Rio Tinto Alcan

United States/NA

1. Product and company identification

Product name : ALUMINUM WROUGHT METAL, 2XXX SERIES ALLOYS

Synonym : 2014, 2014 Clad, 2017, 2022, 2024, 2024 Clad, 2024A, 2027, 2039, 2056, 2056 Clad, 2139, 2214, 2214 Clad, 2219, 2618, 2XXX series.

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/Manufacturer : Rio Tinto Alcan
1188 Sherbrooke West
Montreal, Quebec H3A 3G2
Canada

Telephone: +1 514 848 8000

Code : 285

In case of emergency : +1 215 207 0061 (Rio Tinto Alcan)
For advice on chemical emergencies, spillages, fires or first aid.

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

Product type : Massive metal.

2. Hazards identification

Emergency overview

Physical state : Solid. [Metal.]

Color : Silvery grey

Hazard statements : CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Precautionary measures : Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Routes of entry : Inhalation.

Potential acute health effects

Skin : No known significant effects or critical hazards.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data. Not applicable for metal solid form. Prolonged over exposure to fine aluminium dust may cause pneumoconiosis and pulmonary fibrosis. Case study reports of disease due to sole exposure to vaporized aluminium are old and rare.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

2. Hazards identification

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Target organs : Contains material which may cause damage to the following organs: kidneys, liver, upper respiratory tract, skin, eyes.

Over-exposure signs/symptoms

Inhalation : No specific data.

Skin : No specific data.

Eyes : No specific data.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

3. Composition/information on ingredients

Name	CAS number	%
aluminium	7429-90-5	>90
Zinc	7440-66-6	2.7 - 8
copper	7440-50-8	0 - 6.8
magnesium	7439-95-4	0.25 - 2.9
Iron	7439-89-6	0.1 - 1.1
manganese	7439-96-5	0 - 0.9
silicon	7440-21-3	0 - 0.8
titanium	7440-32-6	0.1 - 0.2

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.

4. First aid measures

Eye contact : Get medical attention if any damage to the eye is caused by the metal. Get medical attention if irritation occurs.

Skin contact : 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. Get medical attention if symptoms occur.

Inhalation : For dust exposure: If irritation or other pulmonary symptoms persist, seek medical attention.

Ingestion : Not applicable.

Protection of first-aiders : No special protection is required. See Section 8 for information on appropriate personal protective equipment.

Notes to physician : No specific treatment. Treat symptomatically.

5. Fire-fighting measures

Flammability of the product : Massive metal: No specific fire or explosion hazard.

Extinguishing media

Suitable : 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.

Not suitable : Water, foam, halogenated extinguishing agents.

Special exposure hazards : 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).

Hazardous thermal decomposition products : None.

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

6. Accidental release measures

Personal precautions : Put on appropriate personal protective equipment (see Section 8).

Environmental precautions : No specific hazard.

Methods for cleaning up

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

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

7. Handling and storage

Handling : 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. Excercise 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.
- 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

7. Handling and storage

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.

Storage : Store in accordance with local regulations. Store in a segregated and approved area. 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 impratical, leave the coil in place and keep people at least 30 meteres 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.

8. Exposure controls/personal protection

Ingredient	Exposure limits
aluminium	**OSHA PEL (United States, 11/2006).** TWA: 5 mg/m³, (as Al) 8 hour(s). Form: Respirable fraction TWA: 15 mg/m³, (as Al) 8 hour(s). Form: Total dust **ACGIH TLV (United States, 2/2010).** TWA: 1 mg/m³ 8 hour(s). Form: Respirable fraction; see Appendix C
copper	**ACGIH TLV (United States, 2/2010).** TWA: 1 mg/m³, (as Cu) 8 hour(s). TWA: 0.2 mg/m³ 8 hour(s). Form: Fume **OSHA PEL (United States, 6/2010).** TWA: 1 mg/m³ 8 hour(s). Form: Dusts and mists TWA: 0.1 mg/m³ 8 hour(s). Form: Fume
silicon	**OSHA PEL (United States, 11/2006).** TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction TWA: 15 mg/m³ 8 hour(s). Form: Total dust
manganese	**ACGIH TLV (United States, 2/2010).** TWA: 0.2 mg/m³, (as Mn) 8 hour(s). **OSHA PEL (United States, 6/2010).** CEIL: 5 mg/m³, (as Mn) Form: Fume

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : 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/ft 3).

Personal protection

Respiratory : Recommended: If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

Hands : Use strong, cut-resistant gloves suitable for handling metals. Wear suitable gloves. When handling hot material, wear heat-resistant protective gloves that are able to withstand the temperature of molten product.

Eyes : 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 or dusts. Recommended: face shield

Skin :

8. Exposure controls/personal protection

No special protective clothing is required.
Recommended: For handling molten metal: Clothing must be resistant to drops of molten metal and radiant heat.

Environmental exposure controls : 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/ft 3).

Other protection : For handling molten metal: Approved safety helmet with neck protection.
For handling molten metal: Safety boots or shoes with spats.

Personal protective equipment (Pictograms) :

9. Physical and chemical properties

Physical state : Solid. [Metal.]

Flash point : Not applicable.

Burning time : Not applicable.

Burning rate : Not applicable.

Auto-ignition temperature : Not applicable.

Flammable limits : Not applicable.

Color : Silvery grey

Odor : Odorless.

pH : Not applicable.

Boiling/condensation point : Not applicable.

Melting/freezing point : 482 to 660°C (899.6 to 1220°F)

Relative density : 2.5 to 2.9

Bulk Density : Not applicable.

Granulometry : Not applicable.

Vapor pressure : Not applicable.

Vapor density : Not applicable.

Odor threshold : Not applicable.

Evaporation rate : Not applicable.

Viscosity : Not applicable.

Solubility : Insoluble in the following materials: cold water, hot water, methanol, diethyl ether, n-octanol and acetone.

Physical/chemical properties comments : Not applicable.

10. Stability and reactivity

Chemical stability : The product is stable.

Conditions to avoid : 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.

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.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur. Fine dust presents an explosion hazard if dispersed in air at high concentrations.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Zinc	TDLo Intratracheal	Rat	25 mg/kg	-
magnesium	TDLo Intratracheal	Rat	250 mg/kg	-
Iron	LD50 Oral	Rat	7500 mg/kg	-
	LCLo Inhalation Dusts and mists	Rat	250 mg/m³	6 hours
manganese	LD50 Oral	Rat	9 g/kg	-
silicon	LD50 Oral	Rat	3160 mg/kg	-
	LDLo Intraperitoneal	Rat	500 mg/kg	-
Aluminium	LC50 Dusts and mists	Rat	>2350 mg/l	4 hours
	LC50 Oral	Rat	>5000 mg/kg	-
	Dermal	Rat	No effect level.	-

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

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Iron	Sub-chronic LOAEL Oral	Rat	26 mg/kg	12 weeks
	Sub-chronic NOAEL Inhalation Dusts and mists	Rat	5 mg/m³	4 weeks

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

Irritation/Corrosion

Conclusion/Summary

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

Sensitizer

Conclusion/Summary

Skin : Non-sensitizer.

Respiratory : Non-sensitizer.

Carcinogenicity

Conclusion/Summary : No carcinogenic effect.

Classification

11. Toxicological information

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
aluminium	A4	-	-	-	-	-

Mutagenicity

Conclusion/Summary : No mutagenic effect.

Teratogenicity

Conclusion/Summary : No teratogenic effect.

Reproductive toxicity

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

12. Ecological information

Ecotoxicity : Not readily biodegradable.

Toxicity

Product/ingredient name	Test	Result	Species	Exposure
aluminium	OECD	EC50 >100 mg/l	Fish - Salmo trutta	96 hours
-	OECD	EC50 >100 mg/l	Daphnia - Daphnia magna	48 hours
-	OECD	EC50 >100 mg/l	Algae - Selenastrum capricomutum	72 hours

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/degradability

Conclusion/Summary : Not applicable

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

13. Disposal considerations

Waste disposal : Recycle, if possible. 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 should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-	-		-
TDG Classification	Not regulated.	-	-	-		-
Mexico Classification	Not regulated.	-	-	-		-

14. Transport information

ADR/RID Class	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-
IATA-DGR Class	Not regulated.	-	-	-		-

PG* : Packing group

15. Regulatory information

HCS Classification : Target organ effects

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

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: copper; Zinc
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: copper: Immediate (acute) health hazard; Zinc: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: Zinc; copper

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

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 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	Zinc copper	7440-66-6 7440-50-8	2.7 - 8 0 - 6.8
Supplier notification	Zinc copper	7440-66-6 7440-50-8	2.7 - 8 0 - 6.8

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

State regulations

Massachusetts : The following components are listed: ALUMINUM; ZINC; COPPER; MAGNESIUM

New York : The following components are listed: Zinc; Copper

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

Pennsylvania : The following components are listed: ALUMINUM; ZINC; COPPER FUME; MAGNESIUM

15. Regulatory information

Canada

WHMIS (Canada) : Not controlled under WHMIS (Canada).

Canadian NPRI : The following components are listed: Aluminum; Zinc; Copper

Canada inventory : All components are listed or exempted.

International regulations

International lists : **Australia inventory (AICS)**: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: Not determined.
Korea inventory: All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

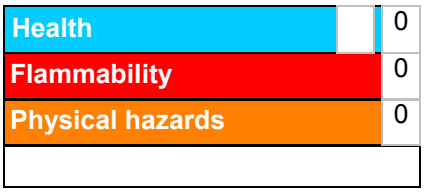
Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

16. Other information

Label requirements : CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

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



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 MSDSs 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.) :

16. Other information

Date of printing : **3/21/2014.**

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Date of previous issue : 5/22/2012.

Version : 1.01

Prepared by : Not available.

Indicates information that has changed from previously issued version.

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