

Galvanized Carbon and High Strength – Low Alloy Steel (Hot Dipped)

## Material Safety Data Sheet

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

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Galvanized Carbon and High Strength – Low Alloy Steel (Hot Dipped)  
**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	0.10-1.25	7439-96-5
Silicon	0.35 max	7440-21-3
Carbon	0.30 max	7440-44-0
Copper	0.35 max	7440-50-8
Nickel	0.10 max	7440-02-0
Chromium	0.10 max	7440-47-3
Aluminum	0.08 max	7429-90-5
Molybdenum	0.05 max	7439-98-7
Columbium	0.050 max	7440-03-1
Sulfur	0.025 max	7704-03-1
Phosphorus	0.025 max	7723-14-0
Tin	0.020 max	7440-31-5
Nitrogen	0.012 max	7727-37-9
Vanadium	0.08 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	0.20-0.50	7429-90-5
Lead	0.015 – 0.025	7439-92-1

Galvanized Carbon and High Strength – Low Alloy Steel (Hot Dipped)

### 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.

## Galvanized Carbon and High Strength – Low Alloy Steel (Hot Dipped)

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	2
	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

## Galvanized Carbon and High Strength – Low Alloy Steel (Hot Dipped)

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.

**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.

# California Steel Industries, Inc.

Effective Date: April 29, 2005

Galvanized Carbon and High Strength – Low Alloy Steel (Hot Dipped)

## Exposure Guidelines

Component	ACGIH TLV	ACGIH STEL	OSHA PEL	OSHA STEL
Nuisance particulates, if generated	10 mg/m <sup>3</sup> - total 3 mg/m <sup>3</sup> - respirable	None	15 mg/m <sup>3</sup> total 5 mg/m <sup>3</sup> respirable	None
Chromium	0.5 mg/m <sup>3</sup>	None	1 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
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> (CEIL)
Nickel	1.5 mg/m <sup>3</sup> 0.2 mg/m <sup>3</sup> (insol)	None	1 mg/m <sup>3</sup>	None
Zinc (Oxide)	5 mg/m <sup>3</sup> (fume) 10 mg/m <sup>3</sup> (dust)	10 mg/m <sup>3</sup> (fume)	5 mg/m <sup>3</sup> (fume) 15 mg/m <sup>3</sup> (oxide) tot. 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.

Galvanized Carbon and High Strength – Low Alloy Steel (Hot Dipped)

**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.

# California Steel Industries, Inc.

Effective Date: April 29, 2005

Galvanized Carbon and High Strength – Low Alloy Steel (Hot Dipped)

## 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

## 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 (Deminimus)	SARA 302	SARA 304	CERCLA RQ	CAA 112(r)	CA Prop 65
Aluminum	X	X	X (1%)	---	---	---	---	---
Carbon	X	X	---	---	---	---	---	---
Chromium	X	X	X (1%)	---	X	5000	---	X
Columbium	X	X	---	---	---	---	---	---
Copper	X	X	X (1%)	---	X	5000	---	---
Iron	X	X	---	---	---	---	---	---
Lead	X	X	X (NA*)	---	X	10	---	X
Manganese	X	X	X (1%)	---	---	---	---	---
Molybdenum	X	X	---	---	---	---	---	---
Nickel	X	X	X (0.1%)	---	X	100	---	X
Nitrogen	X	X	---	---	---	---	---	---
Phosphorous	X	X	X (1%)	X	X	1	---	---
Silicon	X	X	---	---	---	---	---	---
Sulfur	X	X	---	---	---	---	---	---
Tin	X	X	---	---	---	---	---	---
Titanium	X	X	---	---	---	---	---	---
Vanadium	X	X	X (1%)	---	---	---	---	---
Zinc	X	X	X (1%)	---	X	1000	---	---

\*NA = Not applicable

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

**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.

# California Steel Industries, Inc.

Effective Date: April 29, 2005

Galvanized Carbon and High Strength – Low Alloy Steel (Hot Dipped)

## 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	7440-47-3	0.10 max
Copper	7440-50-8	0.35 max
Lead	7439-92-1	0.015 – 0.025
Manganese	7439-96-5	0.10-1.25
Nickel	7440-02-0	0.10 max
Phosphorus	7723-14-0	0.025 max
Vanadium	7440-62-2	0.08 max
Zinc	7440-66-6	>99

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

Issue Date: April 29, 2005

Previous Issue Date: September 1, 2004

The information in this document is believed to be correct as of the date issued. **HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.** This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for this particular purpose and on the condition that he assume the risk of his use thereof.