



Safety Data Sheet

Wrought Aluminum Products, 1XXX Series Alloys

1**PRODUCT AND COMPANY IDENTIFICATION**

Supplier
Malin Co.
5400 Smith Road
Brook Park, Ohio 44142
Phone: (216) 267-9080
Web: www.malinco.com

Product Name: Wrought Aluminum Products, 1XXX Series Alloys
Revision Date: 5/21/2015
Version: 1
SDS Number: PI-SDS-M100
Product Code: PI-SDS-M100
Chemical Formula: Mixture
Product Use: Various fabricated aluminum parts and products.

2**HAZARDS IDENTIFICATION****Route of**

Entry: Eyes; Ingestion; Inhalation; Skin

Inhalation: Health effects from mechanical processing (cutting, grinding): Dust: can cause irritation of the upper respiratory tract.

Additional health effects from elevated temperature processing (welding, melting): Dust and fumes from processing: Acute overexposure: Can cause metal fume fever (nausea, chills, fever, shortness of breath and malaise), reduced ability of the blood to carry oxygen (methemoglobin), and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease, reproductive harm in males, asthma, respiratory sensitization and lung cancer.

Skin Contact: Skin contact with hot metal can cause burns. Dust or fume from processing can cause mechanical irritation. Prolonged or repeated skin contact may cause sensitization and allergic contact dermatitis.

Eye Contact: Dust or fume from processing can cause mechanical irritation.

Ingestion: Not relevant, due to the form of the product.

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GHS Signal Word:
WARNING

GHS Hazard Pictograms:



GHS Classifications:
Physical, Flammable Solids, 2

GHS Phrases:
H228 - Flammable solid

GHS Precautionary Statements:
P281 - Use personal protective equipment as required.
P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P308+313 - IF exposed or concerned: Get medical advice/attention.

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

Explosion/fire hazards may be present when:

- Dust or 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 fume from processing can cause irritation of the eyes, skin and upper respiratory tract.

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COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

Cas #	Percentage	Chemical Name
7429-90-5	>98.9%	Aluminum
7439-92-1	<.03%	Lead
7440-02-0	<.06%	Nickel

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FIRST AID MEASURES

Inhalation: Solid aluminum does not present an inhalation hazard. Dust and fumes from processing: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. If breathing is difficult, provide oxygen. Loosen any tight clothing on neck or chest. Provide

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cardiopulmonary resuscitation for persons without pulse or respirations. Consult a physician.

Skin Contact: Dust and fume from processing or contact with lubricant/residual oil: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists. Skin contact with hot metal can cause burns.

Eye Contact: Aluminum dust can irritate the eyes (mechanical abrasion). Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation. Consult a physician.

Ingestion: Not relevant, due to the form of the product.

5 FIRE FIGHTING MEASURES

Flammability: NA

Flash Point: N/A

Flash Point Method: N/A

Burning Rate: Negligible as a solid, rapid as a dust.

Suitable extinguishing media:

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

Unsuitable extinguishing media:

DO NOT USE halogenated extinguishing agents on small chips/fines. DO NOT USE water in fighting fires around molten metal.

These fire extinguishing agents will react with the burning material.

Specific hazards arising from the chemical:

May be a potential hazard under the following conditions:

- 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/explosions.

Special protective equipment and precautions for firefighters:

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

Fire-fighting equipment/instructions:

Use gentle surface application of Class D extinguishing agent or dry inert granular material (e.g., sand) to cover and ring the burning material. Apply extinguishing media carefully to avoid creating airborne dust. If impossible to extinguish, protect surroundings and allow fire to burn itself out.

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

Suspensions of aluminum dust in air may pose a explosion hazard. Aluminum fines are combustible and are difficult to extinguish.

6 ACCIDENTAL RELEASE MEASURES

Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot Aluminum does not necessarily glow red. Use personal protection recommended in Section 8 of the SDS.

Molten metal: Keep unnecessary personnel away.

Collect scrap for recycling. If molten: Use dry sand to contain the flow of material. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated, rust free and approved for such use. Allow the spill to cool before remelting as scrap.

No special environmental precautions required.

7 HANDLING AND STORAGE

Handling Precautions: Keep material dry. Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red.

Storage Requirements: If processing of this product generates dust or if 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) codes and standards listed in Section 16.

Use non-sparking handling equipment, tools and natural bristle brush. Cover and reseal partially empty containers. Provide grounding and bonding where necessary to prevent accumulation of static charges during metal 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, unless specifically approved for use with flammable/explosive dusts (Aluminum). 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 small chunks, fines or dust to contact water, particularly in enclosed areas.

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

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Do not use compressed air to remove settled material from floors, beams or equipment.

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EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Dust and fumes from processing - use with adequate explosion-proof ventilation

Personal Protective Equip: Wear safety glasses with side shields.

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PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Silver to gray wire
Physical State: Solid
Odor: Odorless
Solubility: Insoluble in water
Spec Grav./Density: 2.7-2.71 g/cubic cm
Freezing/Melting Pt.: 1189.4-1214.6°F

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STABILITY AND REACTIVITY

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

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

- Water: Slowly generates flammable and explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Water/aluminum mixtures may be hazardous when confined.
- 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) 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 or molten 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.
- Iron powder and water: Explosive reaction forming hydrogen gas when

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Conditions to Avoid:

heated above 1470°F (800°C).

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

- Water: Slowly generates flammable and explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Water/aluminum mixtures may be hazardous when confined.
- Heat: Oxidizes at a rate dependent upon temperature and particle size. Explosions can occur with coils of foil that have been submerged or partially submerged in water for an extended period of time. Water can penetrate between the layers of foil, react with the aluminum surface and generate heat and hydrogen gas. When the coils are removed from the cooling effects of the water, rapid temperature increases can occur causing steam explosions which result in the rupture of the coils and discharge of debris.

Coils of foil may be a potential hazard under the following conditions:

- Coil has been annealed (annealing removes residual oil that could prevent penetration of water)
- Foil is very thin gauge (5-9 mcm thickness which increases surface area)
- Coil has been immersed for an extended period of time (several hours or more)
- Wetted coil has recently been removed from the cooling effects of the water. In such situations, the coils should be isolated (30 meters from any personnel) for at least 72 hours as soon as possible after removal from the water. Coils making crackling sounds or emitting steam should not be approached or transported in commerce. Wetted coils should not be charged into a furnace for remelting until completely dry.

Materials to Avoid:

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

- Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) 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 or molten 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: Explosive reaction forming hydrogen gas when heated above 1470°F (800°C).

Hazardous

Decomposition:

No hazardous decomposition products are known.

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Hazardous

Polymerization: Will not occur.

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TOXICOLOGICAL INFORMATION

Health effects associated with ingredients

Aluminum dust/fines and fumes: Low health risk by inhalation. Generally considered to be biologically inert (milling, cutting, grinding).

Some products are supplied with an oil coating or have residual oil from the manufacturing process.

Oil: Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis.

Health effects associated with compounds formed during processing

The following could be expected if welded, remelted or otherwise processed at elevated temperatures:

Alumina (aluminum oxide): Low health risk by inhalation. Generally considered to be biologically inert.

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated.

Oil vapor or mist: Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, 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 the accumulation of fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies (inhalation) with experimental animals 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 of aluminum can generate oxides of nitrogen.

Oxides of nitrogen (NO and NO₂): Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause reduced ability of the blood to carry oxygen (methemoglobin). Can cause cough, shortness of breath, accumulation of fluid in the lungs (pulmonary edema) and death. Effects can be delayed up to 2-3 weeks.

Nitrogen dioxide (NO₂): Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis).

Information on likely routes of exposure

Eye contact Dust and fumes from processing: Can cause irritation.

Inhalation Additional health effects from elevated temperature processing (e.g., welding, plasma arc cutting):

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Can cause. Acute overexposures: Can cause the accumulation of fluid in the lungs (pulmonary edema) and reduced ability of the blood to carry oxygen (methemoglobin).

Ingestion

Not available.

Skin contact

Dust and fumes from processing: Can cause irritation.

Contact with residual oil/oil coating: Can cause irritation.

Prolonged or repeated skin contact may cause dermatitis.

Symptoms related to the physical, chemical and toxicological characteristics

Dust and fume from processing: Can cause mechanical irritation.

Contact with residual oil/oil coating: Prolonged skin contact may cause skin irritation and/or dermatitis.

Information on toxicological effects

Acute toxicity

Not applicable.

Skin corrosion/irritation

Non-corrosive.

Serious eye damage/eye irritation

Dust and fume from processing: May irritate eyes.

Respiratory or skin sensitization

Not a skin sensitizer.

Respiratory sensitization

Not a respiratory sensitizer.

Skin sensitization

Contact with residual oil/oil coating: Prolonged contact may cause redness and irritation.

Germ cell mutagenicity

Contains no ingredient listed as a mutagen.

Neurological effects

Not classified. Based on available data, the classification criteria are not met.

Pre-existing conditions aggravated by exposure

Dust and fume from processing: Asthma, chronic lung disease, and skin rashes.

Carcinogenicity

Contains no ingredient listed as a carcinogen

ACGIH Carcinogens

Aluminum - CAS 7429-90-5

A4 Not classifiable as a human carcinogen.

Reproductive toxicity

Contains no ingredient listed as toxic to reproduction.

Routes of exposure

Eye contact. Skin contact. Inhalation.

Teratogenicity

Not applicable.

Specific target organ toxicity - single exposure

Not classified. Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure

Not classified. Based on available data, the classification criteria are not met.

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Aspiration hazard Not applicable.
Chronic effects Not applicable.

12 ECOLOGICAL INFORMATION

Ecotoxicity	This material is not expected to be harmful to aquatic life.
Persistence and degradability	The product contains inorganic compounds which are not biodegradable.
Bioaccumulative potential	Will not bio-accumulate.
Mobility in soil	Not available.
Other adverse effects	Not available.

13 DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a non-hazardous waste, it should be disposed of in accordance with local, state and federal regulations.

RECYCLE

14 TRANSPORT INFORMATION

DOT Class: Not regulated #
Not regulated by DOT.

15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)
Components of this product are listed on the TSCA inventory.
7429-90-5 | >98.9% | Aluminum

CERCLA (Comprehensive Response Compensation, and Liability Act)
NOT listed

SARA TITLE III (Superfund Amendments and Reauthorization Act)
313/312 Hazard categories:
None.

313 Reportable Ingredients:
7429-90-5 | >98.9% | Aluminum

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*Aluminum (7429905 >98.9%) EPCRAWPC, MASS, NJHS, OSHAWAC, PA, SARA313, TSCA, TXAIR

CERCLA = Superfund clean up substance
EPCRAWPC = EPCRA Water Priority Chemicals
MASS = MA Massachusetts Hazardous Substances List
NJHS = NJ Right-to-Know Hazardous Substances
OSHA WAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
PRIPOL = Clean Water Act Priority Pollutants
SARA313 = SARA 313 Title III Toxic Chemicals
TOXICPOL = Clean Water Act Toxic Pollutants
TSCA = Toxic Substances Control Act
TXAIR = TX Air Contaminants with Health Effects Screening Level
HWCRA = RCRA Hazardous Wastes
NRC = Nationally Recognized Carcinogens

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OTHER INFORMATION

OTHER INFORMATION: THIS SDS IS A COMPILATION OF INFORMATION FOUND IN THE SAFETY DATA SHEET(S) SUPPLIED BY RAW MATERIAL SUPPLIERS.

This information contained in this safety data sheet is based on information available to Malin Co. and is believed to be accurate. Where this information is based on data developed by third parties, Malin Co. expressly denies liability. Malin Co. makes no warranty, expressed or implied, regarding the accuracy this information or data or the results obtained from its use. All recommendations are made without guarantee, since the conditions of use of this product are beyond Malin Co. control. Malin Co. assumes no responsibility for any damages resulting from the use of this product described herein.

Please contact Malin Co. for further information