



# California Steel Industries, Inc.

Effective Date: April 1, 2010

## GALVANIZED STEEL

### Material Safety Data Sheet

For Emergency Call:  
California Steel Industries, Inc. (909) 350-6296

#### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Galvanized Steel

**CAS Number:** 65997-19-5

**Chemical Name:** Galvanized Steel

**Chemical Family:** Carbon Steel Alloy

##### Company Identification

Manufacturer's Name: California Steel Industries, Inc.

Address: 14000 San Bernardino Ave., Fontana, California 92335

Telephone – General Information: (909) 350-6284

#### 2. COMPOSITION/INFORMATION ON INGREDIENTS

| Components             | Typical Weight Percentage | CAS Number |
|------------------------|---------------------------|------------|
| Base metal & Residuals |                           |            |
| Iron                   | >97                       | 7439-89-6  |
| Manganese              | 0.10- 1.35                | 7439-96-5  |
| Silicon                | 0.035 max                 | 7440-21-3  |
| Carbon                 | 0.25 max                  | 7440-44-0  |
| Copper                 | 0.25 max                  | 7440-50-8  |
| Nickel                 | 0.10 max                  | 7440-02-0  |
| Chromium Alloy         | 0.10 max                  | 7440-47-3  |
| Aluminum               | 0.08 max                  | 7429-90-5  |
| Molybdenum             | 0.05 max                  | 7439-98-7  |
| Columbium              | 0.060 max                 | 7440-03-1  |
| Sulfur                 | 0.025 max                 | 7704-34-9  |
| Phosphorus             | 0.025 max                 | 7723-14-0  |
| Tin                    | 0.020 max                 | 7440-31-5  |
| Nitrogen               | 0.012 max                 | 7727-37-9  |
| Vanadium               | 0.04 max                  | 7440-62-2  |
| Titanium               | 0.080 max                 | 7440-32-6  |

| Components        | Typical Weight Percentage | CAS Number |
|-------------------|---------------------------|------------|
| Coating Materials |                           |            |
| Zinc              | >99                       | 7440-66-6  |
| Aluminum          | 0.15 – 0.30               | 7429-90-5  |
| Lead              | 0.001 – 0.015             | 7439-92-1  |



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3. HAZARDS IDENTIFICATION

**Emergency Overview**

Avoid contact with eyes. Wash thoroughly after handling.

Odorless, metallic gray solid.

**Potential Health Effects:**

**Note:** Steel products, under normal conditions, do not present an inhalation, ingestion or skin hazard. However, operations such as welding, grinding, sawing, and burning, which may cause airborne particulates or fume formation, may present a health hazard.

**Eyes:** Contact with dusts or particulates produced by cutting, welding or grinding may be abrasive and irritating to the eyes and cause stinging, watering, and redness.

**Skin:** Contact with dusts or particulates produced by cutting, welding or grinding may be abrasive and mildly irritating to the skin. Particulates may cause a red-brown pigmentation of the skin following repeated exposure. No harmful effects from skin absorption are expected.

**Inhalation (Breathing):** No LC50 toxicity data available for the product. Dusts or particulates produced by cutting, welding or grinding are expected to have a low degree of toxicity by inhalation.

**Ingestion (Swallowing):** No LD50 toxicity data available for the product. Dusts or particulates produced by cutting, welding or grinding are not known to be toxic.

**Signs and Symptoms:** Effects of overexposure may include irritation of the nose and throat and digestive tract.

**Cancer:** No information available on the cancer hazard of this material. However, a component has been identified as a cancer hazard (see Section 11).

**Target Organs:** A component of this product is a potential hazard to the male reproductive system (see Section 11).

**Developmental:** No data available.

**Other Comments:** Chronic exposure to manganese may result in a central nervous system disorder (manganism). Symptoms may include confusion, bizarre behavior, visual hallucinations, difficulty with speech and movement, tremor, loss of balance, decreased libido and impotence.

Chronic exposure to high concentrations of iron have been associated with hemosiderosis, hemochromatosis and in severe cases, liver cirrhosis. Typical occupational exposures to iron compounds are not expected to cause these effects. Chronic inhalation can produce "mottling" of the lungs (siderosis). This is considered a benign pneumoconiosis and does not normally lead to fibrosis or cause significant physiologic impairment.



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Metal fume fever is a brief, self-limited illness characterized by fever, chills, aching muscles, sweating, nausea, vomiting, and coughing. Symptoms typically occur several hours after exposure to metal oxide fumes and subside within 24-48 hours.

This material / product contains chemicals known to the State of California to cause cancer and/or reproductive toxicity (see sections 11 and 15).

**Medical Conditions Aggravated by Exposure:** Conditions aggravated by exposure may include skin disorders, respiratory (asthma-like) and male reproductive disorders.

**4. FIRST AID**

**Eyes:** If irritation or redness develops from dust exposure, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

**Skin:** First aid is not normally required. However, it is good practice to wash any material from the skin.

**Inhalation:** First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air. Seek immediate medical attention

**Ingestion:** First aid is not normally required; however, if dust is swallowed and symptoms develop, seek medical attention.

**5. FIRE FIGHTING MEASURES**

**Flash Point (test method):** Not applicable

**Flammable Limits:** Not applicable

**Explosive Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Extinguishing Media:** For fires involving powder or dust, use dry chemicals, sand, earth, water spray or regular foam.

|                          |               |   |
|--------------------------|---------------|---|
| <b>NFPA Fire Rating:</b> | Health Hazard | 1 |
|                          | Flammability  | 0 |
|                          | Reactivity    | 0 |

**Key:** Least = 0, Slight = 1, Moderate = 2, High = 3, Extreme = 4

**Special Firefighting Procedures:** For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self-contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors. Cool equipment exposed to fire with water, if it can be done with minimal risk.



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**Unusual Fire and Explosive Hazards:** No unusual fire or explosive hazards are expected. However, dust powder or fumes are flammable or explosive when exposed to heat or flames

**6. ACCIDENTAL RELEASE MEASURES**

In case of dust release, stay upwind and away from spill. Notify persons down wind of spill/release, isolate immediate hazard area and keep unauthorized personnel out. Contain spill if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8). Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways. Notify appropriate federal, state, and local agencies. Sweep up and package appropriately for disposal.

**7. HANDLING AND STORAGE**

**Handling:** The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8). Wash thoroughly after handling. Do not wear contaminated clothing or shoes. Use good personal hygiene practice.

**Storage:** Keep away from any incompatible material (see Section 10).

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Ventilation:** If current ventilation practices are not adequate to maintain airborne dust concentrations below the established exposure limits (see Section 2), additional ventilation or exhaust systems may be required.

**Specific Personal Protective Equipment**

**Eyes:** Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. Depending on conditions of use, a face shield may be necessary.

**Skin:** Not required based on the hazards of the material. However, it is considered good practice to wear gloves when handling chemicals.

**Respiratory:** A NIOSH/MSHA approved air purifying respirator with a type 95 particulate filter may be used under conditions where airborne concentrations are expected to exceed exposure limits (see below). Protection provided by air-purifying respirators is limited (see manufacturer's respirator selection guide). Use a positive pressure air supplied respirator if there is potential for uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

**Other:** Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse. It is recommended that impervious clothing be worn.



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#### Exposure Guidelines

| Component                           | ACGIH TLV                                                        | ACGIH STEL                        | OSHA PEL                                                                                            | OSHA STEL                     |
|-------------------------------------|------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------|
| Nuisance particulates, if generated | 10 mg/m <sup>3</sup> - total<br>3 mg/m <sup>3</sup> - respirable | None                              | 15 mg/m <sup>3</sup> total<br>5 mg/m <sup>3</sup> respirable                                        | None                          |
| Chromium Alloy                      | 0.5 mg/m <sup>3</sup>                                            | None                              | 1 mg/m <sup>3</sup>                                                                                 | None                          |
| Iron (oxide dust & fume)            | 5 mg/m <sup>3</sup>                                              | None                              | 10 mg/m <sup>3</sup>                                                                                | None                          |
| Manganese                           | 0.2 mg/m <sup>3</sup>                                            | None                              | None                                                                                                | 5 mg/m <sup>3</sup> (CEILING) |
| Nickel                              | 1.5 mg/m <sup>3</sup><br>0.2 mg/m <sup>3</sup> (insoluble)       | None                              | 1 mg/m <sup>3</sup>                                                                                 | None                          |
| Zinc (Oxide)                        | 5 mg/m <sup>3</sup> (Respirable)                                 | 10 mg/m <sup>3</sup> (Respirable) | 5 mg/m <sup>3</sup> (fume)<br>15 mg/m <sup>3</sup> (oxide) tot.<br>5 mg/m <sup>3</sup> (oxide) resp | None                          |

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Metallic gray

**Odor:** Odorless

**Odor threshold level:** Not applicable

**Physical state:** Solid

**pH:** Not applicable

**Vapor pressure (mmHg and temp):** Not applicable

**Vapor density (air = 1):** Not applicable

**Boiling point (at 1 atm):** Not applicable

**Melting point:** Base material 2750°F; Coating 750°F

**Solubility in water:** Insoluble

**Specific gravity (H<sub>2</sub>O = 1):** 7.85

**Evaporation rate (butyl acetate = 1):** Not applicable

### 10. STABILITY AND REACTIVITY

**Stability (thermal, light, etc.):** Stable under normal conditions of storage and handling.

**Conditions to Avoid:** Storage near strong oxidizers.



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**Incompatibility (materials to avoid):** Avoid contact with strong oxidizers.

**Hazardous Decomposition Products:** Thermal decomposition may release hazardous metal fumes.

**Hazardous Polymerization:** Not applicable

**11. TOXICOLOGICAL INFORMATION**

**Manganese CAS# 7439-96-5**

Repeated administration of manganese resulted in limited evidence of male reproductive effects in laboratory animals. The adverse effects included decreased spermatids, spermatocytes and degeneration of seminiferous tubules. Chronic administration of certain inorganic manganese salts has resulted in limited evidence of central nervous system effects in laboratory animals. The effects included degenerative changes in basal ganglionic cells.

**Nickel CAS# 7440-02-0**

There is sufficient evidence in animals for the carcinogenicity of metallic nickel, nickel monoxides, nickel hydroxides and crystalline nickel sulfides, and limited evidence in animals for other nickel compounds (e.g., alloys, arsenides and nickel carbonyl). Occupational exposure has been associated with cancer of the lung and nasal cavity. Nickel and nickel compounds have been identified as carcinogens by NTP and IARC.

**Welding Fumes**

Welding fumes may be different in composition from the original welding product, with the chief component being ordinary oxides of metal being welded. Chronic health effects (including cancer) have been associated with the fumes and dusts of individual component metals (see above), and welding fumes as a general category have been listed by IARC as a carcinogen. There is also limited evidence that welding fumes may cause adverse reproductive and fetal effects. Evidence is stronger where welding materials contain known reproductive toxicants.

This material / product contains chemicals known to the State of California to cause cancer and/or reproductive toxicity that may be released during welding (see section 15).

**12. ECOLOGICAL INFORMATION**

No ecological data are available.

**13. DISPOSAL CONSIDERATIONS**

This material, if discarded as produced, is not a RCRA "listed" or "characteristic" hazardous waste. Use which results in chemical or physical change or contamination may subject it to regulation as a hazardous waste. Along with properly characterizing all waste materials, consult state and local regulations regarding the proper disposal of this material.

**14. TRANSPORT INFORMATION**

**DOT/TC/IMO/UN Proper Shipping Name:** Not regulated

**DOT/TC/IMO/UN Identification Number:** Not applicable

**DOT/IMO/UN Classification:** Not regulated



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### 15. REGULATORY INFORMATION

**OSHA (Occupational Safety and Health Administration):** This material is considered to be non-hazardous as defined by the OSHA Hazard Communication Standard. However, dusts and fumes from this product may be hazardous as identified in Sections 3 and 11.

| Component      | TSCA Inventory | DSL | SARA 313 (Deminimis) | SARA 302 | SARA 304 | CERCLA RQ | CAA 112(r)               | CA Prop 65 |
|----------------|----------------|-----|----------------------|----------|----------|-----------|--------------------------|------------|
| Aluminum       | X              | X   | X (1%)               | ---      | ---      | ---       | ---                      | ---        |
| Carbon         | X              | X   | ---                  | ---      | ---      | ---       | ---                      | ---        |
| Chromium Alloy | X              | X   | X (1%)               | ---      | X        | 5000      | X as Chromium Compounds  | ---        |
| Columbium      | X              | X   | ---                  | ---      | ---      | ---       | ---                      | ---        |
| Copper         | X              | X   | X (1%)               | ---      | X        | 5000      | ---                      | ---        |
| Iron           | X              | X   | ---                  | ---      | ---      | ---       | ---                      | ---        |
| Lead           | X              | X   | X (NA*)              | ---      | X        | 10        | X as Lead Compounds      | X          |
| Manganese      | X              | X   | X (1%)               | ---      | ---      | ---       | X as Manganese Compounds | ---        |
| Molybdenum     | X              | X   | ---                  | ---      | ---      | ---       | ---                      | ---        |
| Nickel         | X              | X   | X (0.1%)             | ---      | X        | 100       | X as Nickel Compounds    | X          |
| Nitrogen       | X              | X   | ---                  | ---      | ---      | ---       | ---                      | ---        |
| Phosphorous    | X              | X   | X (1%)               | X        | X        | 1         | X                        | ---        |
| Silicon        | X              | X   | ---                  | ---      | ---      | ---       | ---                      | ---        |
| Sulfur         | X              | X   | ---                  | ---      | ---      | ---       | ---                      | ---        |
| Tin            | X              | X   | ---                  | ---      | ---      | ---       | ---                      | ---        |
| Titanium       | X              | X   | ---                  | ---      | ---      | ---       | ---                      | ---        |
| Vanadium       | X              | X   | X (1%)               | ---      | ---      | ---       | ---                      | ---        |
| Zinc           | X              | X   | X (1%)               | ---      | X        | 1000      | ---                      | ---        |

\*Except when used in alloys

**California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):** Warning: This material / product contains chemicals (as listed above) known to the State of California to cause cancer, and birth defects or other reproductive harm.

**Sections 311/312:** This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of SARA Title III and is considered, under applicable definitions, to meet the following categories:

Acute: No      Chronic: Yes      Fire: No      Reactivity: No

This material has not been identified as a carcinogen by NTP, IARC or OSHA.



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#### NOTIFICATION PURSUANT TO EPCRA, 40 CFR PART 372.45

This material contains toxic chemicals which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372. The following chemicals contained in this material are subject to the reporting requirements of Section 313:

| Chemical       | CAS Number | Typical Weight Percentage |
|----------------|------------|---------------------------|
| Aluminum       | 7429-90-5  | 0.08 max                  |
| Chromium Alloy | 7440-47-3  | 0.10 max                  |
| Copper         | 7440-50-8  | 0.25 max                  |
| Lead           | 7439-92-1  | 0.001 – 0.015             |
| Manganese      | 7439-96-5  | 0.10-1.35                 |
| Nickel         | 7440-02-0  | 0.10 max                  |
| Phosphorus     | 7723-14-0  | 0.025 max                 |
| Vanadium*      | 7440-62-2  | 0.04 max                  |
| Zinc           | 7440-66-6  | >99                       |

\*Except when used in alloys

#### 16. Documentary Information and DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Issue Date: April 1, 2010

Previous Issue Date: October 14, 2008

This product may be treated with a surface passivation material. Hazards associated with exposure to the surface passivation treatment are not covered on this MSDS. An accompanying MSDS specific to the hazards associated with the surface passivation treatment must be used with this MSDS. If the surface passivation treatment MSDS is not included with this MSDS, contact California Steel Industries, Inc. for a copy of the MSDS.

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