

Material Safety Data Sheet



1. Product and company identification

Product name Pxxx series unalloyed Aluminum Remelt Ingot/or other forms/shapes
MSDS # 3001
Code 3
Supplier Tri-Arrows Aluminum. Inc.
9960 Corporate Campus Suite 3000
Louisville, KY 40223
Tel: +1 502-566-5700
**For Chemical Emergency,
Spill, Leak, Fire, Exposure
Or Accident** **Call CHEMTREC Day or Night**
Within the US: 1800-424-9300
Outside the US: +1 703-527-3887 (CHEMTREC)

2. Hazards identification

Physical state Solid. [Powder or flakes.] Odorless.

Color Silvery.

Emergency overview DANGER !

MAY FORM EXPLOSIVE DUST-AIR MIXTURES. (Small chips, dust and fines from processing may be readily ignitable.)
Explosion / fire hazards may be present when: 1) Dust or fines are dispersed in the air. 2) Chips, dust or fines are in contact with water. 3) Dust or fines are in contact with certain metal oxides (e.g. rust) 4) Molten metal is in contact with water / moisture or certain metal oxides (e.g. rust).

MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

Fine dust clouds may form explosive mixtures with air. Keep away from heat, sparks and flame. Prevent dust accumulation. Avoid exposure - obtain special instructions before use. Avoid breathing dust. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use.

Routes of entry Dermal contact. Eye contact. Inhalation. Ingestion.

Potential health effects

Eyes May cause eye irritation.

Skin May cause skin irritation.

Inhalation May cause respiratory tract irritation. May be harmful by inhalation if exposure to vapor, mists or fumes resulting from thermal decomposition products occurs. See toxicological information (section 11).

Ingestion Ingestion may cause gastrointestinal irritation and diarrhea.

See toxicological information (section 11)

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3. Composition/information on ingredients

Ingredient name	CAS #	%
aluminum	7429-90-5	> 96
magnesium	7439-95-4	< 0.5
manganese	7439-96-5	< 0.5
chromium	7440-47-3	< 0.05
Silicon Powder, Amorphous	7440-21-3	< 1
iron	7439-89-6	< 2.5
Copper.	7440-50-8	< 0.5
Zinc Compounds	7440-66-6	< 0.5
nickel	7440-02-0	0 - 0.05

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

4. First aid measures

Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.
Inhalation	If inhaled, remove to fresh air. Get medical attention if symptoms occur.
Ingestion	Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If potentially dangerous quantities of this material have been swallowed, call a physician immediately. Get medical attention if symptoms occur.

5. Fire-fighting measures

Flammability of the product	This product does not present fire or explosion hazards as shipped. Small chips, turnings, dust and fines from processing may be readily ignitable. Combustion of the coatings can generate toxic and irritating hydrogen chloride gas.
Fire/explosion hazards	Fine dust clouds may form explosive mixtures with air. High dust concentrations have a potential for combustion or explosion.
Unusual fire/explosion hazards	Explosion / fire hazards may be present when: 1) Dust or fines dispersed in the air can be explosive. Even a minor dust cloud can explode violently. 2) 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. 3) Dust or fines in contact with certain metal oxides (e.g. rust). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source. 4) Molten metal in contact with water / moisture or other metal oxides (e.g. rust, copper oxide). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with other metal oxides can initiate a thermite reaction. Finely divided metal (e.g. powders or wire) may have enough surface oxide to produce thermite reactions / explosions.

Extinguishing media

Suitable	Use coarse water spray on chips and turnings (Use Class D extinguishing agents on dusts, fines or molten metal Use dry chemical powder.
Not suitable	Water around molten metal. Do not use water jet. Do not use carbon dioxide or halogenated extinguishing agents.
Fire-fighting procedures	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

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Hazardous combustion products

Combustion products may include the following:
Combustion of the coatings can generate toxic and irritating hydrogen chloride gas.
halogenated compounds
metal oxide/oxides
carbon oxides (CO, CO₂) (carbon monoxide, carbon dioxide)
nitrogen oxides (NO, NO₂ etc.)

Protective clothing (fire)

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Personal protection in case of a large spill

Chemical splash goggles. Chemical-resistant protective suit. Boots. Chemical-resistant gloves. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Suggested protective clothing might not be adequate. Consult a specialist before handling this product. CAUTION: The protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if concentrations exceed the protection limits of air-purifying respirator.

Methods for cleaning up

Large spill

Move containers from spill area. Eliminate all ignition sources. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Small spill

Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Handling

Because of the risk of explosion, product should be kept dry. Avoid generating dust. Avoid contact with sharp edges or heated metal. Use standard techniques to check metal temperature before handling. Hot aluminum does not present any warning color change. Exercise great caution, since the metal may be hot. Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage

Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10). Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Other information

If product processing includes operations where dust or extremely fine particles are generated, obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and National Fire Protection Association (NFPA) brochures. These guides are listed below. 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.

Guidelines and Brochures
The Aluminum Association, 900 19th Street, N.W., Washington, DC 20006.

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- Aluminum Association's Bulletin F-1, Guidelines for Handling Aluminum Fines Generated During Various Aluminum Fabricating Operations
- Aluminum Association, "Guidelines for Handling Molten Aluminum"
- National Fire Protection Association
 - NFPA 65, Standard for Processing and Finishing of Aluminum
 - 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

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
aluminum	<p>ACGIH TLV (United States). TWA: 1 mg/m³ 8 hour(s). Issued/Revised: 1/2008 Form: Respirable fraction</p> <p>NIOSH REL (United States). TWA: 10 mg/m³ 10 hour(s). Issued/Revised: 6/1994 Form: Total TWA: 5 mg/m³ 10 hour(s). Issued/Revised: 6/1994 Form: Respirable fraction</p> <p>OSHA PEL (United States). TWA: 15 mg/m³, (as Al) 8 hour(s). Issued/Revised: 6/1993 Form: Total dust TWA: 5 mg/m³, (as Al) 8 hour(s). Issued/Revised: 6/1993 Form: Respirable fraction</p>
Copper Compounds	<p>ACGIH TLV (United States). TWA: 1 mg/m³ 8 hour(s). Form: All forms TWA: 0.2 mg/m³ 8 hour(s). Form: Fume</p> <p>OSHA PEL (United States). TWA: 150 µg/m³ 8 hour(s). Form: All forms TWA: 1 mg/m³ 8 hour(s). Form: Dusts and Mists TWA: 0.1 mg/m³ 8 hour(s). Form: Fume</p> <p>NIOSH REL (United States). TWA: 1 mg/m³ 10 hour(s). Form: Dusts and Mists</p>
manganese	<p>ACGIH TLV (United States). TWA: 0.2 mg/m³, (as Mn) 8 hour(s). Issued/Revised: 5/1995</p> <p>OSHA PEL (United States). CEIL: 5 mg/m³, (as Mn) Issued/Revised: 6/1993 Form: Fume</p>
magnesium oxide	<p>ACGIH TLV (United States). TWA: 10 mg/m³ 8 hour(s). Issued/Revised: 1/2003 Form: Fume</p> <p>OSHA PEL (United States). TWA: 15 mg/m³ 8 hour(s). Issued/Revised: 6/1993 Form: Total particulates</p>
Silicon Powder, Amorphous	<p>OSHA PEL (United States). TWA: 5 mg/m³ 8 hour(s). Issued/Revised: 6/1993 Form: Respirable fraction TWA: 15 mg/m³ 8 hour(s). Issued/Revised: 6/1993 Form: Total dust</p> <p>NIOSH REL (United States). TWA: 10 mg/m³ 10 hour(s). Issued/Revised: 6/1994 Form: Total</p>
chromium	<p>ACGIH TLV (United States). TWA: 0.5 mg/m³ 8 hour(s). Form: Inorganic TWA: 0.01 mg/m³ 8 hour(s). Form: Insoluble TWA: 0.05 mg/m³ 8 hour(s). Form: Soluble TWA: 0.5 mg/m³, (measured as Cr) 8 hour(s). Issued/Revised: 9/1994 Form: Inorganic</p> <p>NIOSH REL (United States). TWA: 0.5 mg/m³ 10 hour(s). Issued/Revised: 6/1994</p> <p>OSHA PEL (United States). TWA: 1 mg/m³, (as Cr) 8 hour(s). Issued/Revised: 6/1993</p>
Iron Compounds	<p>ACGIH TLV (United States). TWA: 10 mg/m³ 8 hour(s). Form: All forms TWA: 5 mg/m³ 8 hour(s). Form: Dust and fumes</p> <p>OSHA PEL (United States). TWA: 10 mg/m³ 8 hour(s). Form: All forms</p> <p>NIOSH REL (United States). TWA: 5 mg/m³ 10 hour(s). Form: Dust and fumes</p>
nickel	<p>NIOSH REL (United States). TWA: 0.015 mg/m³, (as Ni) 10 hour(s). Issued/Revised: 6/1994</p>

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Zinc oxide

OSHA PEL (United States).

TWA: 1 mg/m³, (as Ni) 8 hour(s). Issued/Revised: 6/1993

ACGIH TLV (United States).

TWA: 1.5 mg/m³ 8 hour(s). Issued/Revised: 9/1998 Form: Metallic form

ACGIH TLV (United States).

TWA: 2 mg/m³ 8 hour(s). Issued/Revised: 1/2003

STEL: 10 mg/m³ 15 minute(s). Issued/Revised: 1/2003

NIOSH REL (United States).

CEIL: 15 mg/m³ Issued/Revised: 6/1994 Form: Dust

TWA: 5 mg/m³ 10 hour(s). Issued/Revised: 6/1994 Form: Dust and fumes

STEL: 10 mg/m³ 15 minute(s). Issued/Revised: 6/1994 Form: Fume

OSHA PEL (United States).

TWA: 5 mg/m³ 8 hour(s). Issued/Revised: 6/1993 Form: Fume

TWA: 5 mg/m³ 8 hour(s). Issued/Revised: 6/1993 Form: Respirable fraction

TWA: 15 mg/m³ 8 hour(s). Issued/Revised: 6/1993 Form: Total dust

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Some states may enforce more stringent exposure limits.

Control Measures

The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

Personal protection

Eyes

Avoid contact with eyes. Safety glasses with side shields. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Skin and body

Wear appropriate protective clothing to prevent skin contact. The metal may also present a potential for contact with sharp edges, wear work gloves & arm guards to prevent contact.

Respiratory

Use with adequate ventilation. If concentration exceeds recommended exposure levels, and ventilation is inadequate, use respirator that will protect against organic vapor and dust/mist.

Hands

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

9. Physical and chemical properties

Physical state	Solid. [Powder or flakes.] Odorless.
Color	Silvery.
Odor	Odorless.
Density	2500 to 3100 kg/m ³ (2.5 to 3.1 g/cm ³)
Boiling point / Range	2327°C (4220.6°F)
Melting point / Range	660°C (1220°F)

10. Stability and reactivity

Stability and reactivity	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame).

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Incompatibility with various substances

Reactive or incompatible with the following materials: oxidizing materials, acids, alkalis and moisture.

Hazardous decomposition products

If metal is coated, combustion of the coating may generate toxic and irritating gases including: Hydrogen chloride (HCl), carbon oxides (CO, CO₂) (carbon monoxide, carbon dioxide), partially oxidized hydrocarbons and chlorinated hydrocarbons.

Hazardous polymerization

Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Acute toxicity**Other information**

Overexposure to dust may cause mechanical irritation. Repeated and prolonged inhalation of any respirable dust may result in changes in lung function.

Heating of this material and inhalation of the fumes may result in metal fume fever. Typically, metal fume fever has onset 4-8 hours after exposure and lasts 12-48 hours. Thirst and metallic taste usually precede onset of chills, fever, cough, sweating, myalgia, headache, weakness, dyspnoea and nausea. Metal fume fever is a usually self limiting syndrome. Rarely, pulmonary edema occurs.

Chromium VI compounds may cause adverse reproductive effects in males and females and adverse effects on the developing fetus.

Certain Chromium VI compounds have been classified by IARC as carcinogenic to humans and by NTP as reasonably anticipated to be human carcinogens.

This product contains manganese. Inhalation of high concentrations of manganese dust has resulted in an increased incidence of respiratory disease. Inhalation of high concentrations of manganese dust over a period of years has also been reported to cause central nervous system effects. Symptoms may include irritability, difficulty in walking, speech disturbances, compulsive behavior, and a Parkinson-like syndrome. Ingestion of large amounts of manganese salts can cause irritation of the gastrointestinal tract.

Nickel compounds have been classified by IARC as carcinogenic to humans and by NTP as reasonably anticipated to be human carcinogens. Nickel may cause effects on the genetic material in reproductive cells.

Potential chronic health effects**Carcinogenicity**

No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or the International Agency for Research on Cancer (IARC). No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. National Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).

12. Ecological information

No testing has been performed by the manufacturer.

13. Disposal considerations

Waste information

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), transportation and disposal

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14. Transport information

Not classified as hazardous for transport (DOT, TDG, IMO/IMDG, IATA/ICAO)

15. Regulatory information

U.S. Federal Regulations

United States inventory (TSCA 8b)

All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: aluminum; Silicon Powder, Amorphous

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Pxxx series Unalloyed Aluminum Remelt Ingot : reactive, Immediate (acute) health hazard, Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	aluminum	7429-90-5	> 96
Supplier notification	aluminum	7429-90-5	> 96
CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):	CERCLA: Hazardous substances.: chromium: 5000 lbs. (2270 kg); Copper.: 5000 lbs. (2270 kg); Zinc Compounds		

State regulations

Massachusetts Substances

The following components are listed: ALUMINUM; SILICON DUST

New Jersey Hazardous Substances

The following components are listed: ALUMINUM (DUST AND FUME); SILICON POWDER

Pennsylvania RTK Hazardous Substances

The following components are listed: ALUMINUM; SILICON

California Prop. 65

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

Inventories

Canada inventory

All components are listed or exempted.

Europe inventory

All components are listed or exempted.

Australia inventory (AICS)

All components are listed or exempted.

China inventory (IECSC)

All components are listed or exempted.

Japan inventory (ENCS)

Not determined.

Korea inventory (KECI)

All components are listed or exempted.

Philippines inventory (PICCS)

All components are listed or exempted.

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16. Other information

Label requirements

DANGER !

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MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

HMIS® Rating :

Health 1
Flammability 1
Physical Hazard 0
Personal protection

National Fire Protection Association (U.S.A.)



History

Date of issue 08/05/2011.

Date of previous issue 02/25/2009.

Prepared by EHSS

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from us.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken.

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