

# Aluminum Sheet and Foil

## Safety Data Sheet

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Version: 1.0

### SECTION 1: IDENTIFICATION

#### 1.1. Product Identifier

**Product Form:** Mixture

**Product Name:** Aluminum Sheet and Foil

**Synonyms:** Aluminum Alloys 1XXX, 1050, 1060, 1145, 1350, 1200, 1100, 1235, 3XXX, 3003, 3102, 3104, 5XXX, 5010, 7XXX, 7072, 8XXX 8011, 8111

**Physical State:** Solid

**Color:** Gray to Silver

#### 1.2. Intended Use of the Product

Various fabricated aluminum sheet and foil products.

#### 1.3. Name, Address, and Telephone of the Responsible Party

##### Company

Norandal Aluminum Inc.

Five Corporate Centre

801 Crescent Centre Drive

Suite 600

Franklin, TN 37067

[www.norandaaluminum.com](http://www.norandaaluminum.com)

#### 1.4. Emergency Telephone Number

**Emergency Number:** CHEMTREC

Within USA and Canada: +1-800-424-9300; Outside USA and Canada +1-703-527-3887

### SECTION 2: HAZARDS IDENTIFICATION

#### 2.1. Classification of the Substance or Mixture

##### Classification (GHS-US)

Not classified

#### 2.2. Label Elements

**GHS-US Labeling** No labeling applicable

#### 2.3. Other Hazards

This product is physiologically inert in its massive form. However, user-generated dust and/or fumes may pose a physiological hazard if inhaled or ingested. Avoid inhalation of metal dusts and fumes. May cause an influenza-like illness. Avoid skin and eye contact with dusts to prevent mechanical irritation.

User-generated dust is easily ignited and difficult to extinguish.

Not a fire hazard unless in particle form. Suspensions of aluminum dust in air may pose a severe explosion hazard.

Explosion/fire hazards may be present when (See sections 5, 7, and 10 for additional information):

- Dust and fines are dispersed in air
- Chips, dust or fines are in contact with water.
- Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide).
- Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide)

Dust and fumes from processing can cause irritation to the eyes, skin and upper respiratory tract.

Additional health effects from elevated temperature processing (e.g. welding, melting); Acute overexposures can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise) and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures can cause asthma, benign lung disease (siderosis) and lung cancer.

Carcinogenicity and Reproductive Hazard:

Product as shipped does not present any cancer or reproductive hazards.

Dust from mechanical processing does not present any cancer hazards. It can present a reproductive hazard (manganese).

Dust and fumes from welding or elevated temperature processing can present a reproductive hazard (manganese compounds, inorganic).

Potential environmental effects:

Not expected to be harmful to aquatic organisms.

#### 2.4. Unknown Acute Toxicity (GHS-US) No data available

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1. Substances

Not applicable

#### 3.2. Mixture

- This product may have non-hazardous lubricant residue on the surface at a concentration of <1% by weight.
- This product may have a non-hazardous lubricant applied to the surface at a concentration level of less than 1%. Applied lubricants include, butyl stearate, hard shell wax, or Fin works 4200.
- Some of the components listed below may be classified as non-hazardous.

Chemical Name*	Product Identifier	% (w/w)	Classification (GHS-US)
Aluminum	(CAS No) 7429-90-5	> 95	Comb. Dust Flam. Sol. 1, H228 Water-react. 2, H261
Zinc	(CAS No) 7440-66-6	< 1.6	Comb. Dust Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Manganese	(CAS No) 7439-96-5	< 1.5	Comb. Dust
Silicon	(CAS No) 7440-21-3	< 1	Comb. Dust
Iron	(CAS No) 7439-89-6	< 1	Comb. Dust Flam. Sol. 1, H228 Self-heat. 1, H251
Magnesium	(CAS No) 7439-95-4	< 0.6	Flam. Sol. 1, H228 Self-heat. 2, H252 Water-react. 2, H261
Copper	(CAS No) 7440-50-8	< 0.3	Aquatic Acute 1, H400 Aquatic Chronic 2, H411
Titanium	(CAS No) 7440-32-6	< 0.1	Flam. Sol. 1, H228
Surface lubricants	Various	<1	

- For more detailed chemical composition refer to the certificate of analysis

Full text of H-phrases: see section 16

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### SECTION 4: FIRST AID MEASURES

#### 4.1. Description of First Aid Measures

**General:** Never give anything by mouth to an unconscious person. If medical advice is needed, have product container or label at hand.

**Inhalation:** If metal is heated, oil vapors from any surface lubricants could be irritating to respiratory tract. Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if symptoms persist.

**Skin Contact:** Cool skin rapidly with cold water after contact with molten product. Removal of solidified molten material from skin requires medical assistance. If burns are severe consult a physician.

Dust and fumes from processing – wash with soap and water for at least 15 minutes. Consult a physician if irritation develops or persists.

Aluminum sheet and foil with butyl stearate or Finworks 4200 coating, or any residual oil, may be minimally irritating to the skin upon direct contact. Prolonged or repeated contact may result in contact dermatitis which may cause dryness, chapping, and reddening of the skin.

**Eye Contact:** Dust and fumes from processing – rinse eyes with plenty of water or saline solution for at least 15 minutes. Consult a physician. Removal of solidified molten material from the eyes requires medical assistance. Immediately rinse with water for a prolonged period (at least 15 minutes) while holding the eyelids wide open. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

**Ingestion:** Do NOT induce vomiting. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.

#### 4.2. Most Important Symptoms and Effects Both Acute and Delayed

**General:** Under normal conditions of use not expected to present a significant hazard. During processing or physical alteration, flakes or powder cause irritation of the respiratory tract, eyes, skin, and are harmful. Molten material may release toxic, and irritating fumes.

**Inhalation:** During processing, the most significant route of exposure is by the inhalation (breathing) of fumes. If fumes are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur.

**Skin Contact:** Contact with hot, molten metal will cause thermal burns. Dust may cause irritation in skin folds or by contact in combination with tight clothing. Mechanical damage via flying particles and chipped slag is possible.

**Eye Contact:** During metal processing, dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes. Mechanical damage via flying particles and chipped slag is possible.

**Ingestion:** Ingestion is not considered a potential route of exposure.

**Chronic Symptoms:** Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis, central nervous system damage, secondary Parkinson's disease and reproductive harm in males.

Inhalation of dust and fumes from processing (e.g. welding, melting) can cause asthma, benign lung disease (siderosis) and lung cancer.

#### 4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If you feel unwell, seek medical advice (show the label where possible).

### SECTION 5: FIRE-FIGHTING MEASURES

#### 5.1. Extinguishing Media

**Suitable Extinguishing Media:** Use extinguishing media appropriate for surrounding fire. Dry sand; Class D Extinguishing Agent (for metal powder fires).

**Unsuitable Extinguishing Media:** Do not use water when molten material is involved, may react violently or explosively on contact with water. Do not use halogenated extinguishing agents on small chips or fines as these will react with the burning material.

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### 5.2. Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** Dust, chips, or ribbons can be ignited more easily, by an ignition source, by improper machining, or by spontaneous combustion if finely divided and damp.

- Dust clouds may be explosive. Even a minor dust cloud can explode violently. Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
- Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas. These gases could present an explosion hazard in confined or poorly ventilated spaces.
- Dust and fines in contact with certain metal oxides (e.g. rust, copper oxide). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.
- Molten metal in contact with water/moisture or certain metal oxides (e.g. rust, copper oxide). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with certain metal oxides can initiate a thermite reaction. Finely divided metals (e.g. powders or wire) may have enough surface oxide to produce thermite reactions or explosions.

**Explosion Hazard:** Product as shipped is not explosive.

**Reactivity:** Stable at ambient temperature and under normal conditions of use.

### 5.3. Advice for Firefighters

**Precautionary Measures Fire:** Exercise caution when fighting any chemical fire. Under fire conditions, hazardous fumes will be present. Do not disturb the material until completely cool.

**Firefighting Instructions:** Do not breathe fumes from fires or vapors from decomposition.

**Protection During Firefighting:** Firefighters must use full bunker gear including NIOSH-approved positive-pressure self-contained breathing apparatus to protect against potential hazardous combustion and decomposition products.

**Hazardous Combustion Products:** Carbon oxides (CO, CO<sub>2</sub>). Metal oxides. Hydrocarbons.

### Reference to Other Sections

Refer to section 9 for flammability properties.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Do not handle until all safety precautions have been read and understood. Avoid breathing dust, vapors, fumes.

#### 6.1.1. For Non-Emergency Personnel

**Protective Equipment:** Use appropriate personal protection equipment (PPE).

**Emergency Procedures:** Evacuate unnecessary personnel. Do not touch unless you know the metal is cold. Molten, heated and cold metal have a similar appearance.

#### 6.1.2. For Emergency Personnel

**Protective Equipment:** Equip cleanup crew with proper protection. Wear suitable protective clothing, gloves and eye/face protection.

**Emergency Procedures:** Eliminate ignition sources. Evacuate unnecessary personnel, isolate, and ventilate area.

### 6.2. Environmental Precautions

Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.

### 6.3. Methods and Material for Containment and Cleaning Up

**For Containment:** Contain and collect as any solid. Avoid generation of dust during clean-up of spills.

**Methods for Cleaning Up:** Clean up in accordance with all applicable regulations. Spillage should be collected for recycling when possible.

### 6.4. Reference to Other Sections

See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for Safe Handling

Material should be kept dry. Avoid generating dust. Avoid contact with sharp edges. Avoid contact with hot metal – hot and cold metal have a similar appearance.

Product may have a thin layer of lubricant on the surface which can make it slippery. Use appropriate gloves and tools to ensure safe handling.

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In the case of remelting Scrap material, metal scrap must be thoroughly dried prior to remelting. For more information on the handling and storage of aluminum consult the following documents published by the Aluminum Association, 900 19<sup>th</sup> St., N.W., Washington D.C., 20006: Guidelines for handling molten Aluminum: Recommendation for storage and handling of aluminum powders and paste; and Guidelines for handling Aluminum Fines generated during various aluminum fabricating operations. Processes which generate Dusts or fines; If processing of this product generates dust or fine particles obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and National Fire Protection Association (NFPA) brochures listed in Section 16.

Wetted coils of Foil; Do not cut, transport or even approach any coil giving off a crackling sound or emitting steam vapor. Once a coil has been partially or completely wetted, keep away from the coil until the interior is completely dry. If such cooling is impractical, leave the coil in place and keep people at least 40 yards away from it for at least 72 hours.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

### 7.2. Conditions for Safe Storage, Including Any Incompatibilities

**Technical Measures:** Comply with applicable regulations.

**Storage Conditions:** Store in a dry, cool and well-ventilated place. Keep packing intact until ready for use. Keep/Store away from

direct sunlight, extremely high or low temperatures and incompatible materials.

**Incompatible Materials:** Strong acids. Strong bases. Strong oxidizers.

### 7.3. Specific End Use(s)

Various fabricated aluminum sheet and foil products.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

Aluminum (7429-90-5)		
Mexico	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (dust)
USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (respirable fraction)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable fraction)
USA NIOSH	NIOSH REL (TWA) (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable dust)

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<b>Alberta</b>	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (dust)
<b>British Columbia</b>	OEL TWA (mg/m <sup>3</sup> )	1.0 mg/m <sup>3</sup> (respirable)
<b>Manitoba</b>	OEL TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (respirable fraction)
<b>New Brunswick</b>	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (metal dust)
<b>Newfoundland &amp; Labrador</b>	OEL TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (respirable fraction)
<b>Nova Scotia</b>	OEL TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (respirable fraction)
<b>Nunavut</b>	OEL STEL (mg/m <sup>3</sup> )	20 mg/m <sup>3</sup>
<b>Nunavut</b>	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup>
<b>Northwest Territories</b>	OEL STEL (mg/m <sup>3</sup> )	20 mg/m <sup>3</sup>
<b>Northwest Territories</b>	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup>
<b>Ontario</b>	OEL TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (respirable)
<b>Prince Edward Island</b>	OEL TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (respirable fraction)
<b>Québec</b>	VEMP (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup>
<b>Saskatchewan</b>	OEL STEL (mg/m <sup>3</sup> )	20 mg/m <sup>3</sup> (dust)
<b>Saskatchewan</b>	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (dust)
<b>Silicon (7440-21-3)</b>		
<b>Mexico</b>	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (inhalable fraction)
<b>Mexico</b>	OEL STEL (mg/m <sup>3</sup> )	20 mg/m <sup>3</sup>
<b>USA OSHA</b>	OSHA PEL (TWA) (mg/m <sup>3</sup> )	15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable fraction)
<b>USA NIOSH</b>	NIOSH REL (TWA) (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable dust)
<b>British Columbia</b>	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (total dust) 3 mg/m <sup>3</sup> (respirable fraction)
<b>New Brunswick</b>	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup>
<b>Nunavut</b>	OEL TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (respirable mass) 10 mg/m <sup>3</sup> (total mass)
<b>Northwest Territories</b>	OEL TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (respirable mass) 10 mg/m <sup>3</sup> (total mass)
<b>Ontario</b>	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (total dust)
<b>Québec</b>	VEMP (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (containing no Asbestos and <1% Crystalline silica-total dust)
<b>Saskatchewan</b>	OEL STEL (mg/m <sup>3</sup> )	20 mg/m <sup>3</sup>
<b>Saskatchewan</b>	OEL TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup>
<b>Yukon</b>	OEL STEL (mg/m <sup>3</sup> )	20 mg/m <sup>3</sup>
<b>Yukon</b>	OEL TWA (mg/m <sup>3</sup> )	30 mppcf 10 mg/m <sup>3</sup>
<b>Copper (7440-50-8)</b>		
<b>Mexico</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>Mexico</b>	OEL STEL (mg/m <sup>3</sup> )	2 mg/m <sup>3</sup> (fume) 2 mg/m <sup>3</sup> (dust and mist)
<b>USA ACGIH</b>	ACGIH TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume)
<b>USA OSHA</b>	OSHA PEL (TWA) (mg/m <sup>3</sup> )	0.1 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>USA NIOSH</b>	NIOSH REL (TWA) (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (dust and mist) 0.1 mg/m <sup>3</sup> (fume)
<b>USA IDLH</b>	US IDLH (mg/m <sup>3</sup> )	100 mg/m <sup>3</sup> (dust, fume and mist)
<b>Alberta</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>British Columbia</b>	OEL TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (dust and mist) 0.2 mg/m <sup>3</sup> (fume)
<b>Manitoba</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume)

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<b>New Brunswick</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>Newfoundland &amp; Labrador</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume)
<b>Nova Scotia</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume)
<b>Nunavut</b>	OEL STEL (mg/m <sup>3</sup> )	0.6 mg/m <sup>3</sup> (fume) 2 mg/m <sup>3</sup> (dust and mist)
<b>Nunavut</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>Northwest Territories</b>	OEL STEL (mg/m <sup>3</sup> )	0.6 mg/m <sup>3</sup> (fume) 2 mg/m <sup>3</sup> (dust and mist)
<b>Northwest Territories</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>Ontario</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>Prince Edward Island</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume)
<b>Québec</b>	VEMP (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>Saskatchewan</b>	OEL STEL (mg/m <sup>3</sup> )	0.6 mg/m <sup>3</sup> (fume) 3 mg/m <sup>3</sup> (dust and mist)
<b>Saskatchewan</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>Yukon</b>	OEL STEL (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume) 2 mg/m <sup>3</sup> (dust and mist)
<b>Yukon</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>Manganese (7439-96-5)</b>		
<b>Mexico</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> (fume)
<b>Mexico</b>	OEL STEL (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (fume)
<b>USA ACGIH</b>	ACGIH TWA (mg/m <sup>3</sup> )	0.02 mg/m <sup>3</sup> (respirable fraction) 0.1 mg/m <sup>3</sup> (inhalable fraction)
<b>USA ACGIH</b>	ACGIH chemical category	Not Classifiable as a Human Carcinogen
<b>USA OSHA</b>	OSHA PEL (Ceiling) (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (fume)
<b>USA NIOSH</b>	NIOSH REL (TWA) (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (fume)
<b>USA NIOSH</b>	NIOSH REL (STEL) (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup>
<b>USA IDLH</b>	US IDLH (mg/m <sup>3</sup> )	500 mg/m <sup>3</sup>
<b>Alberta</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup>
<b>British Columbia</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup>
<b>Manitoba</b>	OEL TWA (mg/m <sup>3</sup> )	0.02 mg/m <sup>3</sup> (respirable fraction) 0.1 mg/m <sup>3</sup> (inhalable fraction)
<b>New Brunswick</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup>
<b>Newfoundland &amp; Labrador</b>	OEL TWA (mg/m <sup>3</sup> )	0.02 mg/m <sup>3</sup> (respirable fraction) 0.1 mg/m <sup>3</sup> (inhalable fraction)
<b>Nova Scotia</b>	OEL TWA (mg/m <sup>3</sup> )	0.02 mg/m <sup>3</sup> (respirable fraction) 0.1 mg/m <sup>3</sup> (inhalable fraction)
<b>Nunavut</b>	OEL Ceiling (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup>
<b>Nunavut</b>	OEL STEL (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (fume)
<b>Nunavut</b>	OEL TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (fume)
<b>Northwest Territories</b>	OEL Ceiling (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup>
<b>Northwest Territories</b>	OEL STEL (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (fume)
<b>Northwest Territories</b>	OEL TWA (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (fume)
<b>Ontario</b>	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup>

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Prince Edward Island	OEL TWA (mg/m <sup>3</sup> )	0.02 mg/m <sup>3</sup> (respirable fraction) 0.1 mg/m <sup>3</sup> (inhalable fraction)
Québec	VEMP (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup> (total dust and fume)
Saskatchewan	OEL STEL (mg/m <sup>3</sup> )	0.6 mg/m <sup>3</sup>
Saskatchewan	OEL TWA (mg/m <sup>3</sup> )	0.2 mg/m <sup>3</sup>
Yukon	OEL Ceiling (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup>

### 8.2. Exposure Controls

**Appropriate Engineering Controls:** Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Avoid creating or spreading dust. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed to be explosion proof and in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Ensure all national/local regulations are observed.

**Personal Protective Equipment:** Safety glasses with side shields, Protective goggles. Gloves. Protective clothing. Insufficient ventilation: wear respiratory protection

**Protective clothing.**



**Skin and Body Protection:** With molten material wear fire//flame resistant/retardant clothing, heat resistant gloves, neck shroud, spats, safety boots.

Wear heat resistant gloves when handling heated material.

Avoid sharp edges or heated metal. Wear long sleeved clothing or cut resistant sleeves, cut resistant impervious gloves.

**Eye and Face Protection:** Safety glasses with side shields. Wear a face shield when working with molten material. For processes generating dust or fine particulate wear dust resistant safety goggles.

**Respiratory Protection:** Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits. Wear approved mask.

**Environmental Exposure Controls:** Do not allow the product to be released into the environment. No special environmental precautions required.

**Consumer Exposure Controls:** Do not eat, drink or smoke during use.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety practice. Wash hands and face before breaks and immediately after handling product.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: Silvery gray metal
Odor	: None
Odor Threshold	: Not applicable
pH	: Not applicable
Evaporation Rate	: Not applicable
Melting Point	: 1164 - 1220 °F (628.89 - 660 °C)
Freezing Point	: < 1164 °F (< 628.89 °C)
Boiling Point	: Not applicable
Flash Point	: Not applicable
Auto-ignition Temperature	: Not applicable
Decomposition Temperature	: Not applicable

# Aluminum Sheet and Foil

## Safety Data Sheet

<b>Flammability (solid, gas)</b>	: Not applicable
<b>Lower Flammable Limit</b>	: Not applicable
<b>Upper Flammable Limit</b>	: Not applicable
<b>Vapor Pressure</b>	: Not applicable
<b>Relative Vapor Density at 20 °C</b>	: Not applicable
<b>Relative Density</b>	: Not available
<b>Specific Gravity</b>	: 2.65 - 2.80 (Water=1)
<b>Solubility</b>	: Insoluble.
<b>Partition Coefficient: N-Octanol/Water</b>	: Not applicable
<b>Viscosity</b>	: Not applicable
<b>Explosion Data – Sensitivity to Mechanical Impact</b>	: Not expected to present an explosion hazard due to mechanical impact
<b>Explosion Data – Sensitivity to Static Discharge</b>	: Take precautions against static discharge where there is a risk of dust explosion

## SECTION 10: STABILITY AND REACTIVITY

- 10.1. Reactivity:** Stable at ambient temperature and under normal conditions of use.
- 10.2. Chemical Stability:** Stable under recommended handling and storage conditions (see section 7).
- 10.3. Possibility of Hazardous Reactions:** Hazardous polymerization will not occur. Flammable hydrogen gas is produced from the reaction of Aluminum with strong basic solutions and strong acid solutions. Vigorous, thermite, reactions can occur with aluminum particles on contact with oxides of copper, lead, iron and certain other metals in the presence of a source of ignition or heat.
- 10.4. Conditions to Avoid:** Protect from moisture and water. Incompatible materials.
- In the case of a coil of foil being immersed in water, the water can penetrate between the laps of foil creating a vigorous oxidation reaction producing hydrogen gas and heat. When the coils are removed from the water a rapid temperature increase can occur causing a steam explosion resulting in the rupture of the coil, in addition hydrogen gas can reach concentrations over the explosive limit (4.1%), which can also cause explosive rupture of the coil. Partial immersion or immersion for only a short time can create the same catastrophic result. Wetted coils showing evidence of this reaction should be isolated and allowed to cool for at least 3 days. Wetted coils should not be re-melted under any circumstance until completely dry.
- Chips, fines and dust can also react with moisture and water to generate heat and explosive, flammable hydrogen gas.
- Molten metal can react violently or explosively with moisture and water.
- Elevated temperatures can also increase the oxidation rate of fine particles causing heat generation.
- 10.5. Incompatible Materials:** Strong acids. Strong bases. Strong oxidizers.
- 10.6. Hazardous Decomposition Products:** Reaction with water, acids and bases generates flammable and potentially explosive hydrogen gas.
- Under conditions of fire this product may produce metallic oxides, (iron, copper, aluminum...)
- Combustion of the coatings can generate Carbon monoxide, Carbon dioxide, partially oxidized hydrocarbons.
- Hazardous polymerization does not occur.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on Toxicological Effects - Product

**Acute Toxicity:** Not classified

**LD50 and LC50 Data:** Not available

**Skin Corrosion/Irritation:** Not classified

**pH:** Not applicable

**Serious Eye Damage/Irritation:** Not classified

**pH:** Not applicable

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** Not classified

**Teratogenicity:** Not classified

**Carcinogenicity:** Not classified.

**Specific Target Organ Toxicity (Repeated Exposure):** Not classified

# Aluminum Sheet and Foil

## Safety Data Sheet

**Reproductive Toxicity:** Not classified

**Specific Target Organ Toxicity (Single Exposure):** Not classified

**Aspiration Hazard:** Not classified

**Symptoms/Injuries After Inhalation:** During processing, the most significant route of exposure is by the inhalation (breathing) of fumes. If fumes are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur

**Symptoms/Injuries After Skin Contact:** Contact with hot, molten metal will cause thermal burns. Dust may cause irritation in skin folds or by contact in combination with tight clothing. Mechanical damage via flying particles and chipped slag is possible

**Symptoms/Injuries After Eye Contact:** During metal processing, dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes. Mechanical damage via flying particles and chipped slag is possible

**Symptoms/Injuries After Ingestion:** Ingestion is not considered a potential route of exposure

**Chronic Symptoms:** Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis. Zinc: Prolonged exposure to high concentrations of zinc fumes may cause "zinc shakes", an involuntary twitching of the muscles. Otherwise, zinc is non-toxic. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Anemia. Inhalation of iron oxide fumes undergoing decomposition may cause irritation and flu-like symptoms, otherwise iron oxide is not hazardous. Silicon: Can cause chronic bronchitis and narrowing of the airways. Copper: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure.

### 11.2. Information on Toxicological Effects - Ingredient(s)

#### LD50 and LC50 Data:

<b>Iron (7439-89-6)</b>	
LD50 Oral Rat	98.6 g/kg
<b>Manganese (7439-96-5)</b>	
LD50 Oral Rat	> 2000 mg/kg

# Aluminum Sheet and Foil

## Safety Data Sheet

### SECTION 12: ECOLOGICAL INFORMATION

#### 12.1. Toxicity No additional information available

Copper (7440-50-8)	
LC50 Fish 1	<= 0.0068 (0.0068 - 0.0156) mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 Other Aquatic Organisms 1	0.0426 (0.0426 - 0.0535) mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static])
LC 50 Fish 2	0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Other Aquatic Organisms 2	0.031 (0.031 - 0.054) mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])
Manganese (7439-96-5)	
NOEC chronic fish	3.6 mg/l (Exposure time: 96h; Species: Oncorhynchus mykiss)
Zinc (7440-66-6)	
LC50 Fish 1	2.16 - 3.05 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	0.139 - 0.908 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC 50 Fish 2	0.211 - 0.269 mg/l (Exposure time: 96 h - Species: Pimephales promelas [semi-static])

#### 12.2. Persistence and Degradability

Copper (7440-50-8)	
Persistence and Degradability	Not readily biodegradable.

#### 12.3. Bioaccumulative Potential

Aluminum Sheet and Foil	
Bioaccumulative Potential	Not bioaccumulative.

#### 12.4. Mobility in Soil

Aluminum Sheet and Foil	
Ecology - Soil	Not applicable : The product in its massive form is not dispersible.

#### 12.5. Other Adverse Effects

**Other Information:** Avoid release to the environment.

### SECTION 13: DISPOSAL CONSIDERATIONS

#### 13.1. Waste treatment methods

**Waste Disposal Recommendations:** Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

**Additional Information:** Recycle the material as far as possible.

**Ecology – Waste Materials:** Avoid release to the environment.

### SECTION 14: TRANSPORT INFORMATION

**14.1. In Accordance with DOT** Not regulated for transport

**14.2. In Accordance with IMDG** Not regulated for transport

**14.3. In Accordance with IATA** Not regulated for transport

**14.4. In Accordance with TDG** Not regulated for transport

### SECTION 15: REGULATORY INFORMATION

#### 15.1. US Federal Regulations

Aluminum (7429-90-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on United States SARA Section 313	
<b>SARA Section 311/312 Hazard Classes</b>	Fire hazard Reactive hazard

# Aluminum Sheet and Foil

## Safety Data Sheet

<b>SARA Section 313 - Emission Reporting</b>	1.0 % (dust or fume only)
<b>Silicon (7440-21-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Iron (7439-89-6)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>SARA Section 311/312 Hazard Classes</b>	Fire hazard
<b>Copper (7440-50-8)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on United States SARA Section 313	
<b>SARA Section 313 - Emission Reporting</b>	1.0 %
<b>Magnesium (7439-95-4)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Manganese (7439-96-5)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on United States SARA Section 313	
<b>SARA Section 313 - Emission Reporting</b>	1.0 %
<b>Titanium (7440-32-6)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Zinc (7440-66-6)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on United States SARA Section 313	
<b>SARA Section 313 - Emission Reporting</b>	1.0 % (dust or fume only)

### 15.2. US State Regulations

<b>Aluminum (7429-90-5)</b>
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List
<b>Silicon (7440-21-3)</b>
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List
<b>Copper (7440-50-8)</b>
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List
<b>Magnesium (7439-95-4)</b>
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List
<b>Manganese (7439-96-5)</b>
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List
<b>Titanium (7440-32-6)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List
<b>Zinc (7440-66-6)</b>

# Aluminum Sheet and Foil

## Safety Data Sheet

U.S. - Massachusetts - Right To Know List  
 U.S. - New Jersey - Right to Know Hazardous Substance List  
 U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List  
 U.S. - Pennsylvania - RTK (Right to Know) List

### 15.3. Canadian Regulations

<b>Aluminum Sheet and Foil</b>	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
<b>Aluminum (7429-90-5)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Class B Division 6 - Reactive Flammable Material Class B Division 4 - Flammable Solid
<b>Silicon (7440-21-3)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
<b>Iron (7439-89-6)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 4 - Flammable Solid Class B Division 6 - Reactive Flammable Material
<b>Copper (7440-50-8)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
<b>Magnesium (7439-95-4)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 4 - Flammable Solid Class B Division 6 - Reactive Flammable Material
<b>Manganese (7439-96-5)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
<b>Titanium (7440-32-6)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 4 - Flammable Solid
<b>Zinc (7440-66-6)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

### SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

**Revision Date** : 05/04/2015  
**Other Information** : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

#### GHS Full Text Phrases:

Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
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# Aluminum Sheet and Foil

## Safety Data Sheet

Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Comb. Dust	Combustible Dust
Flam. Sol. 1	Flammable solids Category 1
Self-heat. 1	Self-heating substances and mixtures Category 1
Self-heat. 2	Self-heating substances and mixtures Category 2
Water-react. 2	Substances and mixtures which in contact with water emit flammable gases Category 2
H228	Flammable solid
	May form combustible dust concentrations in air
H251	Self-heating; may catch fire
H252	Self-heating in large quantities; may catch fire
H261	In contact with water releases flammable gases
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects

### Party Responsible for the Preparation of This Document

Noranadal Aluminum, Inc.  
Five Coporate Centre  
801 Crescent Centre Drive  
Suite 600  
Franklin, TN 37067

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

North America GHS US 2012 & WHMIS 2