

MATERIAL SAFETY DATA SHEET

Material Name: Wrought **Aluminum Products, 6xxx Series Alloys** ID:

SECTION 1 - CHEMICAL PRODUCT AND COMPANY INFORMATION

Chemical Name: **Wrought Aluminum Products, 6xxx Series Alloys**

Product Use: **Various fabricated aluminum parts and products**

Manufacturer Information:

OMNISOURCE CORPORATION

1610 North Calhoun Street

Fort Wayne, Indiana 46808

Telephone: (260)422-5541 Safety Department

Emergency #: 800-666-4789

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Component	Percent
7429-90-5	**Aluminum	>89.9
7440-66-6	**Zinc (Zn)	<2.5
7439-95-4	Magnesium (Mg)	<2.1
7440-21-3	Silicon (Si)	<1.8
7439-96-5	Manganese (Mn)	<1.5
7440-50-8	*Copper (Cu)	<1.3
7439-89-6	Iron (Fe)	<1.1
7440-31-5	Tin (Sn)	<.8
7440-47-3	*Chromium (Cr)	<.5
7440-02-0	*Nickel (Ni)	<.03
7439-92-1	*Lead (Pb)	<.014

Note: Those elements identified by an * and those elements capable of generating highly toxic fumes or dusts (identified by a **) are classified as toxic by EPA in 40 CFR 372.65 and subject to reporting requirements of SARA Title III § 313 and 40 CFR 372.

SECTION 3 - HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Solid. Silvery. Odorless. Non-flammable as supplied. Small chips, fine tunings and dust from processing may be readily ignitable. Explosion/fire hazards may be present when: 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, molten metal is in contact with water, moisture or certain metal oxides.

ACUTE EFFECTS: Excessive exposure to dusts/fumes may cause irritation of eyes, nose or throat. Inhalation of dusts/ fumes may result in metal fume fever (metallic taste in mouth, dryness and irritation of throat, chills and fever).

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CHRONIC EFFECTS: Prolonged inhalation of fumes or dust may cause a variety of adverse health effects to the respiratory system, including (but not necessarily limited to) lesions of the mucous membrane, bronchitis, pneumonia and cancers of the nasal cavity and respiratory tract.

POTENTIAL HEALTH EFFECTS/MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Asthma, chronic lung disease, skin rashes and Parkinson's disease.

ROUTES OF ENTRY: Inhalation (dusts/fumes/mists), contact with skin and eyes (dusts/mists), ingestion (dusts).

SECTION 4 - FIRST AID MEASURES

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

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

INHALATION: Remove to fresh air. In 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.

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EXTINGUISHING MEDIA: Use Class D extinguishing agents on dusts, fines or molten metal. Use coarse water spray on chips, dusts or fines. **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 SPRILL: *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 re-melting 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) brochure 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.

Location ventilation and vacuum and systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used. Dust collections 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 to entrap or seal off the water. Water and other

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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 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 degrees 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 concentration exceeds the limits listed in Section 8. Suggested respiratory protection: P95, P100 for lead

EYE PROTECTION: Wear safety glasses/goggles to avoid eye contact.

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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.

Sampling to establish lead exposures is advised where exposures to airborne particulate or fumes are possible. Consult OSHA Lead Standard 29 CFR 1910.1025 for specific health/industrial hygiene precautions and requirements to follow when handling lead compounds.

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, 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.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: solid, sheet, plate, wire, rod, bar, extrusion, forgings, etc.

BOILING POINT: N/A

VAPOR PRESSURE: N/A

SOLUBILITY WATER: None

DENSITY: Range: generally 2.69-2.72 g/vm³ (0.097-0.099 lb/in³)

ODOR: None

OCTANOL-WATER COEFFICIENT: N/A

APPEARANCE: Silvery

MELTING POINT: Range: generally 1030-1210 degrees F (554-654 Degrees C)

VAPOR DENSITY: N/A

SPECIFIC GRAVITY: See Density

pH Level: N/A

ODOR THRESHOLD: N/A

SECTION 10 - STABILITY AND REACTIVITY

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

CONDITIONS TO AVOID:

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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: Oxidizers 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 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 generate 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 degrees F (800 degrees C).

SECTION 11 - TOXICOLOGY INFORMATION

HEALTH EFFECTS OF INGREDIENTS

A: GENERAL PRODUCT INFORMATION

No information available for product

B: COMPONENT ANALYSIS - LD50-LC50

Silicon - Oral LD50 RAT:3160 mg/kg

Manganese - Oral LD50 Rat: 9gm/kg

Iron - Oral LD50 Rat: 30gm/kg

CARCINOGENICITY

A: GENERAL PRODUCT INFORMATION

No information available for product.

B: COMPONENT CARCINOGENICITY

Chromium - ACGIH A4 - not classified as a human carcinogen

IARC Monograph 49;1990

Nickel - ACGIH A5- Not suspected as a human carcinogen

IARCD Monograph 49;1990 (and alloys)

NTP suspect carcinogen; (under nickel and certain nickel compounds).

Lead - ACGIH elemental as Pb; A3 animal carcinogen

IARC Monograph 23, supplemental 7, 1987; (evaluated as a group)

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SECTION 12 - ECOLOGICAL INFORMATION

ECOTOXICITY

A: GENERAL PRODUCT INFORMATION

No information available for product.

B; COMPONENT ANALYSIS - ECOTOXICITY 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 - TRANSPORT 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 Product	-			

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

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

ZINC: SARA 313: form R reporting required 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 .004 inches).

MANGANESE: SRA 313: form R reporting required for 1.0% de minimis concentration.

COPPER: SARA 313: form R reporting required for 1.0% de minimis concentration. CERCLA: Final RQ=5000 pounds (2770 kg) (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds .004 inches).

NICKEL: SARA 313: Form R reporting required .1% de minimis concentration. CERCLA: Final RQ=100 pounds (45.4 kg) (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds .004 inches).

LEAD: SARA 313: form R reporting required for .1% de minimis concentration. CERCLA: final RQ=10 pounds (4.54 kg) (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds .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.

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STATE REGULATIONS

A: GENERAL PRODUCT INFORMATION

PENNSYLVANIA "Special Hazardous Substance": Chromium compounds, hexavalent, nickel.

Chemical(s) know to the State of California to cause cancer: Hexavalent chromium, lead, nickel.

Chemical(s) known to the State of California to cause reproductive/developmental effects: lead

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
Zinc	7440-66-6	Yes	Yes	Yes	No	Yes	Yes
Magnesium	7439-95-4	Yes	Yes	Yes	No	Yes	Yes
Silicon	7440-21-3	No	No	Yes	Yes	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes
Copper	7440-50-8	Yes	Yes	Yes	Yes	Yes	Yes
Iron	7439-89-6	Yes	No	No	No	No	No
Tin	7440-31-5	Yes	Yes	Yes	Yes	Yes	Yes
Chromium	7440-47-3	Yes	Yes	Yes	Yes	Yes	Yes
Nickel	7440-02-0	Yes	Yes	Yes	Yes	Yes	Yes
Lead	7439-92-1	Yes	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the State of California to cause cancer.

WARNING! This product contains a chemical known to the State of California to cause reproductive/developmental effects.

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. Material meets the criteria for inclusion in WHMIS Class D2A.

B: COMPONENT ANALYSIS - WHMIS IDL

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

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Component	CAS #	Minimum Concentration
Aluminum	7429-90-5	1% item 47 (197)
Manganese	7439-96-5	1% item 974 (1077)
Copper	7440-50-8	1% item 433 (578)
Chromium	7440-47-3	.1% item 399 (561)
Nickel	7440-02-0	.1% item 1126 (1193)

C: COMPONENT ANALYSIS - INVENTORY

COMPONENT	CAS #	TSCA	DSL	EINECS	AUST	MITI
Aluminum	7429-90-5	Yes	Yes	Yes	Yes	No
Zinc	7440-66-6	Yes	Yes	Yes	Yes	No
Magnesium	7439-95-4	Yes	Yes	Yes	Yes	No
Silicon	7440-21-3	Yes	Yes	Yes	Yes	No
Manganese	7439-96-5	Yes	Yes	Yes	Yes	No
Copper	7440-50-8	Yes	Yes	Yes	Yes	No
Iron	7439-89-6	Yes	Yes	Yes	Yes	No
Tin	7440-31-5	Yes	Yes	Yes	Yes	No
Chromium	7440-47-3	Yes	Yes	Yes	Yes	No
Nickel	7440-02-0	Yes	Yes	Yes	Yes	No
Lead	7439-92-1	Yes	Yes	Yes	Yes	Yes

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

OTHER PRECAUTIONS: Take appropriate precautions when moving or shipping this material to prevent injury to personnel handling it.

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