



ISPAT INLAND INC.

Ispat Inland Flat Products Material Safety Data Sheet

I. **Manufacturer's Name:** Ispat Inland Inc.
 a subsidiary of Ispat International N.V.
Address: 3210 Watling Street (8-213)
 East Chicago, Indiana 46312
Chemical Name and Synonyms: Steel Sheet

Telephone Information:
 Mon. - Fri. (8:00 a.m. - 4:00 p.m.) (219) 399-5447
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II. PRODUCT IDENTIFICATION AND INGREDIENTS IDENTITY INFORMATION: See Chart

III. PHYSICAL DATA

Melting Points: Base Metal: Greater than 2700°F (1482°C) **Specific Gravity (H₂O = 1):** About 7.8
 Metallic Coatings: Aluminum 1216°F (658°C), Zinc 786°F (419°C) **Solubility in Water:** Not Soluble
Appearance: Sheet, strip, or plate that can vary from grayish to silver. A film of rust preventative oil may be present.
Odor: The product is practically odorless but the presence of a protective film may impart a refined oil aroma.

IV. FIRE AND EXPLOSION HAZARD DATA

Steel sheet products are not flammable, do not present an explosion hazard, and do not contribute to the combustion of other materials. Use fire fighting technique(s) or agent(s) applicable to surrounding materials.

V. HEALTH HAZARD AND INFORMATION DATA

Steel products under normal circumstances do not present an inhalation, skin contact, or ingestion hazard. Processes such as burning, cutting, welding, brazing, grinding, etc. that elevate the temperature of the product or produce dust may create elevated concentrations of contaminants. See Table 1: Exposure Information for applicable statutory or recommended occupational exposure limits for contaminants that may be generated during the processing of steel sheet products. There is no American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) or OSHA Permissible Exposure Limit (PEL) for steel. Except as otherwise stated, the following ingredients are not listed in the NTP Annual Report on Carcinogens, or found to be a potential carcinogen in the IARC Monographs or by OSHA.

Effects of Overexposure:

Acute - Dust or fume may cause irritation to the eyes, nose, or throat and may leave a metallic taste in the mouth. Inhalation of the oxides (fresh and typically the result of a welding or torch cutting type activity) of manganese, zinc, or copper may be manifested as flu-like symptoms (24-48 hours characterized by chills, fever, aching muscles, dryness of the mouth and throat, and/or headache) commonly known as "metal fume fever." Some sheet products are shipped with a film of protective coating. Contact with the protective coating may result in skin irritation; welding or torch cutting may produce fume or vapor that may cause eye and/or respiratory tract irritation.

Chronic - **Aluminum:** Inhalation of aluminum (aluminum oxide) fume may result in a benign pneumoconiosis.

Antimony: Inhalation of antimony compounds may result in a benign pneumoconiosis. Inhalation may also result in headache, pain or tightness in the chest, shortness of breath, metallic taste, nausea, gingivitis, or anemia. Contact may cause itching or skin eruptions.

Chromium: Chromium metal and its insoluble salts are considered relatively non-toxic but when inhaled have been associated with decreased pulmonary function in the presence of confounding contaminants. Soluble chromic and chromous salts are considered as possible irritants, allergens, and sensitizers through inhalation and contact. Hexavalent chromium compounds are irritants and corrosive and may enter and affect the body through inhalation, ingestion, or skin contact. The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) report they possess sufficient evidence to establish a causal relationship for human cancer for chromium and certain chromium compounds.

Copper: Inhalation may result in nose and throat irritation, nasal ulceration, and metallic taste and prolonged contact may cause dermatitis. Individuals with Wilson's disease are susceptible to elevated rates of copper metabolism and storage.

Iron: Inhalation of iron oxide fume or dust may result in a deposit in the lung tissue that causes a condition known as siderosis. This condition is benign and no physical impairment is indicated.

Manganese: Inhalation may result in symptoms such as headache, restless sleep patterns, restlessness, personality changes, neurological dysfunction, or muscular weakness.

Nickel: Inhalation may result in inflammation of the respiratory tract that may be accompanied by fever. Nickel compounds are known sensitizers. The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) report they possess limited evidence of human carcinogenicity for nickel and certain nickel compounds.

Titanium: Inhalation of titanium oxides may result in pulmonary irritation without disabling pneumoconiosis.

Vanadium: Inhalation of vanadium oxides may result in metallic taste, throat irritation, cough and/or bronchitis. Contact may cause local irritation.

VI. REACTIVITY DATA AND PHYSICAL HAZARDS

Stability: Considered stable under conditions of use, storage and transportation.

Incompatibility: Not Applicable.

Hazardous Polymerization: Not Applicable.

Conditions to Avoid: Not Applicable

VII. SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled: Steel products are stable but massive and can easily destroy objects in their path. If the product is spilled it should be determined if any utilities (power, water, or gas), persons, or vehicles are involved. Steel products conduct

electricity. Control the situation. Assist the injured, control traffic, and control sources that may cause injury. Notify the nearest fire fighting facility.

Waste Disposal Method: Damaged products described herein are not considered a hazardous waste under the Resource Conservation and Recovery Act (RCRA). The material may be claimed for reuse and/or recycle.

VIII. EMERGENCY AND FIRST AID PROCEDURES

Inhalation: In the event of excessive exposure to dust or fume, remove the employee to fresh air. If breathing is difficult, administer artificial respiration or oxygen. Obtain immediate medical assistance.

Skin: Abrasions and cuts should be washed and closed by a clean compress and be immediately medically treated. Burns must be immediately medically treated. Should skin irritation occur, wash affected area with mild soap and rinse with clean, warm water.

Eyes: Depending upon the type and nature of exposure, relief may be obtained by fresh air or rinsing the eyes with clean water. Obtain medical assistance.

Medical Conditions Aggravated by Exposure: Persons with a predisposition to respiratory disorders (i.e., asthma, emphysema, etc. may be adversely affected by particulates or respiratory irritants generated during the manufacturing process.

IX. SPECIAL PROTECTION INFORMATION AND CONTROL MEASURES

Consult your regional codes or Code of Federal Regulations, Title 29, Part 1910; Subpart G - Occupational Health and Environmental Control; Subpart I - Personal Protective Equipment; Subpart Q - Welding, Cutting, and Brazing; and Subpart Z - Toxic and Hazardous Substances. Certain welding type activities may produce hazardous substances such as carbon monoxide, ozone, phosgene in the presence of certain chemicals, or produce inert suffocating atmospheres in addition to the production of ultraviolet radiation and/or noise.

Ventilation: Local exhaust or ventilation systems sufficient to maintain exposure levels to contaminants below prescribed limits may be required.

Personnel Protection:

Inhalation: When controls are not sufficient to reduce the exposure below the applicable exposure limit then use NIOSH approved respiratory protection within the use limitations of the respirator.

Contact: Appropriate protective gloves, wristlets or clothing should be used to protect against cutting edges or material with an oil film. Replace damaged or oil soaked gloves and/or garments. Appropriate heat shielding garments should be used for activities using or generating heat.

Eyes: Use safety glasses, goggles, helmet, face shield as appropriate to the operation.

Precautions to be taken in handling and storing: Be alert to sharp edges, slippery surfaces when handling, and unsecured lifts.

X. OTHER INFORMATION

SARA Section 313 Toxic Chemical List, De Minimis Concentrations:

Greater than 1.0%	Greater than 0.1%	Zero	WELKOTE-U Organic Composite	
Antimony Compounds	Nickel Compounds	Lead Compounds	Organic Film	
Chromium Compounds		Steel sheet	(includes chromate layer)	Type 1
Copper Compounds		typically contains	Epoxy Resin	<59%
Manganese Compounds		<0.001% lead	SiO ₂	<39%
Zinc Compounds			Polyethylene Wax	<5%
Aluminum (dust and fume)			Blocked Isocyanate	<21%
Vanadium (dust and fume)			Cr	<8%
			Zn	<0.8%
			Zr	<0.4%
			F	<0.4%
			Si	<0.3%

Potential SARA Hazard Categories are:

- Immediate (acute) health hazard
- Delayed (chronic) health hazard

California Proposition 65: The state of California lists cadmium and cadmium compounds, chromium (hexavalent compounds), and lead as chemicals known to cause cancer or reproductive toxicity. Cadmium, cadmium compounds, and lead may be present as impurities of the manufacturing process. Chromium (hexavalent compounds) may be generated during certain manufacturing processes.

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Health & Safety

Prepared by: W. R. Koenig

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DISCLAIMER

ISPAT INLAND MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability with the use or handling of any material beyond Ispat Inland's control. Variations in methods, conditions, equipment used to store, handle or process the material and hazards connected with the use of the material are solely the responsibility of the user and remain at its sole discretion.

When applicable, the product described in this MSDS is considered to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910.1200 *et. seq.* This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Ispat Inland's Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe work-place, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required.

Product Description	CAS NUMBER:	INGREDIENTS AND TYPICAL PERCENT COMPOSITION BY WEIGHT										METALLIC COATINGS			
		7439-89-6	7439-96-5	7429-90-5	7440-47-3	7440-50-8	7440-02-0	7704-34-9	7440-62-2	7440-32-6	7440-36-0	7440-66-6	7439-89-6	7429-90-5	7440-02-0
		Iron	Manganese	Aluminum	Chromium	Copper	Nickel	Sulfur	Vanadium	Titanium	Antimony	Zinc	Iron	Aluminum	Nickel
Cold Rolled and Electrolytic Galvanized Products															
1. Cold Rolled Sheet including I/N Tek Cold Rolled*		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	—	—	—	—
2. DECOR™ Embossed Cold Rolled Steel*		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	—	—	—	—	—	—
3. Zinkote (Electrolytic Galvanize)**		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>98	—	—	—
4. DECOR® Embossed Zinkote**		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>98	—	—	—
5. DURZINKLITE**		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	—	—	>85	—	—	<14
6. WELKOTE-U (#Organic Composite Coated Steel)**		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	—	—	>85	—	—	<14
7. HI-FORM™ including HFY and HFT		>95	<1.7	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	—	—	—	—
8. CAL HI-FORM		>95	<1.7	<0.1	<0.1	<0.2	<0.1	<0.1	—	—	—	—	—	—	—
9. CAL DI-FORM™		>95	<1.7	<0.1	<0.1	<0.2	<0.1	<0.1	—	—	—	—	—	—	—
10. ISOdent		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.1	—	—	—	—	—
11. MINdent		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	—	—	—	—	—	—
12. MartInsite®		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.1	—	—	—	—	—
13. Motor Lamination		>95	<1.4	<0.3	<0.1	<0.2	<0.1	<0.1	—	—	<0.1	—	—	—	—
14. Incore FP		>95	<1.0	<0.3	<0.1	<0.2	<0.1	<0.1	—	—	<0.1	—	—	—	—
15. Ti-Namel® Sheet and Titanium Bearing Sheet		>95	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	—	<0.7	—	—	—	—	—
16. PINacle Sheet		>95	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	—	0.2	—	—	—	—	—
17. Mill/Nium®		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	0.2	—	—	—	—	—
18. Electrosite		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	0.1	—	>98	—	—	—
19. ElectroFORM		>95	<1.7	<0.1	<0.1	<0.2	<0.1	<0.1	—	—	—	>98	—	—	—
20. ElectroDI-FORM		>95	<1.7	<0.1	<0.1	<0.2	<0.1	<0.1	—	—	—	>98	—	—	—
Hot Dipped Coated Products															
21. TI-CO® Galvanized Sheet including HI-FORM and HFY		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>98	—	—	—
22. TI-CO® Galvanized DECOR™ Embossed		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>98	—	—	—
23. DURGRIP Galvannealed Sheet incl. HI-FORM and HFY		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>87	<13	—	—
24. GALVEX TI-CO Galvanized Sheet incl. HI-FORM and HFY		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>98	—	—	—
25. GALVEX DURGRIP Galvannealed Sheet incl. HI-FORM and HFY		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>87	<13	—	—
26. DURGRIP-E Galvannealed Sheet incl. HI-FORM and HFT		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>87	<13	—	—
27. GALVEX DURGRIP-E Galvannealed incl. HI-FORM and HFT		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>87	<13	—	—
28. ALUMINIZED Sheet including HI-FORM		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	—	<4	>85	—
29. TI-CO Galvanized Culvert Sheet		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	—	—	>98	—	—	—
30. DURGRIP Galvanized and Sheet HFT		>95	<1.2	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>87	<13	—	—
31. GALVEX DURGRIP Galvannealed Sheet HFT		>95	<1.2	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>87	<13	—	—
32. TI-CO® Galvanized MINdent		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	>98	—	—	—
Hot Rolled Sheet															
33. Hot Rolled Sheet incl. SAE 1005-1026***		>95	<1.0	<0.1	<0.1	<0.2	<0.1	<0.1	—	<0.2	—	—	—	—	—
34. INX and HSLA		>95	<1.5	<0.1	<0.1	—	<0.1	<0.1	<0.2	—	—	—	—	—	—
35. HI-FORM™ including HFY		>95	<1.4	<0.1	<0.1	—	<0.1	<0.1	<0.2	—	—	—	—	—	—
36. SAE 1522, 1524, 1526 and 1527		>95	<1.7	<0.1	<0.1	—	<0.1	<0.1	—	—	—	—	—	—	—
37. ASTM A414 and A1011 Structural Steel		>95	<1.7	<0.1	<0.1	—	<0.1	<0.1	—	—	—	—	—	—	—
38. Titanium Bearing		>95	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	—	<0.7	—	—	—	—	—

*except as modified by items 7 through 17 **except as modified by items 7 through 11 and 15 through 17 ***except as modified by items 34 through 38 #see Section X

Table 1: Exposure Information

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CONTAMINANT	EXPOSURE LIMITS (MILLIGRAMS PER CUBIC METER)	
	OSHA PEL	ACGIH TLV
IRON (as Fe ₂ O ₃ fume) (Dust or fume as Fe)	10 not applicable	not applicable 5
Aluminum (Welding fume as Al) (metal dust)	Not applicable 15	5 10
(metal dust, respirable fraction)	5	not applicable
Antimony and compounds (as Sb)	0.5	0.5
Chromium (+2, +3 compounds as Cr)	0.5	not applicable
(+6 water sol. compounds as Cr)	0.1(ceiling)	0.05
(Insoluble +6 Cr compounds as Cr)	not applicable	0.01
(Chromic acid / chromates as CrO ₃)	0.1 (ceiling)	not applicable
(Metal and +3 compounds as Cr)	not applicable	0.5
(Metal and insoluble salts, as Cr)	1	not applicable
Copper Dust (as Cu)	1	1
Fume (as Cu)	0.1	0.2
Manganese (as Mn)	5 (ceiling)	0.2
Nickel Metal	1	1.5
Soluble compounds (as Ni)	1	0.1
Insoluble compounds (as Ni)	1	0.2
Sulfur (as sulfur dioxide)	13	5.2 (13 STEL)
Titanium (dioxide)	15 (dust)	10
Vanadium (as V ₂ O ₅) Respirable dust	0.5 (ceiling)	0.05
Fume	0.1 (ceiling)	0.05
Zinc (oxide) Fume	5	5 (10 STEL)
Total dust	15	10
Respirable fraction	5	not applicable
Welding fume	not applicable	5 (inside welding helmet)
Particulates not otherwise classified (PNOC) Respirable fraction	15 5	10 3

STEEL SHEET

CAUTION: Inhalation of high concentrations of dust or fume from further processing, such as welding, burning, melting, cutting, brazing, grinding, or machining may result in respiratory distress, central nervous system effects, or possibly affect other organs. These products may be coated with an oil film which upon prolonged or repeated skin contact may result in skin irritation.

PRECAUTIONS: Avoid inhalation of airborne particulates by appropriate respiratory protection and/or suitable exhaust ventilation. Minimize contact with oil film when present. Use impervious garments.

FIRST AID: Inhalation — remove person to fresh air. If breathing is difficult or stopped, administer oxygen or artificial respiration. Obtain medical assistance. Contact — wash areas with a mild soap and water. If irritation persists, seek medical attention.

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