SECTION 1: Identification of the substance/mixture and of the company/ undertaking

· **1.1 Product identifier**
· **Trade name: Aluminium & Legierungen**

· **Chemical Identification**
Filler metals: MA-1070, MA-1450, MA-2319, MA-4018, MA-4043, MA-4047, MA-5087, MA-5183, MA-5356, MA-5754, MA-6063
Wires in general: see EN 573-3Wrought aluminium materials and aluminium alloys; alloy identification:The alloy marking consists of a standardised, four-digit, internationally recognised number witha possible additional letter describing the delivery (according to EN 573-3; see also reference 3).If necessary, a number determines the metallic state according to EN 515 (see also reference 1), e.g. 5754 H13
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
· **Application of the substance / the mixture**
Thermal spraying, vapour deposition, welding, stamping, rolling, forming, polishing, grinding, cutting, peeling,Pickling, shining, anodising

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
MIGAL.CO GmbH

Wattstr. 2
94405 Landau/Isar
Germany
Tel.: +49(0)9951/69059-3110
Fax.: +49(0)9951/69059-3910

Email: robert.lahnsteiner@migal.co
Internet: http://www.migal.co

· **Further information obtainable from:** Robert Lahnsteiner, Robert.lahnsteiner@migal.co
· **1.4 Emergency telephone number:** +49 9951 69059-3110

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**
The product is not classified, according to the GB CLP regulation.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void
· **2.3 Other hazards**
If molten aluminium comes into contact with water or certain chemicals, especially oxygen-rich ones, there is a risk of splashing, explosion and fire. oxygen-rich, there is a risk of splashing, explosion and fire formation.
There is a risk of explosion, fire formation and splashing if fine aluminium particles, aluminium powder and aluminium chips are produced and released during machining.
There is a risk of burns from contact with hot or molten metal.
There is a risk of injury and cuts from contact with sharp edges of chips, pieces of wire, drawn wires, bars, etc.
There is a risk of eye injury from any work that produces and releases fine aluminium particles, aluminium powder and aluminium chips.
There is a particular risk when welding aluminium products (see also chapter 8).
There is a risk of electric shock from contact, as aluminium is a metal and therefore a good conductor of electricity.
There are risks associated with the release of hydrogen, e.g. during surface treatment in chemical and electrochemical processes (pickling, polishing, anodising, etc.).

(Contd. on page 2)

(Contd. of page 1)

There are risks associated with the handling and storage of large and heavy wire coils as well as rods and bars.

· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

· **3.2 Mixtures**
· **Description:**
Metal in solid form
Alloy of aluminium, magnesium, silicon, iron, manganese, zinc, copper, chromium, titanium, zirconium, vanadium in varying proportions according to EN 573 and the Aluminium Association.
Threshold values [mg/m³]

Element	CAS-Nr.	EINECS-Nr.	EU-Index	Metall	Rauch
Aluminium (Al)	7429-90-5	231-072-3	013-001-00-6	10	5
Magnesium (Mg)	7439-95-4	231-104-6	012-001-00-3		10
Silicium (Si)	7440-21-3	231-130-8		10	
Iron (Fe)	7439-89-6	231-096-4			5
Manganese (Mn)	7439-96-5	213-105-1		5	1
Zinc (Zn)	7440-90-5	231-175-3	030-001-00-1	5	5
Magnesiumoxide (MgO)	1309-48-4	215-171-9			
Aluminiumoxide (Al2O3)	1344-28-1	215-691-6			
Copper (Cu)	7440-50-8	231-159-6			1
Chrom (Cr)	7440-47-3	231-157-5		0,5	
Zincoxide (ZnO)	1314-13-2	215-222-5			5
Titan (Ti)	7440-32-6	231-142-3			
Zirconium (Zr)	7440-67-7	231-176-9	040-001-00-3		5
Vanadium (V)	7440-62-2	231-171-1			0,05

· **Dangerous components:**

CAS: 7429-90-5 EINECS: 231-072-3	aluminium substance with a Community workplace exposure limit	≥50-≤100%
CAS: 1309-48-4 EINECS: 215-171-9	magnesium oxide substance with a Community workplace exposure limit	0-3%
CAS: 7439-96-5 EINECS: 231-105-1	manganese substance with a Community workplace exposure limit	0-3%
CAS: 7440-21-3 EINECS: 231-130-8	silicon substance with a Community workplace exposure limit	0-3%
CAS: 7440-66-6 EINECS: 231-175-3	zinc Aquatic Acute 1, H400; Aquatic Chronic 1, H410	0-3%
CAS: 1314-13-2 EINECS: 215-222-5 Reg.nr.: 01-2119463881-32-XXXX	zinc oxide Aquatic Acute 1, H400; Aquatic Chronic 1, H410	0-3%
CAS: 1344-28-1 EINECS: 215-691-6	aluminium oxide substance with a Community workplace exposure limit	0-3%
CAS: 7440-47-3 EINECS: 231-157-5	chromium substance with a Community workplace exposure limit	0-3%

(Contd. on page 3)

(Contd. of page 2)

CAS: 7440-50-8	copper	0-3%
EINECS: 231-159-6	Aquatic Chronic 2, H411	

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **General information:** By continuous complaints consult a physician.
· **After inhalation:**
(Smoke, Powder)
Supply fresh air; consult doctor in case of complaints.
· **After skin contact:**
In case of burns from hot or molten metal, cool the wound and consult a doctor.
In case of a cut or injury, consult a doctor.
· **After eye contact:**
Solid products: In case of eye injury, a doctor should be consulted
Powder, smoke, chips: In case of irritation, wash eyes with plenty of water. If irritation persists, a doctor should be consulted.
· **After swallowing:**
Seek medical treatment.
Do not induce vomiting.
Never give anything by mouth to an unconscious person.
· **4.2 Most important symptoms and effects, both acute and delayed**
No further relevant information available.
· **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Firefighting measures

· **5.1 Extinguishing media**
· **Suitable extinguishing agents:**
The product is not combustible when delivered.
Fire caused by powder and chips:
Sand. Do not use water.
Extinguishing agent class D
· **For safety reasons unsuitable extinguishing agents:**
Water
halogen-containing fire extinguishing agents
· **5.2 Special hazards arising from the substance or mixture**
Prevent particles from being whirled up when you want to extinguish a powder fire.
As an aluminium powder fire can be long-lasting, it must be ensured after extinguishing that no hidden source of fire exists.
Formation of toxic gases is possible during heating or in case of fire.
· **5.3 Advice for firefighters**
· **Protective equipment:**
Do not inhale explosion gases or combustion gases.
Mount respiratory protective device.
· **Additional information**
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

(Contd. on page 4)

(Contd. of page 3)

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Avoid contact with hot metal. Avoid inhaling vapours and fumes generated during metal working and processing.
Keep people at a distance and stay on the windward side.
Refer to protective measures listed in sections 7 and 8.
· **6.2 Environmental precautions:**
Prevent liquid aluminium from seeping into drains. Do not throw chips or powder into drains.
· **6.3 Methods and material for containment and cleaning up:**
Molten metal : Wait until solidification, then remove the metal.
Powder and chips : Pick up the scattered substances with a broom or explosion-proof vacuum cleaner without releasing dust into the environment.
Pick up mechanically.
Ensure adequate ventilation.
· **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
No special precautions are necessary if used correctly.
• Risk of burning: The colour of the hot aluminium is no different from that of the cold! Take precautions to avoid accidents caused by increased metal temperatures.
• Risk of cuts: All products may have stiff or sharp corners and therefore pose a risk of cuts. It is advisable to wear protective gloves.
• Specific risk with poles, wire rods and drawn wires: There is a risk of injury to the face. Therefore wear protective goggles.
• Specific risk with coiled products: Make sure that the wire does not spring open. There is a risk of injury. Wear protective goggles and gloves.
• Specific risk with stacked rings or coils: There is a risk of splitting as soon as the retaining straps are removed. Avoid cuts from the retaining straps. It is recommended to wear appropriate gloves and protective goggles.
• Specific risk with wire rings: Because the core of a wire ring or wire coil may be covered by packaging, there is a risk of falling into the ring when walking on the goods.
• Specific risk with finely divided metal: There is a risk of explosion and eye injury. Wear protective goggles. Work only in dry, well-ventilated premises.
· **Information about fire - and explosion protection:**
In the solid form (bars, pieces, wire rods, drawn wires), the product is not flammable and does not usually present a risk in terms of fire formation or explosion.
Aluminium powder can explode, especially due to critical concentrations in closed rooms and halls.
• Avoid sparks and prevent electrostatic charges.
• Use suitable electronics
• Do not smoke.
• Remove fine aluminium particles resulting from machining and metal work (turning, sawing, polishing,etc.) using a suitable ventilation system (see reference).
• Prevent the uncontrolled generation of particles, as well as their dispersion.
• Ensure that equipment and premises are cleaned regularly.
• Avoid contact with water, humidity and reactive gases.
Finely dispersed aluminium can generate hydrogen on contact with atmospheric moisture. There is a risk of explosion. Therefore, avoid uncontrolled generation of finely dispersed aluminium (powder, chips, etc.) in an enclosed space without ventilation and suitable extraction devices (suction line elbow, filter, extraction container, machine tool extractor).

(Contd. on page 5)

(Contd. of page 4)

Use of appropriate dust removal techniques that reduce the amount of finely dispersed particles in the environment to non-critical concentrations.

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
Cylindrical products that can roll (rods, rings, wire rings and wire rod coils) must be properly secured, e.g. with a wedge or securing straps.
Aluminium scrap must be stored in a dry place to prevent explosions caused by moisture during remelting.Powders and fine aluminium particles must be stored in a well-ventilated, dry place/surface, without heat and static electricity. Do not store them in the immediate vicinity of flammable products or reactive media (e.g. oxidants).
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** None.
· **Recommended storage temperature:** 5-30°C
· **VCI storage category** -
· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**
· **Ingredients with limit values that require monitoring at the workplace:**

7429-90-5 aluminium
WEL Long-term value: 10* 4** mg/m³
*inhalable dust **respirable dust

1309-48-4 magnesium oxide
WEL Long-term value: 10* 4** mg/m³
(as Mg) *inhalable dust **fume and respirable dust

7439-96-5 manganese
WEL Long-term value: 0.2* 0.05** mg/m³
as Mn *inhalable fraction **respirable fraction

7440-21-3 silicon
WEL Long-term value: 10* 4** mg/m³
*inhalable dust **respirable dust

1344-28-1 aluminium oxide
WEL Long-term value: 10* 4** mg/m³
*inhalable dust **respirable dust

7440-47-3 chromium
WEL Long-term value: 0.5 mg/m³

7440-50-8 copper
WEL Short-term value: 2** mg/m³
Long-term value: 0.2* 1** mg/m³
*fume **dusts and mists (as Cu)

· **DNELs**

1314-13-2 zinc oxide

Oral	DNEL long term	0.83 mg/kg bw/day (consumer)
Dermal	DNEL long term	83 mg/kg bw/day (consumer)
		83 mg/kg bw/day (worker)
Inhalative	DNEL long term	2.5 mg/m³ (consumer)
		5 mg/m³ (worker)

(Contd. on page 6)

(Contd. of page 5)

· **PNECs**

1314-13-2 zinc oxide

PNEC Fresh Water	0.0206 mg/l (fresh water)
PNEC Marine Water	0.0061 mg/l (marine water)
PNEC Soil	35.6 mg/kg (soil)
PNEC Sediment	117.8 mg/kg (fresh water)
	56.5 mg/kg (marine water)
PNEC (Kläranlage)	0.1 mg/l (waste water treatment plant)

· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**
· **Appropriate engineering controls** No further data; see section 7.
· **Individual protection measures, such as personal protective equipment**
· **Respiratory protection:**
Use suitable respiratory protective device and local exhaust ventilation when aerosol or mist is formed.
· **Hand protection**

Protective gloves

Wear gloves for the protection against mechanical hazards according to EN 388.
Heat resistant gloves
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material**
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye/face protection**

Safety glasses

Use appropriate eye protection (goggles, visor, etc.) in the following situations:
• near and when handling molten metal.
• when handling wire, wire rods and bars.
• when handling aluminium powder.
• during any work that produces fine aluminium particles (e.g. peeling, sawing, drilling, polishing, etc.).
• during any work that produces aluminium fumes (e.g. melting, welding, etc.).
• during welding of aluminium products.
• when handling packing straps.
· **Body protection:**
Protective work clothing
Welding work and in particular the handling of liquid metal require appropriate safety clothing.

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**
· **General Information**

· **Physical state**	Solid
· **Colour:**	metallic grey
· **Odour:**	Odourless

(Contd. on page 7)

Trade name: Aluminium & Legierungen

(Contd. of page 6)

· **Odour threshold:**	Not determined.
· **Melting point/freezing point:**	543-660 °C
· **Boiling point or initial boiling point and boiling range**	2,300 °C
· **Flammability**	The mixture is capable of catching fire or being set on fire.
· **Lower and upper explosion limit**	
· **Lower:**	Not determined.
· **Upper:**	Not determined.
· **Flash point:**	Not applicable.
· **Auto-ignition temperature:**	400 °C (7429-90-5 aluminium)
· **Decomposition temperature:**	Not determined.
· **pH**	Not applicable.
· **Viscosity:**	
· **Kinematic viscosity**	Not applicable.
· **Dynamic:**	Not applicable.
· **Solubility**	
· **water:**	Insoluble.
· **Partition coefficient n-octanol/water (log value)**	Not determined.
· **Vapour pressure:**	Not applicable.
· **Density and/or relative density**	
· **Density at 20 °C:**	2.5-2.9 g/cm³
· **Relative density**	Not determined.
· **Vapour density**	Not applicable.

· **9.2 Other information**

· **Appearance:**	
· **Form:**	Solid material
· **Important information on protection of health and environment, and on safety.**	
· **Ignition temperature:**	Product is not selfigniting
· **Explosive properties:**	Product does not present an explosion hazard
· **Change in condition**	
· **Evaporation rate**	Not applicable.

· **Information with regard to physical hazard classes**

· **Explosives**	Void
· **Flammable gases**	Void
· **Aerosols**	Void
· **Oxidising gases**	Void
· **Gases under pressure**	Void
· **Flammable liquids**	Void
· **Flammable solids**	Void
· **Self-reactive substances and mixtures**	Void
· **Pyrophoric liquids**	Void
· **Pyrophoric solids**	Void
· **Self-heating substances and mixtures**	Void
· **Substances and mixtures, which emit flammable gases in contact with water**	Void
· **Oxidising liquids**	Void
· **Oxidising solids**	Void
· **Organic peroxides**	Void
· **Corrosive to metals**	Void

(Contd. on page 8)

(Contd. of page 7)

· **Desensitised explosives** Void

SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **10.3 Possibility of hazardous reactions** Contact with water releases flammable gases.
· **10.4 Conditions to avoid**
Accumulation of powder and dust.Solid aluminium is largely stable. Fine aluminium particles, on the other hand, can be highly reactive.
· **10.5 Incompatible materials:**
For molten aluminium and finely divided aluminium: water, mineral acids, halogenated products,bromides, iodides, sulphates, ammonium nitrates and their compounds.
· **10.6 Hazardous decomposition products:** None, if handled according to order.

SECTION 11: Toxicological information

· **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
· **Acute toxicity** Based on available data, the classification criteria are not met.
· **LD/LC50 values relevant for classification:**

7439-89-6 iron

Oral	LD-50	30 mg/kg (Rat)

7439-96-5 manganese

Oral	LD-50	9,000 mg/kg (Rat)

7440-21-3 silicon

Oral	LD-50	3,160 mg/kg (Rat)

1314-13-2 zinc oxide

Oral	LD-50	7,950 mg/kg (mau)
		>15,000 mg/kg (Rat)
Inhalative	LC-50/4 h	>5.7 mg/l (Rat)

· **Skin corrosion/irritation**
Skin irritations are not likely. In case of intolerance to one or more ingredients irritations cannot be excluded.
· **Serious eye damage/irritation**
Due to the product composition slight irritations of the eyes cannot be excluded.
Based on available data, the classification criteria are not met.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.
· **Additional toxicological information:**
Aluminium powder and dust has a minor effect on the lungs and is harmless and harmless to the body if the permissible maximum values are observed.
Fumes or smoke produced during melting or welding pose only a low health risk as long as the specific regulations and procedures for these processing operations are observed (see also BGR 220).
Welding fumes are classified by the IARC as potentially carcinogenic to humans (Group 2B).

(Contd. on page 9)

(Contd. of page 8)

· **11.2 Information on other hazards**
· **Endocrine disrupting properties**
None of the ingredients is listed.

SECTION 12: Ecological information

· **12.1 Toxicity**
· **Aquatic toxicity:**
1314-13-2 zinc oxide
EC-50 / IC-50 0.413 mg/l (Daphnia magna)
0.136 mg/l (Selenastrum capricornutum)
· **12.2 Persistence and degradability** No further relevant information available.
· **12.3 Bioaccumulative potential** No further relevant information available.
· **12.4 Mobility in soil**
Aluminium does not move freely as long as it does not come into contact with a humid environment with a pH value below 5.5 or above 8.5.
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Endocrine disrupting properties**
The product does not contain substances with endocrine disrupting properties.
· **12.7 Other adverse effects** No further relevant information available.
· **Additional ecological information:**
· **COD-value:** not available
· **BOD5-value:** not available
· **General notes:** Not hazardous for water.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Uncleaned packaging:**
· **Recommendation:** Disposal must be made according to official regulations.

SECTION 14: Transport information

· **14.1 UN number or ID number**
· **ADR, IMDG, IATA** Void
· **14.2 UN proper shipping name**
· **ADR** Void
· **14.3 Transport hazard class(es)**
· **ADR, IATA**
· **Class** -Un
· **Label** -Un
· **Label** -Un
· **14.4 Packing group**
· **ADR, IMDG, IATA** Void
· **14.5 Environmental hazards:** Not applicable.
· **14.6 Special precautions for user** Not applicable.
· **14.7 Maritime transport in bulk according to IMO instruments** Not applicable.

(Contd. on page 10)

(Contd. of page 9)

· **UN "Model Regulation":** Void

SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Labelling according to Regulation (EC) No 1272/2008** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void

· **Directive 2012/18/EU**
· **Named dangerous substances - ANNEX I** None of the ingredients is listed.

· **National regulations:**

· **Waterhazard class:** Not hazardous for water.
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H411 Toxic to aquatic life with long lasting effects.
· **Contact:**
Mr. Robert Lahnsteiner
Tel: +49 9951 69059-0
E-mail: Robert.Lahnsteiner@migal.co
· **Abbreviations and acronyms:**
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (UK REACH)
PNEC: Predicted No-Effect Concentration (UK REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2