ThyssenKrupp Materials NA, Inc.

MATERIALS SAFETY DATA SHEET

Aluminum Alloys

SECTION I. MATERIAL IDENTIFICATION

COMPANY	RE-ISSUE DATE	IDENTIFICATION NUMBER
ThyssenKrupp Materials NA, Inc. 22355 West Eleven Mile Road Southfield, Michigan 48033	2-Jan-06	N/A
TRADE NAME	**EMERGENCY PHONE NUMBER**	**PREPARED BY:**
Aluminum Alloys	(248) 233-5681	L. J. Switaj
CHEMICAL NAME	**FORMULA DOT**	**IDENTIFICATION NO.**
Aluminum (Does not include Lithium or Nickel Alloys)	AL	N/A

SECTION II HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT		% COMPOSITION	PHYSICAL	OSHA-mg/m3	ACGIH mg/m3	WISHA
BASE METAL	**CAS NUMBER**	**BY WEIGHT**	**Description**	**8-HR. - TWA**	**8-HR. - TWA**	**PEL mg/m3**
ALUMINUM	7429-90-5	80.0-99. 7	AS ALUMINUM DUST	15	10	10
NOT ALL OF THE ELEMENTS LISTED BELOW ARE PRESENT IN ALL ALLOYS OF ALUMINUM						
ALLOYING		**% COMPOSITION**	**PHYSICAL**	**OSHA-mg/m3**	**ACGIH mg/m3**	**WISHA**
ELEMENTS	**CAS NUMBER**	**BY WEIGHT (1)**	**Description**	**8-HR. - TWA**	**8-HR. - TWA**	**PEL mg/m3**
BERYLLIUM	7440-41-7	0.002	AS DUST/FUME	0.002	0.002	0.005*
CHROMIUM	7440-47-3	0.1-1.0	AS METAL	0.5	0.5	0.5
COBALT	7440-48-4	0.1-10.0	AS DUST/FUME	0.1	0.05	0.05
COPPER	7440-50-8	1.0-20.0	AS COPPER DUST	1.0	1.0	1.0
			AS COPPER FUME	0.1	0.2	0 .1
IRON	7439-89-6	1.0-10.0	AS IRON OXIDE FUME	10.0	5.0	5.0
LEAD	7439-92-1	1.0-10.0	AS DUST/FUME	0.05	0.15	0.05
MAGNESIUM	7439-95-4	1.0-20.0	AS DUST/OXIDE FUME	10.0	10.0	10.0
MANGANESE	7439-96-5	1.0-10.0	AS MANGANESE	1.0	1.0	5.0
NICKEL	7440-02-0	0.0-2.40	AS DUST/FUME	1.0	1.0	
SILICON	7440-21-3	10.0-20.0	AS SILICON DUST/FUME	5.0	10.0	10.0
			AS RESPIRABLE FRACTION	5.0		5.0
SILVER	7440-22-4	0.1-1.0	AS METAL DUST/FUME	0.01	0.1	0.01
TIN	7440-31-5	1 0-10.0	AS OXIDE	2.0	2.0	2.0
ZINC	1314-13-2	1 0-10.0	AS OXIDE FUME	5.0	5.0	5.0
			AS ZINC OXIDE TOTAL DUST	10.0	10.0	10.0

Aluminum alloys may be comprised of all or variations of the alloys shown here

PEL=Permissible Exposure Limit (1) % of Alloying Material Vanes with Grade of Material. Other trace elements of <1% May be in Present.

SECTION III. PHYSICAL DATA

MATERIAL (At Normal Conditions)	APPEARANCE AND ODOR
SOLID	Metallic appearance; No Odor
MELTING POINT	**SPECIFIC GRAVITY**
440-1215 Deg. F	2.5-2.9

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 dispensed 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	CONDITIONS TO AVOID Contact with Halogen Acids, Sodium Hydroxide,
Stable	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.

SECTION VII. HEALTH HAZARD DATA

NOTE: 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 fume 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, discoloration of skin, hair and teeth.

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 respitory 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”

Welding Fume Is listed as a possible carcinogen to humans.

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

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 particulates or respiratory irritants generated during the mfg. 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 contaminates 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 Protection: 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.

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.l%: Chromium. Cobalt, Lead, and Nickel

TSCA Status All components are listed on the TSCA inventory

CERCLA Hazardous Substances Chromium, Lead, Copper & Zinc

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.