## ThyssenKrupp Materials NA, Inc.

### MATERIALS SAFETY DATA SHEET

#### Aluminum Alloys

### SECTION I. MATERIAL IDENTIFICATION

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>RE-ISSUE DATE</th>
<th>IDENTIFICATION NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ThyssenKrupp Materials NA, Inc.</td>
<td>2-Jan-06</td>
<td>N/A</td>
</tr>
<tr>
<td>22355 West Eleven Mile Road, Southfield, Michigan 48033</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### TRADE NAME

Aluminum Alloys

#### CHEMICAL NAME

Aluminum (Does not include Lithium or Nickel Alloys)

#### COMPANY

ThyssenKrupp Materials NA, Inc.

#### EMERGENCY PHONE NUMBER

(248) 233-5681

#### PREPARED BY:

L. J. Switaj

### SECTION II. HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>MATERIAL (At Normal Conditions)</th>
<th>APPEARANCE AND ODOR</th>
<th>SOLID</th>
<th>MELTING POINT</th>
<th>SPECIFIC GRAVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallic appearance; No Odor</td>
<td></td>
<td></td>
<td>440-1215 Deg. F</td>
<td>2.5-2.9</td>
</tr>
</tbody>
</table>

### SECTION III. PHYSICAL DATA

<table>
<thead>
<tr>
<th>MATERIAL OR COMPONENT</th>
<th>% COMPOSITION</th>
<th>PHYSICAL DESCRIPTION</th>
<th>OSHA-mg/m3</th>
<th>ACGIH mg/m3</th>
<th>WISHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASE METAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminium</td>
<td>7429-90-5</td>
<td>80.0-99.7 AS ALUMINUM DUST</td>
<td>15</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

### SECTION IV. FIRE AND EXPLOSIVE

**SPECIAL FIRE FIGHTING PROCEDURES:**

Damp aluminum dust with hydrogen may form explosive air mixtures. Small chips, fine turnings and dust may ignite readily. Explosion potential may exist when dust and fines are dispersed in the air. Avoid contact with metal oxides, molten aluminum and moisture. Aluminum Products in their solid state present no fire or explosive hazard.

### SECTION V. REACTIVITY DATA

**STABILITY:**

Stable

**CONDITIONS TO AVOID:**

Contact with Halogen Acids, Sodium Hydroxide, Anhydrous Bromine, Iodates, and Ammonium Nitrates.

**HAZARDOUS DECOMPOSITION PRODUCTS:**

Metallic Dust Or Fumes May Be Produced During Welding, Burning, Grinding And Possibly Machining. Refer To ANSI Z49.1

### SECTION VI. Environmental

**SPILL OR LEAK PROCEDURES:**

N/A

**WASTE DISPOSAL METHODS:**

Disposal must comply with applicable Federal, State and Local disposal and discharge laws.
ALUMINUM PRODUCTS IN THEIR NATURAL STATE DO NOT PRESENT AN INHALATION OR CONTACT HAZARD. HOWEVER OPERATIONS SUCH AS BURNING, WELDING, SAWING, BRAZING AND GRINDING MAY RELEASE FUMES AND/OR DUST WHICH MAY PRESENT HEALTH HAZARDS.

**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 oxides of Manganese, Magnesium, Zinc and Copper may be manifested as flu-like symptoms commonly known as "metal fume fever". Phosphorous dust is considered a nuisance dust.

**Chronic -**

**Aluminum:** Inhalation of Aluminum Oxide dust or an accumulation of Silicon in the lungs may result in benign pneumoconiosis.

**Beryllium:** Inhalation of beryllium dust or fume may cause chronic beryllium disease (CBD) and a cancer hazard. It may also cause eye, skin, and respiratory system irritation.

**Cobalt:** May cause lung inflammation and damage, and diffuse pulmonary fibrosis from inhalation. Classified as a carcinogen by IARC.

**Chromium:** May enter and affect the body through inhalation, ingestion, or skin contact with kidney & liver damage. The National Toxicology Program (NTP) and the Internal Agency for Research on Cancer (IARC) report they possess sufficient evidence to establish a causal relationship for human cancer from Hexavalent Chromium.

**Copper:** Inhalation may cause nose and throat irritation and metal fume fever and prolonged contact may cause dermatitis. scarring of the lungs and reproductive harm in males.

**Iron:** Inhalation of iron Oxide fume or dust may result in a lung condition known as siderosis.

**Lead:** Lead compounds can be toxic & may cause cancer when ingested or inhaled. Lead is a cumulative poison and excessive exposure can have an adverse effect on human reproduction. Acute exposure to lead can be manifested as abdominal pain, nausea, constipation, anorexia, or vomiting, and in severe cases death.

**Manganese:** Inhalation may result in symptoms such as headache, restlessness, neurological dysfunction, damage to the central nervous system or muscular weakness, scarring of the lungs and reproductive harm in males.

**Magnesium:** Inhalation may result in inflammation of the respiratory tract and fever. Dust and fume may cause irritation to the eyes, nose and throat.

**Nickel:** Inhalation of nickel dust or fume may inflame the respiratory tract, cause nasal or lung cancer.

**Silicon:** An accumulation of Silicon in the lungs may result in benign pneumoconiosis, chronic bronchitis.

**Silver:** May cause eyes, nasal, septum, throat and skin irritation and intestinal disturbance.

**Tin:** May cause eye, skin, and respiratory system irritation and siderosis.

**Zinc:** Dust or fume may cause irritation to the eyes, nose, or throat and may leave a metallic taste in the mouth. Inhalation of oxides may cause "metal fume fever" and metal fume fever and prolonged contact may cause dermatitis. discoloration of skin, hair and teeth.

**Welding Fume:** Is listed as a possible carcinogen to humans.

**Coatings:** If coated with oil, contact may cause skin irritation/dermatitis.

**SECTION VII. HEALTH HAZARD DATA**

**SECTION 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. Should skin irritation occur, wash affected area with mild soap and rinse with clean warm water. Obtain medical assistance.

Eyes: Depending on 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 may be adversely affected by particles or respiratory irritants generated during the manufacturing process.

**SECTION IX. SPECIAL PROTECTION INFORMATION & CONTROL MEASURES**

**Note:** 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 P-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: Additional air make up systems may be required if, local exhaust or ventilation systems are not sufficient to maintain exposure levels to contaminate below prescribed limits. When inhalation controls are not sufficient to reduce the exposure below the applicable exposure limit then use OSHA/NIOSH approved respiratory protection within the use limitations of the respirator.

Personal: To avoid contact use appropriate protective gloves or clothing to protect against cutting edges. Appropriate heat shielding garments should be used for activities using or generating heat. Eyes should be protected by using safety glasses, goggles, helmet, face shield as appropriate to the operation being performed.

Protection: Precautions to be taken in handling and storage:

- Be alert to sharp edges and unsecured Lifts.

**SECTION X. OTHER INFORMATION**

**SARA Section 313 Toxic Chemical List, de minimis Concentrations**

- > 1.0%: Copper, Aluminum, Zinc, and Manganese
- > 0.1%: Chromium, Cobalt, Lead, and Nickel

**California Proposition 65**

The state of California lists chromium (Hexavalent compounds), nickel, lead, and cobalt as chemicals known to cause cancer and 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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