



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

### 1.1. Product identifier

**m4p™ StrengthAl**

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Relevant identified uses:** Metal powder for additive manufacturing; Powdermetallurgy  
**Uses advised against:** No information available.

### 1.3. Details of the supplier of the safety data sheet

#### Supplier

m4p material solutions GmbH

Mittelweg 13  
D 39130 Magdeburg

**Telephone** +49 (0)177 8036000

**Telefax:** +49 (0)391 7214941

#### Information contact

Herr Dr. Andreas Pelz

**Information telephone** +49 (0)177 8036000

**Information telefax** +49 (0)391 7214941

**E-mail (competent person)** a.pelz@metals4printing.com

**Website** www.metals4printing.com

### 1.4. Emergency telephone number

Euro Emergency number

**Telephone** 112

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008:

Identification is not obligatory. Please observe the information on the safety data sheet at all times.

### 2.2. Label elements

**Classification according to Regulation (EC) No 1272/2008 [CLP]**

**Hazard pictograms:** -

**Signal word:** -

**Hazard statements:** -

**Precautionary statements:** -

### 2.3. Other hazards

Does not contain PBT/vPvB substances  $\geq 0,1\%$ , evaluated according to REACH Annex XIII.

The mixture does not contain any substances listed for endocrine disrupting properties according to REACH Art.

59(1) in the list,

or it has been determined in accordance with the criteria set out in Delegated Regulation (EU) 2017/2100

or Commission Regulation (EU) 2018/605 of the Commission established,  
that it does not contain substances with endocrine disrupting properties in a concentration of at least 0.1 %.

## SECTION 3: Composition / information on ingredients

### 3.1. Substances

not applicable

### 3.2. Mixtures

Mixture related information

#### Composition/information on ingredients

Substance:	CAS-No.:	REACH-no.:	Concentration:	Classification: EC 1272/2008 (CLP):	M, ATE, Note
Aluminium	7429-90-5	01-2119529243-45-XXXX	Balance	Flam. Sol. 1/2, H228; Water-react. 2/3, H261	M = 0
Magnesium	7439-95-4		4,2-5,0%	Flam. Sol. 1/2, H228; Self-heat. 1, H251; Water-react. 2/3, H261	
Scandium	7440-20-2		0,3-0,4%	-	
Iron	7439-89-6		<0,55%	-	M = 1
Silicon	7440-21-3		<0,12%	-	

(Full text of H- and EUH-statements: see section 16.)

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

**General information:** In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

**In case of inhalation:** Move victim to fresh air. Put victim at rest and keep warm. Seek medical attention if problems persist.

**Following skin contact:** After contact with skin, wash immediately with plenty of water and soap. In case of skin irritation, consult a physician.

**After eye contact:** In case of contact with eyes, rinse immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Seek medical attention if problems persist.

**After ingestion:** Rinse mouth immediately and drink plenty of water. Seek medical attention if problems persist.

### 4.2. Most important symptoms and effects, both acute and delayed

When in doubt or if symptoms are observed, get medical advice.

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

**Suitable extinguishing media** Dry sand. D powder.

**Unsuitable extinguishing media** Water. Foam. Carbon dioxide (CO2).

## 5.2. Special hazards arising from the substance or mixture

Contact with water liberates extremely flammable gases.

## 5.3. Advice for firefighters

### General information

Co-ordinate fire-fighting measures to the fire surroundings.

### Special protective equipment for fire-fighters:

In case of fire: Wear self-contained breathing apparatus.

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## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment. Remove all sources of ignition. Remove persons to safety. Provide adequate ventilation.

### 6.2. Environmental precautions

Do not allow to enter into surface water or drains.

### 6.3. Methods and material for containment and cleaning up

Take up mechanically, placing in appropriate containers for disposal. Avoid generation of dust. Treat the recovered material as prescribed in the section on waste disposal. Avoid generation of dust. Provide adequate ventilation. Avoid contact with water.

### 6.4. Reference to other sections

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13

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## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

#### Advices on safe handling

Provide adequate ventilation as well as local exhaustion at critical locations. Do not breathe dust. Avoid generation of dust. Use only in well-ventilated areas. Do not breathe gas/fumes/vapour/spray. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. Avoid contact with skin and eyes.

#### Precautions against fire and explosion:

Take precautionary measures against static discharges.

### 7.2. Conditions for safe storage, including any incompatibilities

#### Requirements for storage rooms and vessels

Keep container tightly closed in a cool, well-ventilated place. Keep the packing dry and well sealed to prevent contamination and absorption of humidity.

#### Hints on joint storage

Keep away from food, drink and animal feedingstuffs.

### 7.3. Specific end use(s)

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### occupational exposure limit value

Substance:	CAS-No.:		Source:	Occupational exposure limit value:[ppm]	Occupational exposure limit value:[mg/m³]	Limitation of exposure peaks:	Remark:
Aluminium	7429-90-5	De	TRGS900		1,25	2	allgemeiner Staubgrenzwert

#### DNEL-/PNEC-values

##### DNEL value

Substance:	CAS-No.:	DNEL/DMEL
Aluminium	7429-90-5	worker inhalative long-term, systemic 3,72 mg/m³ worker inhalative long-term, local 3,72 mg/m³ population oral long-term, systemic 7,9 mg/kg bw/day
Iron	7439-89-6	worker inhalative long-term, local 3 mg/m³ population inhalative long-term, local 1,5 mg/m³

#### Additional information

none

### 8.2. Exposure controls

#### Occupational exposure controls:

Provide adequate ventilation as well as local exhaustion at critical locations. Technical measures and the application of suitable work processes have priority over personal protection equipment.

#### General protection and hygiene measures:

When using do not eat, drink, smoke, sniff.

Wash hands before breaks and after work.

Apply skin care products after work.

Wash contaminated clothing prior to re-use.

#### Personal protection equipment

Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.

#### Respiratory protection

Respiratory protection necessary at: In the case of the formation of dust.

#### Hand protection

Tested protective gloves are to be worn: DIN-/EN-Norms: EN ISO 374

#### Eye/face protection

Tightly sealed safety glasses.

#### Body protection:

Wear suitable protective clothing.

#### Environmental exposure controls

refer to chapter 7. No further action is necessary.

#### Consumer exposure controls

refer to chapter 7. No further action is necessary.

**Exposure Scenario:**

none

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## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

**Appearance**

<b>Physical state:</b>	solid: Powder
<b>Colour:</b>	grey
<b>Odour:</b>	odourless
<b>Odour threshold:</b>	not applicable

**Safety relevant basis data**

<b>Melting point/freezing point:</b>	550-650 °C
<b>Initial boiling point and boiling range:</b>	No data available
<b>Flammability:</b>	No data available
<b>lower flammability or explosive limits:</b>	No data available
<b>Upper flammability or explosive limits:</b>	No data available
<b>Flash point:</b>	No data available
<b>Ignition temperature:</b>	No data available
<b>Decomposition temperature:</b>	No data available
<b>pH:</b>	not applicable
<b>Kinematic viscosity:</b>	not applicable
<b>Water solubility (g/L):</b>	insoluble
<b>Partition coefficient: n-octanol/water:</b>	No data available
<b>Vapour pressure:</b>	not applicable
<b>Density:</b>	2,7 g/cm <sup>3</sup>
<b>Relative density:</b>	not applicable
<b>Particle properties:</b>	No data available

### 9.2. Other information

No data available

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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Oxidation in humid air.

### 10.2. Chemical stability

With proper storage and handling the product is stable.

### 10.3. Possibility of hazardous reactions

No hazardous reaction when handled and stored according to provisions.

### 10.4. Conditions to avoid

moisture.

## 10.5. Incompatible materials

No data available

## 10.6. Hazardous decomposition products

No data available

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## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

There are no data available on the preparation/mixture itself.

<b>M-factor:</b>	not applicable	<b>Acute toxicity (dermal):</b>	not applicable
<b>Acute toxicity (oral):</b>	not applicable	<b>Acute toxicity (inhalative):</b>	not applicable

#### Acute toxicity

Substance:	CAS-No.:	Toxicological information
Iron	7439-89-6	LD50 oral (rat) 30000 mg/kg
Aluminium	7429-90-5	LC50 inhalation (Rat) > 888 mg/l/4 h LC50 fish (96 h) 1,55 mg/l LD50 oral (rat) > 2000 mg/kg

#### Skin corrosion/irritation:

Not listed

#### Serious eye damage/irritation:

Not listed

#### Respiratory or skin sensitisation:

Not listed

#### CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)

Carcinogenicity:

Not listed

Germ cell mutagenicity:

Not listed

Reproductive toxicity:

Not listed

#### STOT-single exposure:

Not listed

#### STOT-repeated exposure:

Not listed

### 11.2. Information about other hazards

Not listed

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## SECTION 12: Ecological information

### 12.1. Toxicity

There are no data available on the mixture itself.

### Ecotoxicity

Substance:	CAS-No.:	Ecotoxicity
Iron	7439-89-6	LC50 fish (96 h) 1,29 mg/l
Aluminium	7429-90-5	LC50 fish (96 h) 1,55 mg/l

### 12.2. Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

### 12.3. Bioaccumulative potential

No information available.

### 12.4. Mobility in soil

No information available.

### 12.5. Results of PBT and vPvB assessment

This substance does not meet the criteria for classification as PBT or vPvB.

### 12.6 Endocrine disruptive effect

No information available.

### 12.7. Other adverse effects

No information available.

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## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### Appropriate disposal/Product:

Dispose of waste according to applicable legislation.

#### Appropriate disposal / Package

Non-contaminated packages may be recycled.

Handle contaminated packages in the same way as the substance itself.

#### List of proposed waste codes / waste designations according to EWC / AVV

According to EAKV, allocation of waste identity numbers/waste descriptions must be carried out in a specific way for every industry and process.

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## SECTION 14: Transport information

### 14.1. UN number

UN No.: n.a.

No dangerous good in the sense of transport regulation.

### 14.2. UN proper shipping name

Land transport (ADR/RID)

-

Sea transport (IMDG), Air transport (ICAO-TI / IATA-DGR)

-

### 14.3. Transport hazard class(es)

Hazard label(s) / Label: -

Classification code: / Classification Code: -

#### 14.4. Packing group

Packing group/ Packing Group: -

#### 14.5. Environmental hazards

	Yes	No
ADR/RID / IMDG / ICAO-TI / IATA-DGR:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marine pollutant:	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 14.6. Special precautions for user

Land transport (ADR/RID)

transport category: - tunnel restriction code: -

Special provisions: - Limited quantity (LQ): -

Sea transport (IMDG)

EmS-No: -

Special provisions: - Limited quantity (LQ): -

#### 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Remark none

### SECTION 15: Regulatory information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

##### EU legislation

Contains no substance subject to the restrictions of Annex XVII of the REACH Regulation.

Contains no REACH candidate substance.

Contains no substance listed in REACH Annex XIV.

**Regulation (EC) No. 1005/2009 on substances that lead to the depletion of the ozone layer**

not relevant

**Regulation (EC) No 850/2004 [POP-Regulation]**

not relevant

##### National regulations

Observe in addition any national regulations!

**Other regulations, restrictions and prohibition regulations**

No information available.

#### 15.2. Chemical Safety Assessment

For this substance a chemical safety assessment has not been carried out.

### SECTION 16: Other information

**Relevant H- and EUH-phrases (Number and full text):**

##### Hazard statements

H228 Flammable solid.

H251 Self-heating; may catch fire.

H261 In contact with water releases flammable gases.

### Training advice

none

### Recommended restrictions of use:

Reserved for industrial and professional use.

### Further remarks:

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

### Documentation of changes:

none

### Key literature references and sources for data

Data arise from reference works and literature.

ECHA - European Chemical Agency  
information of suppliers

### Abbreviations and acronyms

For abbreviations and acronyms, see table at <http://abbrev.esdscom.eu>