

Rio Tinto

Section 1. Identification

Product name : ALUMINUM WROUGHT METAL, 6XXX SERIES ALLOYS
Product code : 290
Other means of identification : 6XXX series, 6XXXX, Aluminum wrought metal
Product type : Massive metal.

Relevant identified uses of the substance or mixture and uses advised against

Material uses : Industrial applications: Primary metal; casting/molten and alloying; processing and manufacturing into articles and semi-fabricated articles, building and construction products, packaging products.

Supplier's details : Rio Tinto Aluminium
400-1190 Avenue des Canadiens-de-Montréal
Montreal, Quebec H3B 0E3
Canada
Telephone: +1 514 848 8000

e-mail address of person responsible for this SDS : rta.msds@riotinto.com

Emergency telephone number : +1 215 207 0061 (Rio Tinto Aluminium)
For advice on chemical emergencies, spillages, fires or first aid.

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Aluminum.	>90	7429-90-5
silicon	0.2 - 3.3	7440-21-3
Magnesium	0.2 - 3.0	7439-95-4
zinc	1.5	7440-66-6
Manganese	0 - 1.2	7439-96-5
Iron	0 - 1	7439-89-6
Copper.	0.01 - 1.2	7440-50-8
chromium	0 - 0.5	7440-47-3

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention if any damage to the eye is caused by the metal.
- Inhalation** : For dust exposure: If irritation or other pulmonary symptoms persist, seek medical attention.
- Skin contact** : Get medical attention if symptoms occur. Cuts should be treated promptly and covered. Heated material can cause thermal burns. In case of burns, immediately cool affected skin with cold water and continue for as long as possible or apply wet cloths to the area until medical attention can be obtained.
- Ingestion** : Not applicable.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Not applicable.
- Inhalation** : Not applicable.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : Not applicable.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No special protection is required. See Section 8 for information on appropriate personal protective equipment.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire. Not a fire hazard unless in a particle form (small chips, fine turnings, dust). Suspensions of aluminum dust in air may pose a severe explosion hazard, especially in a confined atmosphere. Avoid sparks and prevent electrostatic discharges from accumulating. A potential for explosion exists for a mixture of fine coarse particles if at least 15% to 20% of the material is finer than 44 microns (325 mesh). Buffing and polishing generate finer material than grinding, sawing and cutting. In case of aluminum fires, use a class D dry powder extinguisher.

Unsuitable extinguishing media : Water, foam, halogenated extinguishing agents.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Hazardous thermal decomposition products : None.

Special protective actions for fire-fighters : 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. Aluminium may lose structural strength when subject to fire and will melt to a hazardous liquid at temperatures in the range of 480 – 660 degrees celsius (dependent on the alloy composition).

Special protective equipment for fire-fighters : No special protection is required.

Remark : Molten aluminium may explode on contact with water or moisture, and may react violently with rust, certain metal oxides and nitrates.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : No specific hazard.

Methods and materials for containment and cleaning up

Small spill : Take care with items that are sharp or heavy. Recycle, if possible.

Large spill : Take care with items that are sharp or heavy. Note: see Section 1 for emergency contact information and Section 13 for waste disposal. Recycle, if possible. Do not attempt to arrest the flow of molten aluminium with shovels, hand tools or footwear. Contain spill with dry sand. Let solidify and cool down to ambient air temperature.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Take care with items that are sharp or heavy. Because of the risk of explosion, aluminum ingots and metal scrap should be thoroughly dried before remelting. 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. For more information on the handling and storing of aluminum, consult the following documents published by the Aluminum Association, 1525 Wilson Blvd, Suite 600, Arlington, VA 22209 (www.aluminium.org):

- Guidelines for handling molten aluminum.
- Recommendations for storage and handling of aluminum powders and pastes.

Section 7. Handling and storage

- Guidelines for handling aluminum fines generated during various aluminum fabricating operations.

See also ""National Fire Protection Association Codes"": NFPA 484: Standard for Combustible Materials.

Inspect all remelt ingot prior to charging into a furnace and remove surface contamination such as water, ice, snow, deposits of grease and oil and other surface contamination resulting from transport or storage.

Adequately preheat and dry ingot before charging it into a furnace. As a guide, this is done by heating the ingots to 400 degrees Celsius throughout. Heating for 2 hours per 25mm of section thickness is typically required to bring aluminium to a uniform temperature.

Perform the furnace charging sequence in such a way that full submersion of ingots in molten aluminium is avoided to prevent entrapment of moisture beneath molten metal.

Advice on general occupational hygiene

- : Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

- : Store in accordance with local regulations. Do not cut, transport or even approach any coil giving off a crackling sound or emitting steam vapour. Once a coil of foil has been partially or completely wetted: KEEP THE COIL COOL UNTIL THE INTERIOR IS COMPLETELY DRY. If such cooling is impractical, leave the coil in place and keep people at least 30 meters away from it for at least 72 hours. (See Rio Tinto Alcan publication entitled "Potential Safety Hazards of immersing a coil of Aluminum Foil in water"). Product ready for remelting must be kept dry.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Aluminum.	<p>OSHA PEL (United States, 11/2006). TWA: 5 mg/m³, (as Al) 8 hours. Form: Respirable fraction</p> <p>ACGIH TLV (United States, 3/2015). TWA: 1 mg/m³ 8 hours. Form: Respirable fraction</p> <p>NIOSH REL (United States, 10/2013). TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total</p>
silicon	<p>OSHA PEL (United States, 2/2013). TWA: 5 mg/m³, (as Al) 8 hours. Form: Respirable fraction TWA: 15 mg/m³, (as Al) 8 hours. Form: Total dust</p> <p>OSHA PEL (United States, 2/2013). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>NIOSH REL (United States, 10/2013). TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total</p>
Magnesium	None.
zinc	None.
Manganese	<p>OSHA PEL (United States, 2/2013). CEIL: 5 mg/m³, (as Mn) Form: Fume</p> <p>NIOSH REL (United States, 10/2013). TWA: 1 mg/m³, (as Mn) 10 hours. Form: Fume STEL: 3 mg/m³, (as Mn) 15 minutes. Form: Fume</p> <p>ACGIH TLV (United States, 3/2015). TWA: 0.1 mg/m³, (as Mn) 8 hours. Form: Inhalable fraction TWA: 0.02 mg/m³, (as Mn) 8 hours. Form: Respirable fraction</p>
Iron	ACGIH TLV (United States).

Section 8. Exposure controls/personal protection

Copper.	<p>TWA: 5 mg/m³, (as iron oxide) 8 hours. Form: Dust and fumes NIOSH REL (United States). TWA: 5 mg/m³, (as iron oxide) 10 hours. Form: Dust and fumes OSHA PEL (United States). TWA: 10 mg/m³, (as iron oxide) 8 hours. Form: Fume ACGIH TLV (United States, 3/2015). TWA: 1 mg/m³, (as Cu) 8 hours. Form: Dust and mist TWA: 0.2 mg/m³ 8 hours. Form: Fume</p>
chromium	<p>NIOSH REL (United States, 10/2013). TWA: 1 mg/m³, (as Cu) 10 hours. Form: Dusts and Mists OSHA PEL (United States, 2/2013). TWA: 1 mg/m³ 8 hours. Form: Dusts and Mists TWA: 0.1 mg/m³ 8 hours. Form: Fume NIOSH REL (United States, 10/2013). TWA: 0.5 mg/m³ 8 hours. ACGIH TLV (United States, 3/2015). TWA: 0.5 mg/m³, (measured as Cr) 8 hours. Form: Inorganic OSHA PEL (United States, 2/2013). TWA: 1 mg/m³, (as Cr) 8 hours.</p>

Appropriate engineering controls : If the product is in its solid form: No special ventilation requirements. Special ventilation should be used to convey finely divided metallic dust generated by grinding, sawing or polishing operations, in order to eliminate explosion hazards. Maintain dust concentration in ventilation ducts below the lower explosive limit of 40 g/m³ (0.04 oz/ft³).

Environmental exposure controls : Not applicable.

Individual protection measures

Hygiene measures : Wash thoroughly after handling.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
Recommended: face shield

Skin protection

Hand protection : Use strong, cut-resistant gloves suitable for handling metals.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: For handling molten metal: Clothing must be resistant to drops of molten metal and radiant heat.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: For handling molten metal: Safety boots or shoes with spats.

Respiratory protection : Not applicable. Recommended: If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Personal protective equipment (Pictograms) :



Section 9. Physical and chemical properties

Appearance

Physical state	: Solid. [Metal.]
Color	: Silvery grey
Odor	: Odorless.
Odor threshold	: Not applicable.
pH	: Not applicable.
Melting point	: 482 to 660°C (899.6 to 1220°F)
Boiling point	: Not applicable.
Flash point	: Not applicable.
Evaporation rate	: Not applicable.
Flammability (solid, gas)	: Not applicable.
Lower and upper explosive (flammable) limits	: Not applicable.
Vapor pressure	: Not applicable.
Vapor density	: Not applicable.
Bulk density	: Not applicable.
Granulometry	: Not applicable.
Relative density	: 2.5 to 2.9
Solubility	: Insoluble in the following materials: cold water, hot water, methanol, diethyl ether, n-octanol and acetone.
Partition coefficient: n-octanol/water	: Not applicable.
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: Not applicable.
Viscosity	: Not applicable.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: In the form of particles, may explode when mixed with halogenated acids, halogenated solvents, bromates, iodates or ammonium nitrate. Aluminum particles on contact with copper, lead, or iron oxides can react vigorously with release of heat if there is a source of ignition or intense heat. Molten aluminium may react violently if it comes into contact with water.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Aluminum. silicon Manganese Iron	LC50 Inhalation Dusts and mists	Rat	>2350 mg/l	4 hours
	LD50 Oral	Rat	>5000 mg/kg	-
	LD50 Oral	Rat	3160 mg/kg	-
	LD50 Oral	Rat	9 g/kg	-
	LCLo Inhalation Dusts and mists	Rat	250 mg/m ³	6 hours
	LD50 Oral	Rat	7500 mg/kg	-
	LD50 Dermal	Rat	1 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-

Conclusion/Summary : No known significant effects or critical hazards.

Irritation/Corrosion

Conclusion/Summary

Eyes : Not applicable for solid metal form. Aluminum dust may cause eye discomfort and irritation.

Sensitization

Conclusion/Summary

Skin : Non-sensitizer.

Respiratory : Non-sensitizer.

Mutagenicity

Conclusion/Summary : No mutagenic effect.

Carcinogenicity

Conclusion/Summary : No carcinogenic effect.

Reproductive toxicity

Conclusion/Summary : Not considered to be toxic to the reproductive system.

Teratogenicity

Conclusion/Summary : No teratogenic effect.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Inhalation.

Potential acute health effects

Eye contact : Not applicable.

Inhalation : Not applicable.

Skin contact : No known significant effects or critical hazards.

Ingestion : Not applicable.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Section 11. Toxicological information

Short term exposure

Potential immediate effects : No specific data.

Potential delayed effects : No specific data.

Long term exposure

Potential immediate effects : No specific data.

Potential delayed effects : No specific data.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
Iron	Sub-chronic LOAEL Oral Sub-chronic NOAEL Inhalation Dusts and mists	Rat Rat	26 mg/kg 5 mg/m ³	12 weeks 4 weeks

Conclusion/Summary : No known significant effects or critical hazards.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Aluminum.	EC50 >100 mg/l	Algae - Selenastrum capricomutum	72 hours
chromium	EC50 >100 mg/l	Daphnia - Daphnia magna	48 hours
	EC50 >100 mg/l	Fish - Salmo trutta	96 hours
	Acute EC50 0.2 ppm Marine water	Algae - Bacillariophyta	72 hours
	Acute EC50 5 ppm Marine water	Algae - Macrocystis pyrifera - Young	4 days
	Acute EC50 35000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 13.9 ppm Fresh water	Fish - Anguilla rostrata	96 hours
Chronic NOEC 50 mg/l Marine water	Algae - Glenodinium halli	72 hours	
Chronic NOEC 0.19 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks	

Conclusion/Summary : No acute or chronic classification is appropriate for Al metal massive based on non toxic results below the Ecotoxicity Reference Value (ERV) of tests with aluminium metal, oxide and hydroxide at loadings of 100 mg/L at pH 8-8.5 (maximum solubility of Al expected). All aluminium in soil or the aquatic environment comes from natural sources. Local sources has an insignificant contribution and impact on environment.

Persistence and degradability

Conclusion/Summary : Not applicable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Aluminum.	-	-	Not readily

Section 12. Ecological information

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not mobile under normal environmental conditions. May be leached from the ground at low pH (<5.5) or high pH (>8.5)

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. 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. Recycle, if possible.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	ADR/RID	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-	-	-
Transport hazard class(es)	-	-	-	-	-	-
Packing group	-	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.	No.
Additional information	-	-	-	-	-	-

Special precautions for user : Not applicable.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not applicable.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Zinc; Copper.; chromium

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Section 15. Regulatory information

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Not applicable.

Composition/information on ingredients

No products were found.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Aluminum.	7429-90-5	>90
	Zinc	7440-66-6	1.5
Supplier notification	Aluminum.	7429-90-5	>90
	Zinc	7440-66-6	1.5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: ALUMINUM; SILICON DUST; MAGNESIUM; ZINC

New York : The following components are listed: Zinc

New Jersey : The following components are listed: ALUMINUM; SILICON; MAGNESIUM; ZINC

Pennsylvania : The following components are listed: ALUMINUM; SILICON; MAGNESIUM

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

International lists

National inventory

Australia inventory (AICS) : All components are listed or exempted.

Canada inventory : All components are listed or exempted.

China inventory (IECSC) : All components are listed or exempted.

Europe inventory : All components are listed or exempted.

Korea inventory : All components are listed or exempted.

Section 15. Regulatory information

New Zealand Inventory of Chemicals (NZIoC) : All components are listed or exempted.
Philippines inventory (PICCS) : All components are listed or exempted.
Taiwan Chemical Substances Inventory (TCSI) : All components are listed or exempted.

Canada

WHMIS (Canada) : Not classified.
Canadian NPRI : The following components are listed: Aluminum (fume or dust only); Zinc (and its compounds)

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	*	0
Flammability		0
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

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



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
Not classified.	

History

Date of issue/Date of revision : 04/04/2016
Date of previous issue : No previous validation
Version : 1

Section 16. Other information

Key to abbreviations

- : ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- IMSBC = International Maritime Solid Bulk Cargoes Code
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations

References

- : Not available.

✔ Indicates information that has changed from previously issued version.

United States / 4.7 / EN-US

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.