

# Material Safety Data Sheet - MSDS

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product name:**



**Application:**

*Aluminium welding and brazing materials*

**Supplier:**

*Alumat d.o.o.  
Partizanska 38  
Slovenska Bistrica  
Slovenija*

## 2. PRODUCT TRADE NAME / PRODUCT CLASSIFICATION(S):

ER1070 (AI1070)

ER4043 (AI4043), ER4047 (AI4047)

ER5356 (AI5356), ER5554 (AI5554), ER5556 (AI5556), ER5183 (AI5183), ER5087 (AI5087)

## 3. HAZARDS IDENTIFICATION

HMIS Ratings: Health: 1 Fire: 1 Physical Hazard: 1

**Physical and Chemical Hazards:** Improper use of the product or inadequate preparation of the conductors, moulds or surroundings can result in aggressive reactions. Self-propagating high temperature reaction will occur if heated above ignition temperature. Generates molten metal in excess of 1370°C, slag and dense, dusty smoke.

**Human health:** Burns from contact with reaction or reaction products are possible. Inhalation of powder or fumes may cause metal fume fever.  
Exposure to reaction by-products: See section 8.

**Environment:** Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

## 4. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS #	% by weight	UN number
Aluminum	7429-90-5	87 - 98	UN1309
Silicium Powder, Amorphous	7440-21-3	4 - 13	UN1346
Copper Metal Powder	7440-50-8	0.1 - 6	Not regulated.
Magnesium Metal Powder	7439-95-4	0.1 - 5	UN2950
Manganese	7439-96-5	<1.5	Not regulated.
Chromium, Metal	7440-47-3	<0.5	Not regulated.

**The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.**

*See Section 8 for Exposure Limits of the oxides found in the welding fumes.*

## 5. FIRST-AID MEASURES

Molten product will cause skin burns and if in contact with eyes while in a molten state may cause serious damage. Burns (in contact with molten metal, slag or hot equipment): Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital.

**Inhalation:** Inhalation of welding fumes: / Dust inhalation: Move into fresh air and keep at rest. In case of persistent throat irritation or coughing: Seek medical attention and take along these instructions.

**Skin contact:** Remove contaminated clothes and rinse skin thoroughly with water. If material is hot, treat for thermal burns and get immediate medical attention.

**Eye contact:** Dust in the eyes: Do not rub eye. Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids widely. If irritation persists: Seek medical attention and bring these instructions

# Material Safety Data Sheet - MSDS

**Ingestion:** Immediately rinse mouth and drink plenty of water. Keep person under observation. If person becomes uncomfortable seek hospital and bring these instructions.

## 6. FIRE-FIGHTING MEASURES

**Extinguishing media:** Extinguish with dry sand and/or flood with large amounts of water. Use fire-extinguishing media appropriate for surrounding materials. Extinguishing media which are not suitable: Hand water buckets or hand storage pumps. Molten metal contact with water can cause small pockets of superheated steam.

**Specific hazards:** During fire, health hazardous gases may be formed. Ignition temperature: > 950 °C  
Ignition of large quantities of exothermic materials may result in large volumes of dense smoke.

**Protective equipment for fire-fighters:** Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace

## 7. ACCIDENTAL RELEASE MEASURES

**Personal precautions** Follow precautions for safe handling described in this safety data sheet. Avoid inhalation of  
Dust. Do not breathe fumes. Avoid contact with skin and eyes. For personal protection, see  
Section 8.

**Environmental precautions:** Precaution should be taken to prevent hot material and reaction byproducts from contact with  
Combustible materials in surrounding areas. Avoid spreading dust or contaminated materials.  
Avoid discharge to the aquatic environment. Contact local authorities in case of spillage to  
drain/aquatic environment

**Methods for cleaning up:** Sweep up spilled substance and remove to safe place. For waste disposal, see section 13

## 8. HANDLING AND STORAGE

**Handling :** Avoid breathing dusts, vapors or fumes from burning materials. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Do not ingest. Keep container closed. Wash thoroughly after handling.

**Storage :** unopened containers should be kept in a relatively dry storage area at temperatures between 15°C (60°F) and 30°C (80°F) and 50% maximum relative humidity.

## 9. Exposure Controls, Personal Protection

**Engineering controls:** Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. If user operations generate dust, fumes or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Eyes :** Safety glasses with side shields. Face shield with radiation shielding. Body : Full suit. (Fire resistant.)

**Respiratory :** Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room

**Hands:** Gloves. (Fire resistant.)

**Feet:** Metal cap, safety boots.

# Material Safety Data Sheet - MSDS

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m <sup>3</sup>	Other	ppm	mg/m <sup>3</sup>	Other	ppm	mg/m <sup>3</sup>	Other	
Aluminium powder (pyrophoric)	US ACGIH 2/2010	-	1	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	10	-	-	-	-	-	-	-	[3] [b]
	BC 10/2009	-	1	-	-	-	-	-	-	-	[c]
	ON 7/2010	-	1	-	-	-	-	-	-	-	[a]
Aluminium powder (pyrophoric), as Al	QC 6/2008	-	10	-	-	-	-	-	-	-	[A]
Silicon	BC 10/2009	-	3	-	-	-	-	-	-	-	[d]
	ON 7/2010	-	10	-	-	-	-	-	-	-	[e]
	QC 6/2008	-	10	-	-	-	-	-	-	-	[f]
	US ACGIH 2/2010	-	0.2	-	-	-	-	-	-	-	[g][B]
Copper	AB 4/2009	-	1	-	-	-	-	-	-	-	[C]
	BC 10/2009	-	0.2	-	-	-	-	-	-	-	[h][C]
Copper, as Cu	BC 10/2009	-	1	-	-	-	-	-	-	-	[g][C]
	ON 7/2010	-	0.2	-	-	-	-	-	-	-	[i][C]
Copper	QC 6/2008	-	1	-	-	-	-	-	-	-	[g][C]
	ON 7/2010	-	0.2	-	-	-	-	-	-	-	[j]
Copper, as Cu	QC 6/2008	-	1	-	-	-	-	-	-	-	[k][C]
	ON 7/2010	-	0.2	-	-	-	-	-	-	-	[l][C]
Manganese, as Mn	US ACGIH 2/2010	-	0.2	-	-	-	-	-	-	-	[D]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	
	BC 10/2009	-	0.2	-	-	-	-	-	-	-	[D]
	ON 7/2010	-	0.2	-	-	-	-	-	-	-	
Chromium, measured as Cr	QC 6/2008	-	1	-	-	3	-	-	-	-	[l][D]
	US ACGIH 2/2010	-	0.5	-	-	-	-	-	-	-	[m][E]
Chromium, as Cr	AB 4/2009	-	0.5	-	-	-	-	-	-	-	[3]
Chromium	BC 10/2009	-	0.5	-	-	-	-	-	-	-	
Chromium, as Cr	ON 7/2010	-	0.5	-	-	-	-	-	-	-	
Chromium	QC 6/2008	-	0.5	-	-	-	-	-	-	-	

3]Skin sensitization **Form:** [a]Respirable fraction; see Appendix C [b]Metal Dust [c]Respirable [d]Respirable dust [e]Total dust [f]Total dust. [g]Fume [h]Dusts and Mists [i]Dusts and mists [j]dust and mists [k]dusts & mists [l]fume [m]Inorganic **Notes:** [A]as Al [B]Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124) :36338-33351, June 30, 1993, for revised OSHA PEL. Adopted Values enclosed are those for which changes are proposed. Consult the Notice of Intended Changes for current proposal. See Notice of Intended changes. [C]as Cu [D]as Mn [E]measured as Cr

# Material Safety Data Sheet - MSDS

## 10. Physical and Chemical Properties

Physical state and Appearance	Solid.
Color	Reddish-brown. Grayish-white.
Odor	Odorless.
Melting/freezing point	1540 to 2030°C (2804 to 3686°F)
Specific gravity	Not available.
Solubility	Insoluble in the following materials: cold water, hot water.

## 11. Stability and Reactivity

Stability and reactivity	The product is stable.
Hazardous decomposition products	Metallic oxides. Carbon oxides (CO, CO <sub>2</sub> ). Arc radiation can support the production of ozone and nitrogen oxides.
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.

## 12. Toxicological Information

Product/ingredient name	Result	Species	Dose	Exposure
Silicon	LD <sub>50</sub> Oral	Rat	3160 mg/kg	-
Manganese	LD <sub>50</sub> Oral	Rat	9 g/kg	-

**CARCINOGENIC EFFECTS:** See Section 2.  
Contains material which causes damage to the following organs: blood, kidneys, lungs, liver, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

**Chronic effects and other toxic effects on humans**  
Acute exposure to welding fumes may result in discomfort such as: dizziness, nausea or dryness of nose, throat or the eyes

LD <sub>50</sub> or LC <sub>LO</sub> found for oral, dermal or inhalation routes of administration:	
Nickel:	oral rat LD <sub>50</sub> : 9000 mg/kg body weight
Silicon:	oral rat LD <sub>50</sub> : 3160 mg/kg body weight
Manganese:	oral rat LD <sub>50</sub> : 9000 mg/kg body weight
Iron:	intraperitoneal rabbit LD <sub>LO</sub> : 20 mg/kg - no toxic effect noted

## 13. Ecological Information

Product/ingredient name	Result	Species	Exposure
Aluminum powder (pyrophoric) Copper	Acute LC50 120 ug/L Fresh water	Fish - Oncorhynchus mykiss - EMBRYO	96 hours
	Acute EC50 4.1 ug/L Fresh water	Crustaceans - Simocephalus vetulus Juvenile (Fledgling, Hatchling, Weanling) - <48 hours	48 hours
	Acute EC50 1 ug/L Fresh water	Daphnia - Ceriodaphnia dubia - Juvenile (Fledgling, Hatchling, Weanling) - <24 hours	48 hours
	Acute LC50 9.4 ug/L Fresh water	Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) - <1 months	96 hours
Manganese	Chronic NOEC 7.43 ug/L Fresh water	Fish - Salmo trutta - IMMATURE - 14 cm 26.3 g	4 days
	Acute EC50 40000 ug/L Fresh water	Daphnia - Daphnia magna	48 hours
	Chronic NOEC 28000 ug/L Fresh water	Daphnia - Daphnia magna	48 hours
Chromium	Acute LC50 50 to 65 ug/L Fresh water	Crustaceans - Simocephalus vetulus <24 hours	48 hours
	Acute LC50 22 ug/L Fresh water	Daphnia - Daphnia magna - <24 hours	48 hours
Production of Degradation	Acute LC50 14.3 ppm Fresh water	Fish - Cyprinus carpio	96 hours
	Some metallic oxides.		

# Material Safety Data Sheet - MSDS

## 14. Disposal Considerations

**Waste information** : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.

## 15. Transport Information

No transport class is found applicable to this product.

- **Road ADR:** Not restricted
- **Railway RID:** Not restricted
- **Transport by see IMDG:** Not restricted
- **Air transport:** Not restricted

TRANSPORT INFORMATION include inter alia:

UN number: -

Product / good designation: -

Product / goods class: -

## 16. Regulatory Information

**EUROPEAN COMMUNITY:**

All components are listed on European Core inventory (ECOIN).

**U.S. FEDERAL:**

Regulations : Safety and Health standards, 29 CFR 1910, available from U.S. Government printing office, Washington, D.C. 20402-0001

## 17. Other Information

- RID = Regulations concerning the international carriage of dangerous good by rail.
- ADR = European agreement concerning the international carriage of dangerous goods by road.
- DoT49CFR = U.S. Department of transportation 49 code of Federal Regulations.
- ADNR = Regulations concerning the carriage of dangerous goods on the Rhine.
- IMDG code = International Maritime Dangerous Goods Code.
- ICAO -TI = International Civil Aviation Organization - Technical Instructions.
- IATA-DGR = International Air Transport Association - Dangerous Goods Regulations.
- ACGIH = American Conference of Governmental Industrial Hygienists.
- CAS = Chemical Abstract Service.
- CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act.
- CFR = Code of Federal Regulations.
- DSL = Domestic Substances List (Canada)

# Material Safety Data Sheet - MSDS

- EINECS = European Inventory of Existing Commercial Chemical Substances.
- EPA = Environmental Protection Administration.
- TCLP = Toxic Chemicals Leachate Program.
- IARC = International Agency for Research on Cancer.
- NIOSH = National Institute for Occupational Safety and Health.
- NTP = National Toxicology Program.
- OSHA = Occupational Safety and Health Administration.
- PEL = Permissible Exposure Limit.
- STEL = Short Term Exposure Limit.
- TLV = Threshold Limit Value.
- TSCA = Toxic Substances Control Act.

**Workers qualifying:** Safety at Work Certificate

**Recommended use and possible restrictions:** Metallurgical products

**Instructions:** Technical instructions by producer

**Sources:**

- Official gazette of Republic Slovenia, Nr. 73/1999,
- Official gazette of Republic Slovenia, Nr. 101/2002.

The content and format of this MSDS is in accordance with:

- Commission Directive 2001/58/EC of July 2001, amending for the second time Commission Directive 91/155/EC;
- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);
- Directive 1999/45/EC or. 67/584/EEC of the classification, packaging and labelling of dangerous substances;
- Directive 1998/24/EC on protection of the health and safety of workers from the risk related to chemical agents at work;
- EN 573-3 (2007): Aluminium and aluminium alloys - Chemical composition and form of wrought products;
- EN 18273-3 (2016): Aluminium and aluminium alloys - Chemical composition and form of wrought products;
- Directive 2002/95/EG (RoHS) dated 27.1.2003 - "Directive of the European Parliament and Council of 27. January 2003, on the restriction of the use of certain hazardous substances in electrical and electronic equipment";
- Directive 2000/53/EC (ELV) dated 18.9.2000 - "Directive of the European Parliament and of the Council of 18. September 2000, on end-of life vehicles";

The data based on the present state of knowledge and experience. The Safety Data Sheet serves to describe the product only with regard to the safety requirements. These data do not constitute a specification. The existing regulations are to be observed by customers at their own responsibility

# Material Safety Data Sheet - MSDS

## LEGEND:

ACGIH	American Conference of Governmental Industrial Hygienists	atm	atmosphere
AICS	Australian Inventory of Chemical Substances	cm	centimeter gram
CAS	Chemical Abstract Services	g	inch kilogram
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act	in	pound meter
CFR DOT	Code of Federal Regulations	kg	milligram
DSL	Department of Transportation	lb.	millimeter
ECOIN	Domestic Substances List	m	not otherwise specified parts
EPA	(Canada) European Core	mg	per billion
IARC	Inventory Environmental	mm	
LC50	Protection Agency International Agency for Research on Cancer Lethal Concentration (50 percent kill)	n.o.s.	
		ppb	
LCL	Lowest published lethal	ppm	parts per million pounds/square inch
o	concentration Lethal dose (50	psia	absolute microgram
LD5	percent kill)	ug	
0	Lowest published lethal		
LDL	dose Metal Inert Gas		
o			
MIG			
NFPA	National Fire Protection Association		
NIOSH	National Institute for Occupational Safety and Health		
NTP	National Toxicology Program		
OSHA	Occupational Safety and Health Administration		
PEL	Permissible Exposure Limit		
PIN	Product Identification Number		
RCA	Resource Conservation and Recovery Act		
SARA	Superfund Amendments and Reauthorization Act		
STEL	Short Term Exposure Limit		
TCLP	Toxic Chemicals Leachate Program		
TDG	Transportation of Dangerous Goods		
TIG	Tungsten Inert Gas		
TLV	Threshold Limit Value		
TSCA	Toxic Substances Control Act		
TWA	Time weighted Average		