115951

Material Safety Data Sheet

Material Name: WROUGHT ALUMINUM PRODUCTS, 3xxx SERIES ALLOYS **ID: 665**

*** Section 1 - Chemical Product and Company Identification ***

Chemical Formula: Mixture
Product Use: Various fabricated aluminum parts and products.
Other Designations: 3xxx Series Alloys, 3xxx Cladding, 0033, 3003F, 3104BLND, C20B, C156, C162, C189, C204, C230, C295, C296, C300, C301, C331, C344, C363, CH14, CK32, CU54, CU55, 3PORC, Alclad 3003, Alclad 3004, Clad 3003, KB11, MC365, MC369, MC370, MC371, MC372, MC373, MC374, MC378, MC380, MC382, MC386, MC387, MC389, MC392, MC395, MC396, MC398, MC399, MC400, MC401, MC402, MC403, MC404, MC405, MC406, MC413, MC414, MC424, MC425, MD52, MD176, MD189, MD228, MD229, MD239, MD240, MD241, MD243, MD263RB, MD263RH, MD263RL, MD267, MD268, MD271, MD272, MD276, MD278, MD281, MD285, MD286, MD287, MD288, MD289, MD291, MD297, MD305, MD306, MD307, MD310, MD311, MD312, MD313, MD314, MD315, MD321, MD324, MD327, MD329, MD330, MD333, MD334, MD338, MD339, MD340, MD341, MD347, MD350, MD351, MD352, MD354, MD355, MD356, MD357, MD359, MD360, MD362, MN363, MN381, MN397, MN421, MN422, MN423, RA240, RA245, RA254, RA258, RA259, RA261, RA263, RA264, RA269, RA270.

Alcoa Inc.
201 Isabella Street
Pittsburgh, PA 15212-5858

Phone: Health and Safety: 1-412-553-4649

Emergency Information:
USA: Chemtrec: 1-800-424-9300 or 1-703-527-3887 Alcoa: 1-412-553-4001

*** Section 2 - Composition / Information on Ingredients ***

CAS #	Component	Percent
7429-90-5	Aluminum	>92
7439-95-4	Magnesium	<2.8
7439-96-5	Manganese	<2
7440-21-3	Silicon	<1.9
7440-66-6	Zinc	<1.8
7440-47-3	Chromium	<0.6

Component Information
Additional compounds which may be formed during processing are listed in Section 8.

*** Section 3 - Hazards Identification ***

Emergency Overview
Solid. Silvery. Odorless. Non-flammable as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.

Explosion/fire hazards may be present when (See Sections 5, 7 and 10 for additional information):
= Dust or fines are dispersed in the air.
= Chips, dust or fines are in contact with water.
= Dust or fines are in contact with certain metal oxides (e.g. rust).
= Molten metal is in contact with water/moisture or certain metal oxides.

Dust and fume from processing can cause irritation of eyes, skin and upper respiratory tract; metal fume fever and lung disease.

Potential Health Effects

(If dusts or fumes are generated by processing)

Eyes

Can cause irritation.

Skin

Can cause irritation.

Inhalation

Can cause irritation of upper respiratory tract, metal fume fever and other health effects listed below. Cancer and reproductive hazard.

Health Effects of Ingredients

Chromium dust Can cause irritation of eyes, skin and respiratory tract. **Chromium and trivalent chromium** IARC/NTP: Not classified by IARC.

Manganese dust or fumes Chronic overexposures: Can cause inflammation of the lung tissue, scarring of the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease and reproductive harm in males.

Silicon, inert dusts Chronic overexposures: Can cause chronic bronchitis and narrowing of the airways. Additional information: Studies with experimental animals by injection have found lesions on the lungs.

Aluminum dust, fines and fumes Low health risk by inhalation. ACGIH: Listed as nuisance dust (milling, cutting, grinding).

Some products are supplied with a lubricant/oil coating or have residual oil from the manufacturing process. **Oil** Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis. **Mineral oils, untreated or mildly refined** Studies with experimental animals by skin contact have found skin tumors. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1)*.

Health Effects Of Additional Compounds Which May Be Formed During Processing

Hexavalent chromium (Chrome VI) Can cause irritation of eyes, skin and respiratory tract. Skin contact: Can cause irritant dermatitis, allergic reactions and skin ulcers. Chronic overexposures: Can cause perforation of the nasal septum, respiratory sensitization, asthma, fluid in the lungs (pulmonary edema), lung damage, kidney damage, lung cancer, nasal cancer and cancer of the gastrointestinal tract. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1)*.

Magnesium oxide fumes Can cause irritation of eyes and respiratory tract. Acute overexposures: Can cause nausea, fever, chills, shortness of breath and malaise (metal fume fever).

Manganese oxide fumes Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause nausea, fever, chills, shortness of breath and malaise (metal fume fever).

Zinc oxide fumes Can cause irritation of upper respiratory tract. Acute overexposures: Can cause nausea, fever, chills, shortness of breath and malaise (metal fume fever). **Zinc oxide dust** Expected to be a low health risk by inhalation.

Silica, amorphous Acute overexposures: Can cause dryness of eyes, nose and upper respiratory tract.

Alumina Low health risk by inhalation. ACGIH: Listed as nuisance dust.

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated. **Oil vapor and mist** Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, asthma, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

Welding, plasma arc cutting, and arc spray metalizing can generate ozone. **Ozone** Can cause irritation of eyes, nose and upper respiratory tract. Acute overexposures: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposures (high concentrations): Can cause respiratory distress, respiratory tract damage, bleeding and fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies with experimental animals by inhalation have found genetic damage, reproductive harm, blood cell damage, lung damage and death. **Welding fumes** IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B)*. Additional Information: In one study, occupational asthma was associated with exposures to fumes from aluminum welding.

Plasma arc cutting can generate oxides of nitrogen. **Oxides of nitrogen (NO and NO_2)** Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause reduced ability of the blood to carry oxygen (methemaglobin). Can cause cough, shortness of breath, fluid in the lungs (pulmonary edema) and death. Effects may be delayed up to 2-3 weeks. **Nitrogen dioxide (NO_2)** Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis).

***IARC Classifications**

Group 1: The agent is carcinogenic to humans. There is sufficient evidence that a causal relationship existed between exposure to the agent and human cancer.

Group 2B: The agent is possibly carcinogenic to humans. Generally includes agents for which there is limited evidence in the absence of sufficient evidence in experimental animals.

Medical Conditions Aggravated By Exposure to the Product

Asthma, chronic lung disease, and skin rashes.

*** Section 4 - First Aid Measures ***

First Aid: Eyes

Flush eyes with plenty of water or saline for at least 15 minutes. Consult a physician.

First Aid: Skin

Wash skin with soap and water for at least 15 minutes. Consult a physician if irritation persists.

First Aid: Inhalation

Remove to fresh air. If unconscious or severely injured, check for clear airway, breathing and presence of pulse. Perform CPR if there is no pulse or respiration. Consult a physician.

*** Section 5 - Fire Fighting Measures ***

Flammable Properties

This product does not present fire or explosion hazards as shipped. Small chips, turnings, dust and fines from processing may be readily ignitable.

Fire/Explosion

May be a potential hazard under the following conditions:

= Dust or fines dispersed in the air can be explosive. Even a minor dust cloud can explode violently.

= Chips, dust or fines in contact with water can generate flammable/explosive hydrogen gas. Hydrogen gas could present an explosion hazard in confined or poorly ventilated spaces.

= Fines and dust in contact with certain metal oxides (e.g., rust). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.

= Molten metal in contact with water/moisture or other metal oxides (e.g., rust). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with other metal oxides can initiate a thermite reaction.

Extinguishing Media

Use Class D extinguishing agents on dusts, fines or molten metal. Use coarse water spray on chips and turnings.

DO NOT USE: Halogenated agents on small chips, dusts or fines. Water around molten metal.

Fire Fighting Equipment/Instructions

Fire fighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

*** Section 6 - Accidental Release Measures ***

Small/Large Spill

If molten: Contain the flow using dry sand or salt flux as a dam. Do not use shovels or hand tools to halt the flow of molten aluminum. Allow the spill to cool before remelting as scrap.

*** Section 7 - Handling and Storage ***

Handling/Storage

Product should be kept dry. Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different.

Requirements for Processes Which Generate Dusts or Fumes

If processing of these products includes operations where dust or extremely fine particulate is generated, 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. Cover and reseal partially empty containers. Use non-sparking handling equipment. Provide grounding and bonding where necessary to prevent accumulation of static charges during dust handling and transfer operations. (See Section 15).

Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used. Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron, iron oxide (rust) or other metal oxides.

Do not allow chips, fines or dust to contact water, particularly in enclosed areas.

Avoid all ignition sources. Good housekeeping practices must be maintained.

Requirements for Remelting of Scrap Material and/or Ingot

Molten metal and water can be an explosive combination. The risk is greatest when there is sufficient molten metal to entrap or seal off the water. Water and other forms of contamination on or contained in scrap or remelt ingot are known to have caused explosions in melting operations. While the products may have minimal surface roughness and internal voids, there remains the possibility of moisture contamination or entrapment. If confined, even a few drops of water can lead to violent explosions.

All tooling and containers which come in contact with molten metal must be preheated or specially coated and rust free. Molds and ladles must be preheated or oiled prior to casting. Any surfaces that may contact molten metal (e.g., concrete) should be specially coated.

Drops of molten metal in water (e.g. from plasma arc cutting), while not normally an explosion hazard, can generate enough flammable hydrogen gas to present an explosion hazard. Vigorous circulation of the water and removal of the particles minimize the hazards.

During melting operations, the following minimum guidelines should be observed:
= Inspect all materials prior to furnace charging and completely remove surface contamination such as water, ice, snow, deposits of grease and oil or other surface contamination resulting from weather exposure, shipment, or storage.
= Store materials in dry, heated areas with any cracks or cavities pointed downwards.
= Preheat and dry large or heavy items such as ingot adequately before charging into a furnace containing molten metal. This is typically done by use of a drying oven or homogenizing furnace. The drying cycle should bring the internal metal temperature of the coldest item of the batch to 400°F and then hold at that temperature for 6 hours.

*** Section 8 - Exposure Controls / Personal Protection ***

Engineering Controls

Use with adequate explosion-proof ventilation to meet the limits listed in Section 8.

Personal Protective Equipment

Respiratory Protection

Use NIOSH-approved respiratory protection as specified by an Industrial Hygienist or other qualified professional if concentrations exceed the limits listed in Section 8. Suggested respiratory protection: P95

Eye Protection

Wear safety glasses/goggles to avoid eye contact.

Skin Protection

Wear impervious gloves to avoid repeated or prolonged skin contact with residual oils and to avoid any skin injury.

General

Personnel who handle and work with **molten metal** should utilize primary protective clothing like face shields, fire resistant tapper's jackets, leggings, spats and similar equipment to prevent burn injuries. In addition to primary protection, secondary or day-to-day work clothing that is fire resistant and sheds metal splash is recommended for use with molten metal.

Minimize breathing **oil vapors and mist**. Remove oil contaminated clothing; launder or dry-clean before reuse. Remove oil contaminated shoes and thoroughly clean and dry before reuse. Cleanse skin thoroughly after contact, before breaks and meals, and at the end of the work period. Oil coating is readily removed from skin with waterless hand cleaners followed by a thorough washing with soap and water.

Exposure Guidelines

A: General Product Information

Alcoa recommends an Occupational Exposure Limit for Oil Mist of 0.5 mg/m3 TWA.

B: Component Exposure Limits

Aluminum (7429-90-5)

ACGIH 10 mg/m3 TWA (metal dust)

OSHA 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

Manganese (7439-96-5)

ACGIH as Mn, 0.2 mg/m3 TWA

OSHA C 5 mg/m3 (fume)

Silicon (7440-21-3)

ACGIH 10 mg/m3 TWA

OSHA 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

Chromium (7440-47-3)

ACGIH 0.5 mg/m3 TWA

OSHA 1 mg/m3 TWA

C: Additional Compounds Which May be Formed During Processing

Alumina (non-fibrous) (1344-28-1)

ACGIH as Al: 10 mg/m3 TWA (The value is for total dust containing no asbestos and < 1% crystalline silica)

OSHA 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

Magnesium oxide fume (1309-48-4)
ACGIH 10 mg/m3 TWA
OSHA total particulate: 15 mg/m3 TWA
Manganese inorganic compounds (Not Available)
ACGIH as Mn; 0.2 mg/m3 TWA
OSHA C 5 mg/m3 (as Mn)
Silica fume (amorphous) (69012-64-2)
ACGIH 2 mg/m3 TWA (This value is for the respirable fraction of the silica fume)
Zinc oxide (1314-13-2)
ACGIH fume: 5 mg/m3 TWA; dust: 10 mg/m3 TWA (The value for Zinc oxide 'dust' is for total dust containing no asbestos and < 1% crystalline silica)
ACGIH fume: 10 mg/m3 STEL
OSHA 5 mg/m3 TWA (fume); 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
Chromium (II) compounds (Not Available)
OSHA 0.5 mg/m3 TWA (as Cr)
Chromium (III) compounds (as Cr) (Not Available)
ACGIH as Cr: 0.5 mg/m3 TWA
Chromium (VI) compounds- water soluble (Not Available)
ACGIH 0.05 mg/m3 TWA
Chromium (VI) compounds (certain water insoluble forms) (Not Available)
ACGIH 0.01 mg/m3 TWA
Chromic acid and chromates (7738-94-5)
OSHA and chromates: C 1 mg/10m3
Oil mist, mineral (8012-95-1)
ACGIH 5 mg/m3 TWA (as sampled by a method that does not collect vapor)
ACGIH (10) mg/m3 STEL (as sampled by a method that does not collect vapor)
OSHA 5 mg/m3 TWA
Welding fumes (NOC) (Not Available)
ACGIH 5 mg/m3 TWA
Ozone (10028-15-6)
ACGIH Heavy work: 0.05 ppm TWA; Moderate work: 0.08 ppm TWA; Light work: 0.1 ppm TWA; heavy, moderate or light work, <= 2Hrs: 0.20 ppm
OSHA 0.1 ppm TWA; 0.2 mg/m3 TWA
Nitrogen dioxide (10102-44-0)
ACGIH 3 ppm TWA
ACGIH 5 ppm STEL
OSHA C 5 ppm; C 9 mg/m3
Nitric oxide (10102-43-9)
ACGIH 25 ppm TWA
OSHA 25 ppm TWA; 30 mg/m3 TWA

*** Section 9 - Physical & Chemical Properties ***

Physical State:	Solid: sheet, plate, wire, rod, bar, extrusion, forgings, etc.	**Appearance:**	Silvery
Boiling Point:	Not applicable	**Melting Point:**	Range: generally 1150-1220ºF (621-660ºC)
Vapor Pressure:	Not applicable	**Vapor Density:**	Not applicable
Solubility Water:	None	**Specific Gravity:**	See Density
Density:	Range: generally 2.70-2.73 g/cm³ (0.098-0.099 lb/in³)	**pH Level:**	Not applicable
Odor:	None	**Odor Threshold:**	Not applicable
Octanol-Water Coefficient:	Not applicable		

*** Section 10 - Chemical Stability & Reactivity Information ***

Stability

Stable under normal conditions of use, storage, and transportation as shipped.

Conditions to Avoid

Chips, fines, dust and molten metal are considerably more reactive with the following:

= **Water:** Slowly generates flammable/explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently/explosively with water or moisture, particularly when the water is entrapped.
= **Heat:** Oxidizes at a rate dependent upon temperature and particle size.
= **Strong oxidizers:** Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) particularly when heated or molten.
= **Acids and alkalis:** Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
= **Halogenated compounds:** Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided aluminum.
= **Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides):** A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.
= **Iron powder and water:** An explosive reaction forming hydrogen gas occurs when heated above 1470°F (800°C).

*** Section 11 - Toxicological Information ***

Health Effects of Ingredients

A: General Product Information

No information available for product.

B: Component Analysis - LD50/LC50

Manganese (7439-96-5)

Oral LD50 Rat : 9 gm/kg

Silicon (7440-21-3)

Oral LD50 Rat : 3160 mg/kg

Carcinogenicity

A: General Product Information

No information available for product.

B: Component Carcinogenicity

Chromium (7440-47-3)

ACGIH A4 - not classifiable as a human carcinogen

IARC Monograph 49; 1990

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

No information available for product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

No ecotoxicity data was found for this product's components.

Environmental Fate

No information available for product.

*** Section 13 - Disposal Considerations ***

Disposal Instructions

Reuse or recycle material whenever possible. Material may be disposed of at an industrial landfill.

US EPA Waste Number & Descriptions

A: General Product Information

RCRA Status: Must be determined at time material is disposed. If material is disposed as waste, it must be characterized under RCRA according to 40 CFR, Part 261, or state equivalent in the U.S.

B: Component Waste Numbers

RCRA waste codes other than described under Section A may apply depending on use of product. Refer to 40 CFR 261 or state equivalent in the U.S.

*** Section 14 - Transportation Information ***

Special Transportation

	PSN #1	PSN #2	PSN #3	PSN #4
Notes:	(1)			
Proper Shipping Name:	Not Regulated			
Hazard Class:	-			
UN NA Number:	-			
Packing Group:	-			
RQ:	-			
Other - Tech Name:	-			
Other - Marine Pollutant:	-			

Notes:

(1) When "Not regulated," enter the proper freight classification, "MSDS Number," and "Product Name" on the shipping paperwork.

Canadian TDG Hazard Class & PIN:	Not regulated

* * * Section 15 - Regulatory Information * * *

US Federal Regulations

A: General Product Information

All electrical equipment must be suitable for use in hazardous atmospheres involving aluminum powder in accordance with 29 CFR 1910.307. The National Electrical Code, NFPA 70, contains guidelines for determining the type and design of equipment and installation which will meet this requirement.

B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Aluminum (7429-90-5)

SARA 313: form R reporting required for 1.0% de minimis concentration (fume or dust only)

Manganese (7439-96-5)

SARA 313: form R reporting required for 1.0% de minimis concentration

Zinc (7440-66-6)

SARA 313: form R reporting required for 1.0% de minimis concentration (only fume or dust)

CERCLA: final RQ = 1000 pounds (454 kg) (no reporting of releases of this hazardous substance is required if the diameter of the solid metal released is equal to or exceeds 0.004 inches)

Chromium (7440-47-3)

SARA 313: form R reporting required for 1.0% de minimis concentration

CERCLA: final RQ = 5000 pounds (2270 kg) (no reporting of releases of this hazardous material is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches)

SARA 311/312 Physical and Health Hazard Categories:

Immediate (acute) Health Hazard:	Yes, if particulates/fumes generated during processing.
Delayed (chronic) Health Hazard:	Yes, if particulates/fumes generated during processing.
Fire Hazard:	No
Sudden Release of Pressure:	No
Reactive:	Yes, if molten

State Regulations

A: General Product Information

PENNSYLVANIA "Special Hazardous Substance": Chromium compounds, hexavalent

Chemical(s) known to the State of California to cause cancer: Hexavalent chromium

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Aluminum	7429-90-5	Yes	Yes	Yes	Yes	Yes	Yes
Magnesium	7439-95-4	Yes	Yes	Yes	No	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes
Silicon	7440-21-3	No	No	Yes	Yes	Yes	Yes
Zinc	7440-66-6	Yes	Yes	Yes	No	Yes	Yes
Chromium	7440-47-3	Yes	Yes	Yes	Yes	Yes	Yes

Other Regulations

A: General Product Information

In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

B: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Aluminum	7429-90-5	1% item 47 (197)
Manganese	7439-96-5	1% item 974 (1077)
Chromium	7440-47-3	0.1% item 399 (561)

C: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS	AUST.	MITI
Aluminum	7429-90-5	Yes	Yes	Yes	Yes	No
Magnesium	7439-95-4	Yes	Yes	Yes	Yes	No
Manganese	7439-96-5	Yes	Yes	Yes	Yes	No
Silicon	7440-21-3	Yes	Yes	Yes	Yes	No
Zinc	7440-66-6	Yes	Yes	Yes	Yes	No
Chromium	7440-47-3	Yes	Yes	Yes	Yes	No

Note: Pure metals are not specifically listed by CAS or MITI number. The class of compounds for each of these metals is listed on the MITI inventory.

*** Section 16 - Other Information ***

MSDS History

Original: March 16, 1990
Supersedes: May 11, 1999
Revised: August 14, 2000

MSDS Status

Changes in Sections 1 and 2.

Prepared By

Hazardous Materials Control Committee

MSDS System Number

115951

Other Information

= Aluminum Association's Bulletin F-1, "Guidelines for Handling Aluminum Fines Generated During Various Aluminum Fabricating Operations." The Aluminum Association, 900 19th Street, N.W., Washington, DC 20006.
= Aluminum Association, "Guidelines for Handling Molten Aluminum, The Aluminum Association, 900 19th Street, N.W., Washington, DC 20006.
= NFPA 65, Standard for Processing and Finishing of Aluminum (NFPA phone: 800-344-3555)
= NFPA 651, Standard for Manufacture of Aluminum and Magnesium Powder
= NFPA 70, Standard for National Electrical Code (Electrical Equipment, Grounding and Bonding)
= NFPA 77, Standard for Static Electricity
= Guide to Occupational Exposure Values-1999, Compiled by the American Conference of Governmental Industrial Hygienists (ACGIH).
= Documentation of the Threshold Limit Values and Biological Exposure Indices, Sixth Edition, 1991, Compiled by the American Conference of Governmental Industrial Hygienists, Inc. (ACGIH).
= NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, June 1994.
= Dangerous Properties of Industrial Materials, Sax, N. Irving, Van Nostrand Reinhold Co., Inc., 1984.
= Patty's Industrial Hygiene and Toxicology: Volume II: Toxicology, 4th ed., 1994, Patty, F. A.; edited by Clayton, G. D. and Clayton, F. E.: New York: John Wiley & Sons, Inc.
= TOMES CPS(TM), MICROMEDEX, Inc., 1999

Key-Legend:

ACGIH	American Conference of Governmental Industrial Hygienists
AICS	Australian Inventory of Chemical Substances
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CPR	Cardio-pulmonary Resuscitation
DOT	Department of Transportation
DSL	Domestic Substances List (Canada)
ECOIN	European Core Inventory
EPA	Environmental Protection Act
IARC	International Agency for Research on Cancer
LC_{50}	Lethal concentration (50 percent kill)
LC_{Lo}	Lowest published lethal concentration
LD_{50}	Lethal dose (50 percent kill)
LD_{Lo}	Lowest published lethal dose
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PIN	Product Identification Number
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TCLP	Toxic Chemicals Leachate Program
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
atm	atmosphere
cm	centimeter
g, gm	gram
in	inch
kg	kilogram
lb	pound
m	meter
mg	milligram
ml, ML	milliliter
mm	millimeter
n.o.s.	not otherwise specified
ppb	parts per billion
ppm	parts per million
psia	pounds per square inch absolute
u	micron
ug	microgram

INFORMATION HEREIN IS GIVEN IN GOOD FAITH AS AUTHORITATIVE AND VALID; HOWEVER, NO WARRANTY, EXPRESS OR IMPLIED, CAN BE MADE.

This is the end of MSDS # 665

WROUGHT ALUMINUM PRODUCTS

3xxx SERIES ALLOYS

CAUTION

Hazards: Small chips, fine turnings and dust may ignite readily.

Explosion potential may be present when: (1) dusts or fines are dispersed in the air, (2) fines, dust or molten aluminum are in contact with certain metal oxides or (3) chips, fines, dust or molten aluminum are in contact with water or moisture.

If coated with oil, may cause skin irritation/dermatitis by contact. Avoid skin contact.

Chronic overexposures to manganese dust can cause central nervous system damage, scarring of the lungs and reproductive harm in males.

Overexposure to fumes (fine dusts) of magnesium oxide, manganese oxide and zinc oxide may cause metal fume fever by inhalation.

Overexposure to dust/fume containing hexavalent chromium compounds may cause nasal and/or lung cancer.

Chronic overexposure to silicon dust can cause chronic bronchitis.

WARNING: Hexavalent chromium is a chemical known to the State of California to cause cancer (Proposition 65).

Precautions: Avoid generating dust. Use with adequate ventilation. Keep material dry. Use appropriate personal protective equipment (safety glasses/gloves) to avoid injury. Use appropriate NIOSH approved respiratory protection (P95) if concentrations exceed the permissible limits.

Read Alcoa Material Safety Data Sheet No. 665 for more information about use and disposal.

Emergency Phone: (412) 553-4001.

INGREDIENTS:	CAS NUMBERS:
Aluminum	(7429-90-5)
Magnesium	(7439-95-4)
Manganese	(7439-96-5)
Silicon	(7440-21-3)
Zinc	(7440-66-6)
Chromium	(7440-47-3)

Alcoa Inc.

201 Isabella Street, Pittsburgh, PA 15212-5858 USA

8/00 665

LES PRODUITS D'ALUMINIUM FORGES

ALLIAGES SERIES 3xxx

ATTENTION

Dangers: De petits fragments, bûchilles et poussières peuvent prendre feu rapidement.

Un risque d'explosion peut exister lorsque : (1) de la poussière ou des fines sont répandues dans l'air, (2) des fines, de la poussière ou de l'aluminium fondu entrent en contact avec certains oxydes métalliques, ou lorsque (3) des fragments, des fines, de la poussière ou de l'aluminium fondu entrent en contact avec de l'eau ou de l'humidité.

Si enduit d'huile, peut causer une irritation de la peau/ dermatite au contact.

La surexposition chronique à la poussière de manganèse peut causer des dommages au système nerveux central, la cicatrisation des poumons et des effets nocifs sur l'appareil reproducteur masculin.

La surexposition aux fumées (fines particules) d'oxyde de magnésium, d'oxyde de manganèse et d'oxyde de zinc peut causer la fièvre des fondeurs par inhalation.

La surexposition par inhalation de la poussière ou de la fumée (fines particules solides en suspension) contenant des composes de chrome hexavalent peut causer le cancer du nez et/ou des poumons.

Une surexposition chronique à la poussière de silicium peut entraîner une bronchite chronique.

Précautions: Evitez de générer de la poussière. Utiliser avec une aération adéquate. Conserver la matière au sec. Utiliser les équipements de protection personnelle nécessaires à éviter le blessure (lunettes de sécurité/gants). Utiliser un appareil respiratoire approprié si les concentrations dépassent les limites admissibles.

Pour de plus amples informations sur l'utilisation et la mise au rebut du produit, lire la fiche de données de sécurité des matières d'Alcoa No. 665.

No. de téléphone d'urgence: (412) 553-4001.

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