repeated Exposure (covers Categories 1 and 2)</td>
<td>NR*</td>
<td>1i</td>
<td>Danger</td>
<td>Causes damage to lungs and brain through prolonged or repeated inhalation exposure.</td>
</tr>
</tbody>
</table>

* Not Rated, Semi-formed steel products are considered articles under Reach regulation (REACH REGULATION (EC) No 1907/2006) and are not subject to classification under CLP regulation (REGULATION (EC) No 1272/2008).

Toxicological data listed below are presented regardless to classification criteria. Individual hazard classification categories where the toxicological information has met or exceeded a classification criteria threshold are listed above.
a. No LC₅₀ or LD₅₀ has been established for Zinc-5% Aluminum Alloy-Coated Sheet Steel as a mixture. The following data has been determined for the components:

- **Iron**: Rat LD₅₀ >98.6 g/kg (REACH)
  - Rat LD₅₀ >1060 mg/kg (IUCLID)
  - Rabbit LD₅₀ >984 mg/kg (IUCLID)
  - Guinea Pig LD₅₀ >20 g/kg (TOXNET)
- **Nickel**: LD₅₀ >9000 mg/kg (Oral/Rat)
- **Manganese**: Rat LD₅₀ > 2000 mg/kg (REACH)
  - Rat LD₅₀ > 9000 mg/kg (NLMToxnet)
- **Zinc**: Rat LD₅₀ > 2000 mg/kg

b. No Skin (Dermal) Irritation data available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as a mixture or its individual components.

c. No Eye Irritation data available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as a mixture. The following Eye Irritation information was found for the components:

- **Iron**: Causes eye irritation.
- **Nickel**: Slight eye irritation from particulate abrasion only.

d. No Skin (Dermal) Sensitization data available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as a mixture. The following Skin (Dermal) Sensitization information was found for the components:

- **Nickel**: May cause allergic skin sensitization.

e. No Respiratory Sensitization data available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as a mixture or its components.

f. No Germ Cell Mutagenicity data available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as a mixture. The following Mutagenicity and Genotoxicity information was found for the components:

- **Iron**: IUCLID has found some positive and negative findings in vitro.
- **Nickel**: EURAR has found positive results in vitro and in vivo but insufficient data for classification.

g. Carcinogenicity: IARC, NTP, and OSHA do not list Zinc-5% Aluminum Alloy-Coated Sheet Steel as carcinogens. The following Carcinogenicity information was found for the components:

- **Welding Fumes** - IARC Group 2B carcinogen, a mixture that is possibly carcinogenic to humans.
- **Nickel and certain nickel compounds** – Group 2B - metallic nickel Group 1 - nickel compounds ACGIH confirmed human carcinogen. Nickel – EURAR Insufficient evidence to conclude carcinogenic potential in animals or humans; suspect carcinogen classification Category 2 Suspected of causing cancer.

h. No Toxic Reproduction data available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as a mixture. The following Toxic Reproductive information was found for the components:

- **Nickel**: Effects on fertility.

i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as a mixture. The following STOT following a Single Exposure data was found for the components:

- **Iron**: Irritating to Respiratory tract.

j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as a whole. The following STOT following Repeated Exposure data was found for the components:

- **Nickel**: Rat 4 wk inhalation LOEL 4 mg/m³ Lung and Lymph node histopathology. Rat 2 yr inhalation LOEL 0.1 mg/m³ Pigment in kidney, effects on hematopoiesis spleen and bone marrow and adrenal tumor. Rat 13 Week Inhalation LOAEC 1.0 mg/m³ Lung weights, and Alveolar histopathology.
- **Manganese**: Inhalation of metal fumes - Degenerative changes in human Brain; Behavioral: Changes in motor activity and muscle weakness (Whitlock et al., 1966).

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure indices (BEIs) with Other Worldwide Occupational Exposure Values 2009, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCLID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS), European Union Classification, Labeling and Packaging. (EU CPL), Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), International Uniform Chemical Information Database (IUCLID), TOXicology Data NETwork (TOXNET), European Risk Assessment Reports (EU RAR).

The following health hazard information is provided regardless to classification criteria and is based on the individual component(s) and potential resultant components from further processing:

**Acute Effects:**

- **Inhalation**: Excessive exposure to high concentrations of metal dust may cause irritation to the eyes, skin and mucous membranes of the upper respiratory tract. Excessive inhalation of fumes of freshly formed metal oxide particles sized below 1.5 micrometer and usually between 0.02-0.05 micrometers from many metals can produce an acute reaction known as “metal fume fever”. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), metallic taste in the mouth, dryness and irritation of the throat followed by weakness and muscle pain. The symptoms come on in a few hours after excessive exposures and usually last from 12 to 48 hours. Long-term effects from metal fume fever have not been noted. Freshly formed oxide fumes of manganese have been associated with causing metal fume fever.

- **Eye**: Excessive exposure to high concentrations of metal dust may cause irritation to the eyes.

- **Skin**: Skin contact with metal dusts may cause irritation or sensitization, possibly leading to dermatitis. Skin contact with metallic fumes and dusts may cause physical abrasion.

- **Ingestion**: Ingestion of harmful amounts of this product as distributed is unlikely due to its solid insoluble form. Ingestion of metal dust may cause nausea or vomiting.

**Acute Effects by component:**
**Zinc-5% Aluminum Alloy-Coated Sheet Steel**

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- **Iron and iron oxides:** Iron is harmful if swallowed, causes skin irritation, and causes eye irritation. Contact with iron oxide has been reported to cause skin irritation and serious eye damage. Particles of iron or iron compounds, which become imbedded in the eye, may cause rust stains unless removed fairly promptly.
- **Zinc and zinc oxides:** Not Reported/Not Classified
- **Manganese and manganese oxides:** Manganese and Manganese oxide are harmful if swallowed.
- **Aluminum and aluminum oxides:** Inhalation may cause cough.
- **Nickel and nickel oxides:** Nickel may cause allergic skin sensitization. Nickel oxide may cause an allergic skin.

### Section 12 - Ecological Information

12(a) **Ecotoxicity (aquatic & terrestrial):** No Data Available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped. However, individual components of the product when processed have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife as follows:

- **Iron Oxide:** LC₅₀ >1000 mg/L; Fish 48 h-EC₅₀ > 100 mg/L (Currenta, 2008k); 96 h-LC₀ ≥ 50,000 mg/L Test substance: Bayferrox 130 red (95 – 97% Fe₂O₃; < 4% SiO₂ and Al₂O₃) (Bayer, 1989a).

- **Nickel Oxide:** IUCLID found LC₅₀ in fish, invertebrates and algae > 100 mg/L.

- **Zinc:** EURAR lists as Category 1 Very toxic to aquatic life with long lasting effects.

12(b) **Persistence & Degradability:** No Data Available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped or individual components.

12(c) **Bioaccumulative Potential:** No Data Available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped or individual components.

12(d) **Mobility (in soil):** No data available for Zinc-5% Aluminum Alloy-Coated Sheet Steel as sold/shipped. However, individual components of the product have been found to be absorbed by plants from soil.

12(e) **Other adverse effects:** None Known

**Additional Information:**

- **Hazard Category:** Category 1
- **Signal Word:** Warning

- **Hazard Symbol:** 🟦

- **Hazard Statement:** Very Toxic to aquatic life with long lasting effects.

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### Section 13 - Disposal Considerations

**Disposal:** Steel scrap should be recycled whenever possible. Product dusts and fumes from processing operations should also be recycled, or classified by a competent environmental professional and disposed of in accordance with applicable federal, state or local regulations.

**Container Cleaning and Disposal:** Follow applicable federal, state and local regulations. Observe safe handling precautions. European Waste Catalogue (EWC): 16-01-17 (ferrous metals), 12-01-99 (wastes not otherwise specified), 16-03-04 (off specification batches and unused products), or 15-01-04 (metallic packaging).

Please note this information is for Zinc-5% Aluminum Alloy-Coated Sheet Steel in its original form. Any alterations can void this information.
Section 14 - Transport Information

14 (a-g) Transportation Information:
US Department of Transportation (DOT) under 49 CFR 172.101 does not regulate Zinc-5% Aluminum Alloy-Coated Sheet Steel as a hazardous material. All federal, state, and local laws and regulations that apply to the transport of this type of material must be adhered to.

Shipping Name: Not Applicable (NA)
Shipping Symbols: NA
Hazard Class: NA
UN No.: NA
Packaging Group: NA
DOT/IMO Label: NA
Special Provisions (172.102): NA

Packaging Authorizations
a) Exceptions: NA
b) Group: NA
c) Authorization: NA

Quantity Limitations
a) Passenger, Aircraft, or Railcar: NA
b) Cargo Aircraft Only: NA
Vessel Stowage Requirements
a) Vessel Stowage: NA
b) Other: NA

DOT Reportable Quantities: NA

International Maritime Dangerous Goods (IMDG) and the Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID) classification, packaging and shipping requirements follow the US DOT Hazardous Materials Regulation.

Regulations Concerning the International Carriage of Dangerous Goods by Road (ADR) does not regulate Zinc-5% Aluminum Alloy-Coated Sheet Steel as a hazardous material.

Shipping Name: Not Applicable (NA)
Classification Code: NA
UN No.: NA
Packaging Group: NA
ADR Label: NA
Special Provisions: NA
Limited Quantities: NA

Packaging
a) Packing Instructions: NA
b) Special Packing Provisions: NA
c) Mixed Packing Provisions: NA

Portable Tanks & Bulk Containers
a) Instructions: NA
b) Special Provisions: NA

Transport Dangerous Goods (TDG) Classification: Zinc-5% Aluminum Alloy-Coated Sheet Steel does not have a TDG classification.

Section 15 - Regulatory Information

Regulatory Information: The following listing of regulations relating to a Steel Dynamics product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities.

This product and/or its constituents are subject to the following regulations:

OSHA Regulations: Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-2, Z-3): The product, Zinc-5% Aluminum Alloy-Coated Sheet Steel as a whole is not listed. However, individual components of the product are listed: Refer to Section 8, Exposure Controls and Personal Protection.

EPA Regulations: The product, Zinc-5% Aluminum Alloy-Coated Sheet Steel is not listed as a whole. However, individual components of the product are listed:

<table>
<thead>
<tr>
<th>Components</th>
<th>Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>SDWA</td>
</tr>
<tr>
<td>Manganese</td>
<td>CAA, SARA 313, SDWA</td>
</tr>
<tr>
<td>Nickel</td>
<td>CAA, CERCLA, CWA, SARA 313</td>
</tr>
<tr>
<td>Aluminum (fume or dust)</td>
<td>SARA 313</td>
</tr>
<tr>
<td>Zinc compounds</td>
<td>CWA, SARA 313</td>
</tr>
</tbody>
</table>

SARA Potential Hazard Categories: Immediate Acute Health Hazard; Delayed Chronic Health Hazard

Section 313 Supplier Notification: The product, Zinc-5% Aluminum Alloy-Coated Sheet Steel contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act and 40 CFR part 372:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Chemical Name</th>
<th>Percent by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>7439-96-5</td>
<td>Manganese</td>
<td>1.35 max</td>
</tr>
<tr>
<td>7440-02-0</td>
<td>Nickel</td>
<td>0.2 max</td>
</tr>
<tr>
<td>7440-66-6</td>
<td>Zinc</td>
<td>19 max</td>
</tr>
<tr>
<td>7429-90-5</td>
<td>Aluminum</td>
<td>0.95</td>
</tr>
</tbody>
</table>
### Zinc-5% Aluminum Alloy-Coated Sheet Steel

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### EPA Regulations (continued):

**Regulations Key:**
- **CAA** Clean Air Act (42 USC Sec. 7412; 40 CFR Part 61 [As of: 8/18/06])
- **CERCLA** Comprehensive Environmental Response, Compensation and Liability Act (42 USC Secs. 9601(14), 9603(a); 40 CFR Sec. 302.4, Table 302.4, Table 302.4 and App. A)
- **CWA** Clean Water Act (33 USC Secs. 1311; 1314(b), (c); (e); (g); 136(b), (c); 137(b), (c) [as of 8/2/06])
- **RCRA** Resource Conservation Recovery Act (42 USC Sec. 6921; 40 CFR Part 261 App VIII)
- **SARA** Superfund Amendments and Reauthorization Act of 1986 Title III Section 302 Extremely Hazardous Substances (42 USC Secs. 11023, 13106; 40 CFR sec. 372.65) and Section 313 Toxic Chemicals (42 USC secs. 11023, 13106; 40 CFR Sec. 372.65 [as of 6/30/05])
- **TSCA** Toxic Substance Control Act (15 U.S.C. s/s 2601 et seq. [1976])
- **SDWA** Safe Drinking Water Act (42 U.S.C. s/s 300f et seq. [1974])

### State Regulations:

The product, **Zinc-5% Aluminum Alloy-Coated Sheet Steel** as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations:

**Pennsylvania Right to Know:**
- Contains regulated material in the following categories:
  - **Hazardous Substances:** Manganese, Nickel, Aluminum, Zinc
  - **Environmental Hazards:** Manganese, Nickel, Aluminum, Zinc
  - **Special Hazardous Substance:** Nickel

**California Prop 65:**

**WARNING:** This product can expose you to nickel and hexavalent chromium, which are known to the State of California to cause cancer, and hexavalent chromium, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov). Some available surface treatments for this product do not contain all of the chemicals identified above – please contact the facility for information about alternative surface treatments to avoid or reduce any exposure to the identified chemicals.

**New Jersey:**
- Contains regulated material in the following categories:
  - **Hazardous Substance:** Manganese, Nickel, Aluminum (dust and fume), Zinc
  - **Environmental Hazards:** Manganese, Nickel, Zinc
  - **Special Hazardous Substance:** Manganese, Aluminum (dust and fume)

**Minnesota:**
- Manganese, Nickel, Zinc

**Massachusetts:**
- Manganese (compounds), Nickel (compounds), Aluminum (dust and fume), Zinc

**Other Regulations:**

**WHMIS Classification (Canadian):** The product, **Zinc-5% Aluminum Alloy-Coated Sheet Steel** is not listed as a whole. However individual components are listed.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>WHMIS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese</td>
<td>Reproductive toxicity - Category 2; Specific target organ toxicity - repeated exposure - Category 1; Combustible dusts</td>
</tr>
<tr>
<td>Nickel</td>
<td>Skin sensitization – Category 1; Carcinogenicity – Category 2; Specific target organ toxicity – repeated exposure - Category 1</td>
</tr>
</tbody>
</table>

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

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### Section 16 - Other Information

**Prepared By:** Steel Dynamics Inc (SDI)

**Original Issue Date:**
- 8/26/2002 (original)
- 05/11/2015 (revision GHS)

**Expiration Date:**
- 04/07/2020

**Updated to comply with California Prop 65:**
- 08/31/2018

**Additional Information:**

**Hazardous Material Identification System (HMIS) Classification**

- **Health Hazard:**
  - 1
- **Fire Hazard:**
  - 0
- **Physical Hazard:**
  - 0

**National Fire Protection Association (NFPA)**

- **Health = 1:** Exposure could cause irritation but only minor residual injury even if no treatment is given.
- **Flammability = 0:** Materials that will not burn.
- **Instability = 0:** Normally stable, even under fire exposure conditions, and are not reactive with water.

**ABBREVIATIONS/ACRONYMS:**

- **ACGIH** American Conference of Governmental Industrial Hygienists
- **BEIs** Biological Exposure Indices
- **CAS** Chemical Abstracts Service
- **NIF** No Information Found
- **NIOSH** National Institute for Occupational Safety and Health
- **NTP** National Toxicology Program

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### Section 16 - Other Information (continued)

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>GI, GIT</td>
<td>Gastro-Intestinal, Gastro-Intestinal Tract</td>
</tr>
<tr>
<td>HMIS</td>
<td>Hazardous Materials Identification System</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>LC50</td>
<td>Median Lethal Concentration</td>
</tr>
<tr>
<td>LD50</td>
<td>Median Lethal Dose</td>
</tr>
<tr>
<td>LDLo</td>
<td>Lowest Dose to have killed animals or humans</td>
</tr>
<tr>
<td>LEL</td>
<td>Lower Explosive Limit</td>
</tr>
<tr>
<td>LOEL</td>
<td>Lowest Observed Effect Level</td>
</tr>
<tr>
<td>LOAEC</td>
<td>Lowest Observable Adverse Effect Concentration</td>
</tr>
<tr>
<td>µg/m³</td>
<td>microgram per cubic meter of air</td>
</tr>
<tr>
<td>mg/m³</td>
<td>milligram per cubic meter of air</td>
</tr>
<tr>
<td>mppcf</td>
<td>million particles per cubic foot</td>
</tr>
<tr>
<td>MSHA</td>
<td>Mine Safety and Health Administration</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>PNOR</td>
<td>Particulate Not Otherwise Regulated</td>
</tr>
<tr>
<td>PNOC</td>
<td>Particulate Not Otherwise Classified</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>ppm</td>
<td>parts per million</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation and Recovery Act</td>
</tr>
<tr>
<td>REACH</td>
<td>Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals</td>
</tr>
<tr>
<td>RTECS</td>
<td>Registry of Toxic Effects of Chemical Substances</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendment and Reauthorization Act</td>
</tr>
<tr>
<td>SCBA</td>
<td>Self-contained Breathing Apparatus</td>
</tr>
<tr>
<td>SDS</td>
<td>Safety Data Sheet</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-term Exposure Limit</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time-weighted Average</td>
</tr>
<tr>
<td>UEL</td>
<td>Upper Explosive Limit</td>
</tr>
</tbody>
</table>

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