



SAFETY DATA SHEET

OCC-SDS TMP 08-01-16

SECTION 1 - IDENTIFICATION

1.1 Product Name: Electrolytic Tin Plate and Tin Coated Sheet (Tin Mill Products)

1.2 Intended Use: Conventional Manufacturing of steel related products

1.3 Manufacturer: Ohio Coatings Company

2100 Tin Plate Place
Yorkville, OH 43971
740-859-5565

1.4 Emergency Phone Number: 740-859-5565

SECTION 2 – HAZARDS IDENTIFICATION

2.1 Classification of Chemicals:

As sold, this product, **Electrolytic Tin Plate and Tin Coated Steel**, is not considered hazardous under Cal-OSHA 8CCR Section 5194. Under 29 CFR 1910.1200 steel products are considered articles/mixtures due to further processing which may produce fume and/or dust. When the product is subjected to further processing (such as sawing, welding, burning, melting, grinding, brazing, or similar processes) potentially hazardous airborne particulate and fumes may be generated.



- Carcinogenicity (Category 2)
- Toxic to Reproduction (Category 2)
- Specific Target Organ Toxicity (STOT) - Repeat Exposure (Category 1)

- Acute Toxicity – Oral (Category 4)
- Skin Sensitization (Category 1)
- Specific Target Organ Toxicity (STOT) –Single Exposure (Category 3)

- Eye Irritation (Category 2B)

2.2 Signal Word: DANGER

SECTION 2 – HAZARDS IDENTIFICATION (continued)**2.3 Hazard Statements:**

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

2.4 Precautionary Statements:

- Do not breath dusts / fume / spray.
- Wear protective gloves / protective clothing / eye protection / face protection.
- Contaminated work clothing must not be allowed out of the workplace.
- Wash thoroughly after handling.
- Use only outdoors or in well ventilated areas.
- Do not handle until all safety precautions have been read and understood.
- Do not eat, drink, or smoke when using this product.
- Obtain special instructions before use.
- If inhaled – Remove person to fresh air and keep comfortable for breathing.
- If exposed, concerned, or feel unwell – Get medical attention/advice.
- 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.
- If in eyes – Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.5 Hazards Not Otherwise Classified: None Known.

2.6 Unknown Acute Toxicity Statement (mixture): None Known

SECTION 3 – COMPOSITION / INFORMATION on INGREDIENTS**3.1 Chemical Name, CAS Number, and Concentration:**

	Chemical Name	CAS Number	% by Weight
Base Metal	Iron	7439-89-6	> 98
	Carbon	7440-44-0	.01 - .13
	Manganese	7439-96-5	.60 max
	Nickel	7440-02-0	.15 max
	Copper	7440-50-8	.20 max
	Aluminum	7429-90-5	.20 max
	Coating	Tin	7440-31-5
Chromium		7440-47-3	.001 max
ATBC oil		77-90-7	.001 max

- All steel products contain small quantities of “trace” or “residual” elements that originate in the raw material used and are not intentionally added. These elements include, but not limited, to phosphorous, sulfur, tin, molybdenum, and silicon with maximum concentration levels of < .02%

CAS – Chemical Abstract Service

SECTION 4 – FIRST-AID MEASURES

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

- **Inhalation:** This product as sold/shipped is not a likely form of exposure. However, during processing (welding, grinding, burning, etc.), potential exposure may occur. If inhaled: Remove person to fresh air and keep comfortable for breathing.
- **Eye Contact:** This product as sold/shipped is not a likely form of exposure. However, during processing (welding, grinding, burning, etc.), potential exposure may occur. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention if irritation persists.
- **Skin Contact:** If on skin: Washing thoroughly after handling. Wash with plenty of water. If irritation or rash occurs – Get medical attention/advise. Remove and wash contaminated clothing before reuse.
- **Ingestion:** This product as sold/shipped is not a likely form of exposure. However, during processing (welding, grinding, burning, etc.), potential exposure may occur. If swallowed – rinse mouth. If concerned or feel unwell – Get medical attention/advise.

4.2 Most important Symptoms/Effects, Acute and Delayed (chronic).

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

4.3 Immediate Medical Attention and Special Treatment: None Known.

SECTION 5 – FIRE FIGHTING MEASURES

5.1 Suitable extinguishing media: Not applicable for this product as sold/shipped. Use extinguishers appropriate for surrounding materials.

5.2 Unsuitable extinguishing media: None.

5.3 Hazardous combustion products: Not applicable for this product as sold/shipped. Metallic coating will begin to melt around 450° F (232° C) and base metal will begin to melt around 2750° F (1510° C). This product will proceed to a liquid and will form irritating and toxic gaseous metallic oxides at extremely high temperatures.

5.4 Unusual fire or explosion hazards: Not applicable for solid product. Do not use water on molten metal.

5.5 Special protective equipment and precautions for firefighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

5.6 Fire-fighting equipment/instructions: Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1 Spill / Leak Procedures: Not applicable for this product 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. Fine, dry material should be removed by vacuuming or wet sweeping methods to prevent spreading of dust. Avoid using compressed air.

6.2 Disposal: 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.

SECTION 7 – HANDLING and STORAGE

7.1 Handling Precautions: Not applicable for this product 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. Practice good housekeeping.

7.2 Storage Precautions: Store away from acids and incompatible materials.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

8.1 Occupational Exposure Limits (OELs): Not Applicable for Electrolytic Tin Plate and Tin Coated Sheet as sold/shipped. However, further processing (burning, welding, grinding, brazing, machining, etc.) may produce fumes and/or particulates. The following exposure limits are offered as reference for an experienced industrial hygienist to review.

INGREDIENTS	CAS Number	OSHA PEL ¹	ACGIH TLV ²	NIOSH REL ³
Iron	7439-89-6	10 mg/m ³ - iron oxide fume	5 mg/m ³ - iron oxide fume	5 mg/m ³ - iron oxide fume
Carbon	7440-44-0	15 mg/m ³ - total dust (PNOR) 5.0 mg/m ³ - respirable fraction, (PNOR)	10 mg/m ³ - inhalable fraction, PNOS 3.0 mg/m ³ -inhalable fraction, PNOS	NE
Manganese	7439-96-5	5.0 mg/m ³ (C) - Fume and Mn compounds	0.2 mg/m ³	5.0 (C) mg/m ³ 1.0 mg/m ³ - as fume 3.0 mg/m ³ - STEL
Nickel	7440-02-0	1.0 mg/m ³ - Ni metal & insoluble compounds	1.5 mg/m ³ - inhalable fraction Ni metal .2 mg/m ³ - inhalable fraction Ni inorganic only insoluble and soluble compounds	0.015 mg/m ³ - Ni metal & insoluble and soluble compounds
Copper	7440-50-8	0.1 mg/m ³ - fume (as Cu) 1 mg/m ³ - dusts & mists (Cu)	0.2 mg/m ³ - fume (as Cu) 1 mg/m ³ - dusts & mists (Cu)	1 mg/m ³
Aluminum	7429-90-5	15 mg/m ³ - total dust 5 mg/m ³ - respirable fraction	10 mg/m ³ - metal dust 5 mg/m ³ - welding fume	10 mg/m ³
Tin	7440-31-5	2.0 mg/m ³ - inorganic compounds, Sn	2.0 mg/m ³ - metal and inorganic compounds, Sn	2.0 mg/m ³ - also applies to other inorganic tin compounds, as Sn, except tin oxides
Chromium	7440-47-3	1.0 mg/m ³ - Cr metal 0.5 mg/m ³ as Cr II & III compounds .005 mg/m ³ - Cr IV, inorganic compounds & certain water insoluble	0.5 mg/m ³ - Cr metal 0.5 mg/m ³ as Cr III compounds 0.05 mg/m ³ - Cr IV, inorganic compounds 0.01 mg/m ³ - Cr IV, inorganic compounds & certain water insoluble	250 mg/m ³ - Cr II & metal 25 mg/m ³ - Cr III 15 mg/m ³ - Cr IV

¹ OSHA Permissible Exposure Limits (PELs) 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. A Peak is defined as the acceptable maximum peak for a maximum duration above the ceiling concentration for an eight hour shift. A skin notation refers to the potential significant contribution to the overall exposure by the cutaneous route, either by contact with vapors or, of probable greater significance, by direct skin contact with the substance. A Short Term Exposure Limit (STEL) is defined as a 15 minute exposure, which should not be exceeded at any time during the workday. 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. 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 guidance purposes only and as such are not legal, regulatory limits for compliance purposes.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION (continued)

PNOR (Particulates Not Otherwise Regulated). All inert or nuisance dusts, whether mineral, inorganic, or organic not listed specifically by substance name are covered by a limit which is the same as the inert or nuisance dust limit of 15 mg/m³ for total dust and 5 mg/m³ for respirable fraction.

PNOS (Particulates Not Otherwise Specified). Particulates identified under PNOS heading are “nuisance dusts” containing no asbestos and <1% silica.

Respirable fraction. The concentration of respirable dust for the application of this limit is to be determined from the fraction passing a size-selector with the characteristics defined in ACGIH 2015 TLVs and BEIs Appendix D, paragraph C.

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 ACGIH 2015 TLVs and BEIs Appendix D, paragraph C.

8.2 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.

8.3 Individual Protective 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 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.

SECTION 9 – PHYSICAL and CHEMICAL PROPERTIES

9.1 Appearance (physical state, color, etc.): Solid, Metallic Gray

9.2 Odor: Odorless

9.3 Odor Threshold: NA

9.4 pH: NA

9.5 Melting Point/Freezing Point: ~2750 °F (~1510 C)

9.6 Initial Boiling Point and Boiling Range: ND

9.7 Flash Point: NA

9.8 Evaporation Rate: NA

9.9 Flammability (solid, gas): Non-flammable, non-combustible

9.10 Upper/lower Flammability / Explosive Limits: NA

9.11 Vapor Pressure: NA

9.12 Vapor Density (Air = 1): NA

9.13 Relative Density: 7.85

9.14 Solubility(ies): Insoluble

9.15 Partition Coefficient n-octanol/water: ND

9.16 Auto-ignition Temperature: NA

9.17 Decomposition Temperature: ND

9.18 Viscosity: NA

NA – Not Applicable

ND – Not Determined for product as a whole

SECTION 10 – STABILITY and REACTIVITY

10.1 Reactivity: Not Determined (ND) for product in a solid form. Do not use water on molten metal.

10.2 Chemical Stability: Steel products are stable under normal storage and handling conditions.

10.3 Possibility of hazardous reaction: None Known






10.4 Conditions to Avoid: Storage with strong acids or calcium hypochlorite.

10.5 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.

10.6 Hazardous Decomposition Products: Thermal oxidative decomposition of steel products can produce fumes containing oxides of iron and manganese as well as other alloying elements.

SECTION 11 – TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects: The following toxicity data has been determined for Electrolytic Tin Plate and Tin Coated Sheet Products when further processed using the information available for its components applied to the guidance on the preparation of an SDS under the GHS requirements of OSHA and the EU CPL:

Hazard Classification	Hazard Category		Hazard Symbols	Signal Word	Hazard Statement
	EU	OSHA			
Eye Damage / Irritation (covers Categories 1, 2A & 2B)	NA*	2B ^c	No Pictogram	Warning	Causes eye irritation – Rating due to iron particulate generated from further processing (welding, grinding, burning, etc.)
Skin/Dermal Sensitization (covers Category 1)	NA*	1 ^d		Warning	May cause an allergic skin reaction – Nickel is a skin sensitizer.
Carcinogenicity (covers Categories 1A, 1B, & 2)	NA*	2 ^g		Warning	Suspected of causing cancer – Rating due to nickel particulate or fume that can enter the body, generated when further processed (welding, burning, grinding, etc.)
Toxic Reproduction (covers Categories 1A, 1B & 2)	NA*	2 ^h		Warning	Suspected of damaging fertility or the unborn child. Rating due to nickel particulate or fume that can enter the body, generated when further processed (welding, burning, grinding, etc.)
Specific Target Organ Toxicity (STOT) Following Single Exposure (covers Categories 1-3)	NA*	3 ⁱ		Warning	May cause respiratory irritation. – Rating due to nickel particulate or fume that can enter the body, generated when further processed (welding, burning, grinding, etc.)
STOT following Repeated Exposure (covers Categories 1 and 2)	NA*	1 ^j		Danger	Causes damage to lungs and central nervous system through prolonged or repeated inhalation exposure. Rating due to nickel particulate or fume that can enter the body, generated when further processed (welding, burning, grinding, etc.)

* Not Applicable. Semi-formed steel products are considered articles under Reach regulation (REACH REGULATION (EC) No 1907/2006) and are not subject to classification under CLP regulation (REGULATION (EC) No 1272/2008)

Toxicological data listed below are presented regardless to classification criteria. Individual hazard classification categories where the toxicological information has met or exceeded a classification criteria threshold are listed above.

a. No LC50 or LD50 has been established for **Tin Mill Products**. The following data has been determined for the components:

Iron: Rat LD50 =98.6 g/kg (REACH) **Nickel:** LD50 >9000 mg/kg (Oral/Rat)
 Rat LD50 =1060 mg/kg (IUCLID) **Carbon:** LD50= >10,000 mg/kg (Oral/ Rat)
 Rat LD50 =984 mg/kg (IUCLID) **Manganese:** Rat LD50 > 2000 mg/kg (REACH)
 Rabbit LD50 =890 mg/kg (IUCLID) Rat LD50 > 9000 mg/kg (NLM Toxnet)
 Guinea Pig LD50 =20 g/kg (TOXNET) **Silicon:** LD50 = 3160 mg/kg (Oral/Rat)

b. No Skin (Dermal) Irritation data available for **Tin Mill Products** as a mixture or its components.

c. No Eye Irritation data available for **Tin Mill Products** as a mixture. The following Eye Irritation information was found for the components:

- **Iron:** Causes eye irritation.
- **Nickel:** Slight eye irritation from particulate abrasion only.
- **Silicon:** Slight eye irritation in rabbit protocol.

SECTION 11 – TOXICOLOGICAL INFORMATION (continued)

d. No Skin (Dermal) Sensitization data available for **Tin Mill Products** as a mixture. The following Skin (Dermal) Sensitization information was found for the components:

- **Nickel:** May cause allergic skin sensitization.

e. No Respiratory Sensitization data available for **Tin Mill Products** as a mixture or its components.

f. No Germ Cell Mutagenicity data available for **Tin Mill Products** as a mixture. The following Mutagenicity and Genotoxicity information was found for the components:

- **Iron:** IUCLID has found some positive and negative findings in vitro.
- **Nickel:** EU RAR has found positive results in vitro and in vivo but insufficient data for classification.

g. Carcinogenicity: IARC, NTP, and OSHA do not list **Tin Mill Products** as carcinogens. The following Carcinogenicity information was found for the components:

- **Welding Fumes** - IARC Group 2B carcinogen, a mixture that is possibly carcinogenic to humans.
- **Chromium (as metal and trivalent chromium compounds)** – IARC Group 3 carcinogens, not classifiable as to their human carcinogenicity.
- **Nickel and certain nickel compounds** – Group 2B - metallic nickel Group 1 - nickel compounds ACGIH confirmed human carcinogen. Nickel – EURAR Insufficient evidence to conclude carcinogenic potential in animals or humans; suspect carcinogen classification Category 2 Suspected of causing cancer.

h. No Toxic Reproduction data available for **Tin Mill Products** as a mixture. The following Toxic Reproductive information was found for the components:

- **Nickel:** Effects on fertility.

i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for **Tin Mill Products** as a mixture. The following STOT following a Single Exposure data was found for the components:

- **Iron:** Irritating to Respiratory tract.

j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for **Tin Mill Products** as a whole. The following STOT following Repeated Exposure data was found for the components:

- **Nickel:** Rat 4 wk inhalation LOEL 4 mg/m³ Lung and Lymph node histopathology. Rat 2 yr inhalation LOEL 0.1 mg/m³ Pigment in kidney, effects on hematopoiesis spleen and bone marrow and adrenal tumor. Rat 13 Week Inhalation LOAEC 1.0 mg/m³ Lung weights, and Alveolar histopathology.
- **Manganese:** Inhalation of metal fumes - Degenerative changes in human Brain; Behavioral: Changes in motor activity and muscle weakness (Whitlock *et al.*, 1966).

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure indices (BEIs) with Other Worldwide Occupational Exposure Values 2009, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCLID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS), European Union Classification, Labeling and Packaging. (EU CPL), Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), International Uniform Chemical Information Database (IUCLID), TOXicology Data NETwork (TOXNET), European Risk Assessment Reports (EU RAR).

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:

Inhalation: Excessive exposure to high concentrations of metal dust may cause irritation to the eyes, skin and mucous membranes of the upper respiratory tract. Excessive inhalation of fumes of freshly formed metal oxide particles sized below 1.5 micrometer and usually between 0.02-0.05micrometers from many metals can produce an acute reaction known as “metal fume fever”. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), metallic taste in the mouth, dryness and irritation of the throat followed by weakness and muscle pain. The symptoms come on in a few hours after excessive exposures and usually last from 12 to 48 hours. Long-term effects from metal fume fever have not been noted. Freshly formed oxide fumes of manganese and copper have been associated with causing metal fume fever.

Eye: Excessive exposure to high concentrations of metal dust may cause irritation to the eyes.

Skin: Skin contact with metal dusts may cause irritation or sensitization, possibly leading to dermatitis. Skin contact with metallic fumes and dusts may cause physical abrasion.

Ingestion: Ingestion of harmful amounts of this product as distributed is unlikely due to its solid insoluble form. Ingestion of metal dust may cause nausea or vomiting.

Acute Effects by component:

Iron and iron 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. Particles of iron or iron compounds, which become imbedded in the eye, may cause rust stains unless removed fairly promptly.

Carbon: Not Reported/ Not Classified

Manganese and manganese oxides: Manganese and Manganese oxide are harmful if swallowed.

Nickel and nickel oxides: Nickel may cause allergic skin sensitization. Nickel oxide may cause an allergic skin.

Silicon and silicon oxides: May be harmful if swallowed.

Chromium, chromium oxides and hexavalent chrome: Hexavalent chrome causes damage to gastrointestinal tract, lung, severe skin burns and eye damage, serious eye damage, skin contact may cause an allergic skin reaction. Inhalation may cause allergic or asthmatic symptoms or breathing difficulties.

Tin: Not Reported/ Not Classified

SECTION 11 – TOXICOLOGICAL INFORMATION (continued)**Delayed (chronic) Effects by component:**

Iron and iron 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).

Carbon: Chronic inhalation may lead to decreased pulmonary function.

Manganese and manganese 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 manganese oxides include: speed and coordination of motor function are especially impaired.

Nickel and nickel 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. Nickel 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. Nickel is suspected of damaging the unborn child.

Silicon and silicon oxides: Silicon dusts are a low health risk by inhalation and should be treated as a nuisance dust. Eye contact with pure material can cause particulate irritation. Skin contact with silicon dusts may cause physical abrasion.

Chromium, chromium oxides, and hexavalent chromium: The health hazards associated with exposure to chromium are dependent upon its oxidation state. The metal form (chromium as it exists in this product) is of very low toxicity. The hexavalent form is very toxic. Repeated or prolonged exposure to hexavalent chromium compounds may cause respiratory irritation, nosebleed, ulceration and perforation of the nasal septum. Industrial exposure to certain forms of hexavalent chromium has been related to an increased incidence of cancer. NTP (The National Toxicology Program) Fourth Annual report on Carcinogens cites "certain Chromium compounds" as human carcinogens. ACGIH has reviewed the toxicity data and concluded that chromium metal is not classifiable as a human carcinogen. Hexavalent chromium may cause genetic defects and is suspected of damaging the unborn child. Developmental toxicity in the mouse, suspected of damaging fertility or the unborn child.

Tin: No systemic effects have been reported from industrial exposure to tin. Occupational exposures to tin can cause a benign pneumoconiosis termed 'stannosis'. No cases of massive fibrosis from over-exposure to tin have been reported.

SECTION 12 – ECOLOGICAL INFORMATION

12.1 Ecotoxicity (aquatic & terrestrial): No Data Available for **Tin Mill Products** 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).
- **Hexavalent Chrome:** EU RAR listed as category 1, found acute EC50 and LD50 to algae and invertebrates < 1 mg.
- **Nickel Oxide:** IUCLID found LC50 in fish, invertebrates and algae > 100 mg/l.

12.2 Persistence & Degradability: No Data Available for **Tin Mill Products** as sold/shipped or individual components.

12.3 Bioaccumulative Potential: No Data Available for **Tin Mill Products** as sold/shipped or individual components.

12.4 Mobility (in soil): No data available for **Tin Mill Products** as sold/shipped. However, individual components of the product have been found to be absorbed by plants from soil.

12.5 Other adverse effects: None Known

12.6 Additional Information:

- **Hazard Category:** Not Reported
- **Signal Word:** No Signal Word
- **Hazard Symbol:** No Symbol
- **Hazard Statement:** No Statement

SECTION 13 – DISPOSAL CONSIDERATIONS

13.1 Disposal: Steel scrap 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.

13.2 Container cleaning and disposal: Follow applicable federal, state, and local regulations. Observe safe handling precautions.

Please note this information is for Electrolytic Tin Plate and Tin Coated Sheet products in its original form. Any alterations can void this information.

SECTION 14 – TRANSPORT INFORMATION

DOT Transportation Data (49 CFR 172.101) Electrolytic Tin Plate and Tin Coated Sheet products are not listed as hazardous substances under CFR 172.101. All federal, state, and local laws and regulations that apply to the transport of this type of material must be adhered to.

DOT: Not regulated as dangerous goods.

IATA: Not regulated as dangerous goods.

IMDG: Not regulated as dangerous goods.

SECTION 15 – REGULATORY INFORMATION

15.1 Regulatory Information: The following listing of regulations relating to the Ohio Coatings Company products 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:

OSHA Regulations: Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-2, Z-3): The product, **Tin Mill Products** as a whole is not listed. However, individual components of the product are listed: Refer to Section 8, Exposure Controls and Personal Protection.

15.2 EPA Regulations: The product, **Tin Mill Products** is not listed as a whole. However, individual components of the product are listed:

Components	Regulations
Chromium	CERCLA, CWA, SARA 313, RCRA, SDWA
Nickel	CAA, CERCLA, CWA, SARA 313
Manganese	CAA, SARA 313, SDWA

SARA 311/312 Potential Hazard Categories: Immediate Acute Health Hazard; Delayed Chronic Health Hazard.

Section 313 Supplier Notification: The product, **Tin Mill Products** contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act and 40 CFR part 372:

CAS #	Chemical Name	Percent by Weight
7440-47-3	Chromium	1 max
7439-96-5	Manganese	1.95 max
9440-02-0	Nickel	0.15 max

Regulations Key:

CAA	Clean Air Act (42 USC Sec. 7412; 40 CFR Part 61 [As of: 8/18/06])
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (42 USC Secs. 9601(14), 9603(a); 40 CFR Sec. 302.4, Table 302.4, Table 302.4 and App. A)
CWA	Clean Water Act (33 USC Secs. 1311; 1314(b), (c), (e), (g); 136(b), (c); 137(b), (c) [as of 8/2/06])
RCRA	Resource Conservation Recovery Act (42 USC Sec. 6921; 40 CFR Part 261 App VIII)
SARA	Superfund Amendments and Reauthorization Act of 1986 Title III Section 302 Extremely Hazardous Substances (42 USC Secs. 11023, 13106; 40 CFR sec. 372.65) and Section 313 Toxic Chemicals (42 USC Secs. 11023, 13106; 40 CFR Sec. 372.65 [as of 6/30/05])
TSCA	Toxic Substance Control Act (15 U.S.C. s/s 2601 et seq. [1976])
SDWA	Safe Drinking Water Act (42 U.S.C. s/s 300f et seq. [1974])

15.3 State Regulations: The product, **Tin Mill Products** as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations:

Pennsylvania Right to Know: Contains regulated material in the following categories:

- Hazardous Substances: Manganese, Nickel, Silicon, Chromium, Chromium Oxide and Tin
- Environmental Hazards: Manganese, Nickel and Chromium
- Special Hazardous Substance: Nickel, Chromium and Chromium Oxide
-

California Prop. 65: Contains elements known to the State of California to cause cancer or reproductive toxicity. This includes Chromium compounds and Nickel.

SECTION 15 – REGULATORY INFORMATION (continued)

New Jersey: Contains regulated material in the following categories:

- Hazardous Substance: Manganese, Nickel, Silicon, Chromium, Chromium Oxide and Tin
- Environmental Hazards: Manganese, Nickel and Chromium
- Special Hazardous Substance: Manganese, Silicon and Chromium

Minnesota: Manganese, Nickel and Chromium

Massachusetts: Manganese, Nickel, Silicon, Chromium, Chromium Oxide and Tin

15.4 Other Regulations:

WHMIS Classification (Canadian): The product, **Tin Mill Products**, is listed as D2A, 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.

SECTION 16 – OTHER INFORMATION

16.1 Prepared By: Ohio Coatings Company

Original Issue Date: 8/1/16

Revised Date: NA

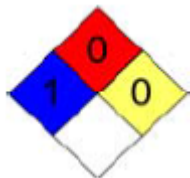
16.2 Additional Information:**Hazardous Material Identification System (HMIS) Classification:**

Health Hazard	1
Fire Hazard	0
Physical Hazard	0

HEALTH = 1. Denotes possible chronic hazard if airborne dusts or fumes are generated. Irritation or minor reversible injury possible.

FIRE = 0. Materials that will not burn.

PHYSICAL HAZARD = 0. Materials that are normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosives.

National Fire Protection Association (NFPA):

HEALTH = 1. Exposure could cause irritation but only minor residual injury even if no treatment is given.

FLAMMABILITY = 0. Materials that will not burn.

INSTABILITY = 0. Normally stable, even under fire exposure conditions, and are not reactive with water.

16.3 DISCLAIMER:

This information is taken from sources or based upon data believed to be reliable. Our objective in sending this information is to help you protect the health and safety of your personnel and to comply with the OSHA Hazard Communication Standard and Title III of the Emergency Planning and Community Right-to-Know Act. Ohio Coatings Company makes no warranty as to the absolute correctness, completeness, or sufficiency of any of the foregoing, or any additional, or other measures that may not be required under particular conditions.

THIS OHIO COATINGS COMPANY SDS MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR TRADE.