



GALVANIZED STEEL

Safety Data Sheet

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

1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER

Product Name: Galvanized Steel

CAS Number: 65997-19-5

Chemical Name: Galvanized Steel

Chemical Family: Carbon Steel Alloy

Intended Use: Conventional manufacturing of steel related components

Company Identification

Manufacturer's Name: California Steel Industries, Inc.
Address: 14000 San Bernardino Ave., Fontana, California 92335
Telephone – General Information: (909) 350-6284

2. HAZARD(S) IDENTIFICATION

Classification

H317 – Sensitization, Skin – Category 1A
H351 – Carcinogenicity – Category 2

Label Elements



WARNING

May cause an allergic skin reaction. (H317)
Suspected of causing cancer. (H351)

Precautionary Statement(s)

Obtain special instructions before use. (P201)
Do not handle until all safety precautions have been read and understood. (P202)
Avoid breathing dust/fume. (P261)
Contaminated work clothing should not be allowed out of the workplace. (P271)
Wear protective gloves. (P280)
IF ON SKIN: Wash with plenty of water. (P302 + P352)
IF skin irritation or rash occurs: Get medical advice/attention. (P321)
Take off contaminated clothing and wash it before reuse (P362 + P364)
IF exposed or concerned: Get medical advice/attention (P308 + P313)
Store locked up. (P405)
Dispose contents/container to approved disposal facility. (P501)



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3. 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	0.35 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

4. FIRST AID MEASURES

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.

Most important symptoms and effects

Acute: Breathing or swallowing dusts or fumes from welding, grinding, sawing and burning may cause irritation of the nose, throat and digestive tract.

Delayed: None known.



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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.

5. FIRE FIGHTING MEASURES

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.

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

NFPA Fire Rating:	Health Hazard	0(2*)
	Flammability	0
	Reactivity	0

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

*If dust is generated

Fire Fighting Instructions: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. 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.

Hazardous Combustion Products: Combustion may yield smoke, metal oxides and other products of incomplete combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: 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). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways.

Methods for Containment and Clean-up: Notify relevant authorities in accordance with all applicable regulations. Immediately clean-up of any spill is recommended. Sweep up and package appropriately for disposal.



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7. HANDLING AND STORAGE

Precautions for safe handling: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. 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.

Conditions for safe storage: Keep away from any incompatible material (see Section 10).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component	ACGIH TLV	ACGIH STEL	OSHA PEL	OSHA STEL
Particulates, Not Otherwise Specified if generated	10 mg/m ³ total 3 mg/m ³ - respirable	None	15 mg/m ³ total 5 mg/m ³ respirable	None
Chromium Alloy	0.5 mg/m ³	None	1 mg/m ³	None
Iron (oxide dust & fume)	5 mg/ m ³ – respirable	None	10 mg/m ³	None
Manganese	0.02 mg/ m ³ – respirable 0.1 mg/ m ³ – inhalable	None	None	5 mg/m ³ (CEILING)
Nickel	1.5 mg/m ³ 0.2 mg/m ³ (insoluble)	None	1 mg/m ³	None
Zinc (Oxide)	2 mg/m ³ – respirable	10 mg/m ³ respirable	15 mg/m ³ (Oxide) total 5 mg/m ³ (oxide) respirable 5 mg/m ³ (fume)	None

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering Controls: 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.

Eye/Face Protection: The use of eye protection (such as goggles) that meets or exceeds ANSI Z.87.1 is recommended if dust is generated. Depending on conditions of use a face shield may be necessary.

Skin/Hand Protection: If dust is generated, handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.



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Respiratory: A NIOSH/MSHA approved air purifying respirator with a type N100 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 CFR1910.134 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.

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: 2750°F base material; 750°F coating

Solubility in water: Insoluble

Specific gravity (H₂O = 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.

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

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

Hazardous Polymerization: Not applicable



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11. TOXICOLOGICAL INFORMATION

Information on the Toxicological Effects of Substances / Mixture

<u>Acute Toxicity</u>	<u>Hazard</u>	<u>LC50/LD50 Data</u>
Inhalation	Non-hazardous	LC50 >5 mg/l (dust)
Skin Absorption	Non-hazardous	LD50 >2000 mg/kg
Ingestion	Non-hazardous	LD50 >5000 mg/kg

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.

Skin Corrosion / Irritation: Contact with dusts or particulates produced by cutting, welding or grinding may be abrasive and mildly irritation to the skin. Particulates ay cause a red-brown pigmentation of the skin following repeated exposure.

Serious Eye Damage / Irritation: Contact with dusts or particulates produced by cutting, welding or grinding may be abrasive and irritation to the eyes and cause stinging, watering and redness.

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

Skin Sensitization: Nickel, a component, may cause an allergic skin reaction.

Respiratory Sensitization: Not expected to be a respiratory sensitizer.

Germ Cell Mutagenicity: This material and its components have not been identified as mutagenic.

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

Reproductive Toxicity: No information available on the reproductive hazard of this material. However, manganese, a component, has demonstrated some effects on the male reproductive system. These effects are not sufficient enough to classify the material as a reproductive hazard (see below).

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure.

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure. Although Nickel has effects on the respiratory system, it is in this material below 1%.

Aspiration Hazard: Not applicable.

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. These effects do not meet the criteria for classifying it as a reproductive toxicant.

Nickel CAS# 7440-02-0

There is limited 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.



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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

This material is not classified as hazardous to the aquatic environment. Components greater than or equal to 1% are not classified as hazardous.

13. DISPOSAL CONSIDERATIONS

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

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

**GALVANIZED STEEL****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 (Demiminis)	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	---	---	---	---	---	---
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): 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 Pressure Hazard: No Reactivity: No

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

**GALVANIZED STEEL****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 (from coating	7440-66-6	>99

*Except when used in alloys

16. Documentary Information and DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Issue Date: November 18, 2013

Previous Issue Date: December 5, 2012

Reason for Revision: Updated to GHS

This product is typically coated with an oil to prevent oxidation. Hazards associated with exposure to the oil are not covered on this SDS. An accompanying SDS specific to the hazards associated with the oil must be used with this SDS. If the oil SDS is not included with this SDS, contact California Steel Industries, Inc. for a copy of the oil SDS.

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