

1. Identification

Product Identifier: **Galvanized (Electrolytic) Steel Sheet Items**

Manufacturer:

Hohmann & Barnard, Inc.
30 Rasons Court
Hauppauge, NY 11788
(631) 234-0600
www.h-b.com

Telephone Numbers

During normal business hours call: (800) 645-0616
24-hour emergency call Chemtrec: (800) 255-3924
(Outside the U.S.): 813-248-0585

Recommended use: For masonry construction products fabricated with galvanized steel

2. Hazards Identification

Classification of the Chemical:

As sold, this product, Galvanized (Electrolytic) Sheet is not hazardous according to the criteria specified in REACH [REGULATION (EC) No 1907/2006] and CLP [REGULATION (EC) No 1272/2008]. Under 29 CFR 1910.1200 Hazard Communication Standard, steel products are considered mixtures due to further processing which may produce dusts and or fume. 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. Precautionary Statement/Emergency Overview: This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other similar processes, potentially hazardous airborne particulate and fumes may be generated.

Signal Word: DANGER



GHS Label Statements:

- Suspected of causing cancer.
- Suspected of damaging fertility or the unborn child.
- Causes damage to lungs through prolonged or repeated inhalation exposure.
- Harmful if swallowed.
- May cause an allergic skin reaction.
- May cause respiratory irritation.
- Causes eye irritation.

GHS Classifications:

- This product is considered hazardous by The 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)
- Carcinogenicity-2
- Single Target Organ
- Acute Toxicity-Oral 4
- STOT Single Exposure - 3
- Toxic to Reproduction - 2
- Toxicity (STOT) Repeat Exposure - 1
- Skin Sensitization - 1
- Eye Irritation - 2B

PRECAUTIONARY STATEMENTS:

- Do not breathe dusts / fume / spray.
- Wear protective gloves / protective clothing / eye protection / face protection.
- Contaminated work clothing must not be allowed out of the workplace.
- 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 inhaled: Remove person to fresh air and keep comfortable for breathing.

If exposed, concerned or feel unwell: Get medical advice/attention.
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 If on skin: Wash with plenty of water. If irritation or rash occurs:
 Get medical advice/attention. Take off contaminated clothing and wash before reuse.
 Dispose of contents in accordance with federal, state and local regulations.

Hazards Not Otherwise Classified: None Known
 Unknown Acute Toxicity Statement (mixture): None Known

3. Composition/Information on Ingredients

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Weight, %*</u>
Iron	7439-89-6	>95
Manganese	7439-96-5	≤2.0
Nickel	7440-02-0	≤0.2
<u>Metallic Coating</u>		
Zinc	7440-66-6	0.14 – 4.2
Iron	7439-89-6	≤0.75

4. First-Aid Measures

Description of Necessary Measures: If exposed, concerned or feel unwell: Get medical advice/attention.

- Inhalation: Galvanized (Electrolytic) Sheet 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: This product 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.
- Ingestion: This product as sold/shipped is not a likely form of exposure. However during further processing (welding, grinding, burning, etc.). If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth. If exposed, concerned or feel unwell: Get medical advice/attention.

Most Important Symptoms/Effects, Acute and Delayed (chronic):

- Inhalation: This product as sold/shipped is not likely to present an acute or chronic health effect.
- Eye: This product as sold/shipped is not likely to present an acute or chronic health effect.
- Skin: This product as sold/shipped is not likely to present an acute or chronic health effect.
- Ingestion: This product as sold/shipped is not likely to present an acute or chronic health effect.n.

Immediate Medical Attention and Special Treatment: None Known

5. Fire-fighting measures

Suitable (and unsuitable) Extinguishing Media: Not applicable for Galvanized (Electrolytic) Sheet as sold/shipped. Use extinguishers appropriate for surrounding materials.

Specific Hazards Arising From the Chemical: Not applicable for this product as sold/shipped. When burned, toxic smoke and vapor may be emitted.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

Not applicable for Galvanized (Electrolytic) Sheet 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.

Methods and Material for Containment and Cleaning Up

Not applicable for this product as sold/shipped. Fine, dry material should be removed by vacuuming or wet sweeping methods to prevent spreading of dust. Avoid using compressed air. Do not release into sewers or waterways. 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.

7. Handling and storage

Precautions for Safe Handling

Not applicable for Galvanized (Electrolytic) Sheet 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. Practice good housekeeping. Avoid breathing metal fumes and/or dust. Do not eat, drink or smoke when using this product.

Conditions for Safe Storage, Including any Incompatibilities

Store away from acids and incompatible materials.

8. Exposure controls/personal protection

Occupational Exposure Limits (OELs):

Galvanized (Electrolytic) Sheet 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 high temperature (burning, welding), sawing, brazing, machining and grinding may produce fumes and/or particulates. The following exposure limits are offered as reference, for an experience industrial hygienist to review.

Ingredients 8(a)	OSHA PEL ¹	ACGIH TLV ²	OSH REL ³	IDLH ⁴
Iron	10 mg/m ³ (as iron oxide fume)	5.0 mg/m ³ (as iron oxide dust and fume)	5.0 mg/m ³ (as iron oxide dust and fume)	2,500 mg Fe/m ³
Manganese	"C" 5.0 mg/m ³ (as Fume & Mn compounds)	0.2 mg/m ³	"C" 5.0 mg/m ³ 1.0 mg/m ³ (as fume) "STEL" 3.0 mg/m ³	500 mg Mn/m ³
Nickel	1.0 mg/m ³ (as Ni metal & insoluble compounds)	1.5 mg/m ³ (as inhalable fraction 5 Ni metal) 0.2 mg/m ³ (as inhalable fraction Ni inorganic only insoluble and soluble compounds)	0.015 mg/m ³ (as Ni metal & insoluble and soluble compounds)	10 mg/m ³ (as Ni)

NE - None Established

1. OSHA PELs (Permissible Exposure Limits) 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. 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 (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted. ACGIH TLVs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes. 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.
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 in 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 2013 TLVs ® and BEIs ® (Biological Exposure Indices) Appendix D, paragraph A. when using this product. Wash hands before breaks and immediately after handling the product.

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.

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 generation of airborne particulates, use protective clothing, and gloves to prevent skin contact. Protective gloves should be worn as required for welding, burning or handling operations. Contaminated work clothing must not be allowed out of the workplace.
- Other protective equipment: An eyewash fountain and deluge shower should be readily available in the work area.

9. Physical and chemical properties

Appearance (physical state, color, etc.): Metallic Gray, Odorless	Upper/lower Flammability or Explosive Limits: NA
Odor: NA	Vapor Pressure: NA
Odor Threshold: NA	Vapor Density (Air = 1): NA
pH: NA	Relative Density: 7.85 g/cc Coating: 7.14 g/cc
Melting Point/Freezing Point: ~2750 °F (~1510 C), Coating: ~787 °F (~419 C)	
Solubility(ies): Insoluble	
Initial Boiling Point and Boiling Range: Coating: ~1700 °F (~927 C)	Partition Coefficient n-octanol/water: ND
Flash Point: NA	Auto-ignition Temperature: NA
Evaporation Rate: NA	Decomposition Temperature: ND
Flammability (solid, gas): Non-flammable, non-combustible	Viscosity: NA

NA - Not Applicable

ND - Not Determined for product as a whole

10. Stability and reactivity

Reactivity: Not Determined (ND)
 Chemical Stability: Steel products are stable under normal storage and handling conditions.
 Possibility of Hazardous Reaction: None Known
 Conditions to Avoid: Storage with strong acids or calcium hypochlorite.
 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.
 Hazardous Decomposition Products: Thermal oxidative decomposition of steel products can produce fumes containing oxides of iron and manganese as well as other alloying elements.

11. Toxicological information

Information on Toxicological Effects

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 by component:

- Iron and 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.
- Manganese and oxides: Manganese and Manganese oxide are harmful if swallowed.
- Nickel and oxides: Nickel may cause allergic skin sensitization. Nickel oxide may cause an allergic skin.

Delayed (chronic) Effects by component:

- Iron and oxides: Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in the development of a benign pneumoconiosis, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. Iron oxide is listed as a Group 3 (not classifiable) carcinogen by the International Agency for Research on Cancer (IARC).
- Manganese and oxides: Chronic exposure to high concentrations of manganese fumes and dusts may adversely affect the central nervous system with symptoms including languor, sleepiness, weakness, emotional disturbances, spastic gait, mask-like facial

expression and paralysis. Animal studies indicate that manganese exposure may increase susceptibility to bacterial and viral infections. Occupational overexposure (Manganese) is a progressive, disabling neurological syndrome that typically begins with relatively mild symptoms and evolves to include altered gait, fine tremor, and sometimes, psychiatric disturbances. May cause damage to lungs with repeated or prolonged exposure. Neurobehavioral alterations in worker populations exposed to MnO including: speed and coordination of motor function are especially impaired.

- Nickel and oxides: Exposure to nickel dusts and fumes can cause sensitization dermatitis, respiratory irritation, asthma, pulmonary fibrosis, edema, and may cause nasal or lung cancer in humans. Causes damage to lungs through prolonged or repeated inhalation exposure. IARC lists nickel and certain nickel compounds as Group 2B carcinogens (sufficient animal data). ACGIH 2013 TLVs® and BEIs® lists insoluble nickel compounds as confirmed human carcinogens. Suspected of damaging the unborn child.

12. Ecological Information

Ecotoxicity (aquatic & terrestrial): No Data Available for Galvanized (Electrolytic) Sheet 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.

Persistence & Degradability: No Data Available

Bioaccumulative Potential: No Data Available

Mobility (in soil): No data available for Galvanized (Electrolytic) Sheet as sold/shipped. However, individual components of the product have been found to be absorbed by plants from soil.

Other adverse effects: None Known

Additional Information:

Hazard Category: Not Reported

Signal Word: No Signal Word

Hazard Symbol: No Symbol

Hazard Statement: No Statement

13. Disposal Considerations

Disposal: Galvanized (Electrolytic) Sheet: 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 (off specification batches and unused products), or 15-01-04 (metallic packaging).

Please note this information is for Galvanized (Electrolytic) Sheet in its original form. Any alterations can void this information.

14. Transport information

US Department of Transportation (DOT) under 49 CFR 172.101 does not regulate Galvanized (Electrolytic) Sheet 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. No data available

Shipping Name: Not Applicable (NA)

Shipping Symbols: NA

Hazard Class: NA

UN No.: NA

Packing 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

15. Regulatory Information

Regulatory Information: The following listing of regulations relating to a U. S. Steel 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:

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

Section 313 Supplier Notification: The product, Galvanized (Electrolytic) Sheet contains the following toxic chemicals 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:

CAS #	Chemical Name	Percent by Weight
7439-96-5	Manganese	2.0 max
7440-02-0	Nickel	0.2 max

State Regulations: The product, Galvanized (Electrolytic) Sheet as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations:

California Prop. 65: Contains elements known to the State of California to cause cancer or reproductive toxicity. This includes nickel.

Other Regulations:

WHMIS Classification (Canadian): The product, Galvanized (Electrolytic) Sheet is not listed as a whole. However individual components are listed.

Ingredients	WHMIS Classification
Manganese	B4, D2A
Nickel	D2B

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.

16. Other information

Issue Date: May 31, 2015

Revision Date: May 31, 2015

Disclaimer: All information, recommendations, and suggestions appearing herein concerning this product are taken from sources or based upon data believed to be reliable. Although reasonable care has been taken in the preparation of this information, Hohmann & Barnard extends no warranties or guarantees, express or implied, makes no representations, and assumes no responsibility as to the accuracy, reliability or completeness of the information presented. Since the actual use of the product described herein is beyond our control, POSCO assumes no liability arising out of the use of the product by others. It is the user's responsibility to determine the suitability of the information presented herein, to assess the safety and toxicity of the product under their own conditions of use, and to comply with all applicable laws and regulations. Appropriate warnings and safe handling procedures should be provided to handlers and users.