m4p™ 316l

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

1.1 - Product identifier

Trade name/designation m4p™ 316l
Chemical name
Product-type Mixture
UFI: H089-G6XK-100N-R6YR

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

Relevant identified uses	- Stainless steel powder for additive manufacturing; powder metallurgy
Uses advised against	- No information available.

1.3 - Details of the supplier of the safety data sheet

m4p material solutions GmbH
Gewerbestraße 4
9181 Feistritz i. R. Austria
Telephone : +43 422893053
Website www.metals4printing.com
Manuela Grabenweger: +43 42289305320 m.grabenweger@metals4printing.com

1.4 - Emergency telephone number

European emergency number: 112

SECTION 2: Hazards identification

2.1 - Classification of the substance or mixture

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

Skin Sens. 1	Skin sensitization - Category 1
Skin Sens. 1A	Skin sensitization - Category 1A
Skin Sens. 1B	Skin sensitization - Category 1B
Carc. 2	Carcinogenicity - Category 2
STOT RE 1	STOT-repeated exposure - Category 1
Aquatic Chronic 3	Hazardous to the aquatic environment - Aquatic Chronic 3

2.2 - Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Contains: Nickel (CAS No.: 7440-02-0)

Signal word : Danger

Hazard pictograms

Hazard statements

H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.

H372	Causes damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statements

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust.
P261	Avoid breathing dust.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear eye protection/protective gloves/protective clothing.
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P405	Store locked up.
P501	Dispose of contents to an appropriate recycling or disposal facility in accordance with regional regulation.

EUH-phrases

EUH208	Contains nickel. May produce an allergic reaction.

2.3 - Other hazards

PBT substances

- The substances in this mixture do not meet the PTB/vPvB criteria of REACH annex XIII.

vPvB substances

Other hazards which do not result in classification	- Fine dust is a potential dust explosion hazard if dispersed in the air in sufficient concentration and an ignition source is present. - Avoid generation of dust.

SECTION 3: Composition / information on ingredients

3.1 - Substances

Not applicable

3.2 - Mixtures

Chemical name	No.	%	Class(es)	Information on the substance
Iron	CAS No. : 7439-89-6 EC No. : 231-096-4 REACH No. : 01-2119462838-24-XXXX	>= 60 - < 80		(a)

(a) Substance contributing to the classification

(b) Substance with exposure limite value

Chemical name	No.	%	Class(es)	Information on the substance
Chromium	CAS No. : 7440-47-3 EC No. : 231-157-5 REACH No. : 01-2119485652-31-XXXX	>= 16 - <= 18		M-factor: 10 (a)
Nickel	CAS No. : 7440-02-0 Index No. : 028-002-01-4 EC No. : 231-111-4	>= 11 - <= 14	Aquatic Chronic 3 - H412 Carc. 2 - H351 Skin Sens. 1 - H317 STOT RE 1 - H372	(a) (b)
Manganese	CAS No. : 7439-96-5 EC No. : 231-105-1 REACH No. : 01-2119449803-34-XXXX	<= 2		(a)
Molybdenum	CAS No. : 7439-98-7 EC No. : 231-107-2 REACH No. : 01-2119472304-43-XXXX	>= 2 - <= 3		(a)
Silicon	CAS No. : 7440-21-3 EC No. : 231-130-8 REACH No. : 01-2119480401-47-XXXX	<= 1		(a)

(a) Substance contributing to the classification

(b) Substance with exposure limite value

SECTION 4: First aid measures

4.1 - Description of first aid measures

Following inhalation

- Provide fresh air.
- In case of respiratory tract irritation, consult a physician.

Following skin contact

- After contact with skin, wash immediately with plenty of water and soap.
- Change contaminated, saturated clothing.
- In case of skin reactions, consult a physician.

After eye contact

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.

After ingestion

- Rinse mouth thoroughly with water.
- When in doubt or if symptoms are observed, get medical advice.

4.2 - Most important symptoms and effects, both acute and delayed

Symptoms and effects - Following inhalation

- Allergic reactions
- Asthmatic complaints
- Cough

Symptoms and effects - Following skin contact

- The following symptoms may occur:
- Allergic reactions

Symptoms and effects - After eye contact

- No information available.

Symptoms and effects - After ingestion

- No information available.

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	- D-powder - Sand
Unsuitable extinguishing media	- alcohol resistant foam - Carbon dioxide (CO2) - Water

5.2 - Special hazards arising from the substance or mixture

Special hazards arising from the substance or mixture	- No information available.
Hazardous decomposition products	- In case of fire may be liberated: - Oxides of metals

5.3 - Advice for firefighters

- Co-ordinate fire-fighting measures to the fire surroundings.
- Do not allow run-off from fire-fighting to enter drains or water courses.

SECTION 6: Accidental release measures

6.1 - Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	- Remove all sources of ignition. - Provide adequate ventilation. - Remove persons to safety. - Use personal protection equipment. - Avoid generation of dust.
For emergency responders	- Wear breathing apparatus if exposed to vapours/dusts/aerosols.

6.2 - Environmental precautions

- Do not allow to enter into surface water or drains.
- Do not allow to enter into soil/subsoil.

6.3 - Methods and material for containment and cleaning up

Methods and material for containment	- Collect in closed and suitable containers for disposal.
Methods and material for cleaning up	- Avoid generation of dust. - Use approved industrial vacuum cleaner for removal. - Ventilate affected area.
Inappropriate techniques	- No information available.

6.4 - Reference to other sections

- Disposal: See section 13
- Personal protection equipment: see section 8
- Safe handling: See section 7

SECTION 7: Handling and storage

7.1 - Precautions for safe handling

Recommendation	- Dust can form an explosive mixture with air. - Provide adequate ventilation as well as local exhaustion at critical locations. - Avoid:Generation/formation of dust - Keep away from sources of ignition - No smoking.
Advices on general occupational hygiene	- Avoid contact with skin, eyes and clothes. - Wash hands before breaks and after work. - When using do not eat, drink, smoke, sniff. - Used working clothes should not be worn outside the work area.

7.2 - Conditions for safe storage, including any incompatibilities

- Keep container tightly closed and in a well-ventilated place.
- Do not store together with:Food and feedingstuffs

7.3 - Specific end use(s)

- No information available.

SECTION 8: Exposure controls/personal protection

8.1 - Control parameters

Nickel (7440-02-0)	
STEL EH40 mg/m³ (UK)	3 mg/m³

DNEL / PNEC

Nickel (7440-02-0)			
Type	**Value**	**User**	**Effect**
DNEL long-term oral (repeated)	0,013 mg/kg bw/day	Consumers	Systemic
DNEL long-term inhalative	0,05 mg/m³	Workers	Systemic
DNEL long-term inhalative	0,06 µg/m³	Consumers	Systemic
PNEC aquatic, freshwater	6,1 µg/l		
PNEC aquatic, marine water	9,55 µg/l		
PNEC sediment, freshwater	109 mg/l		
PNEC sediment, marine water	109 mg/l		
PNEC soil	39,3 mg/l		
PNEC Secondary Poisoning	0,12 mg/l		
PNEC sewage treatment plant (STP)	0,33 mg/l		

Manganese (7439-96-5)			
Type	**Value**	**User**	**Effect**
DNEL long-term inhalative	0,2 mg/m³	Workers	Systemic
DNEL long-term inhalative	0,041 mg/m³	Consumers	Systemic
DNEL long-term dermal	0,004 mg/kg bw/day	Workers	Systemic
DNEL long-term dermal	0,002 mg/kg bw/day	Consumers	Systemic

PNEC aquatic, freshwater	0,455 mg/l		
PNEC aquatic, marine water	0,005 mg/l		
PNEC sediment, freshwater	0,578 mg/l		
PNEC sediment, marine water	0,058 mg/l		
PNEC soil	14,58 mg/l		
PNEC sewage treatment plant (STP)	20,397 mg/l		

Chromium (7440-47-3)

Type	Value	User	Effect
DNEL long-term inhalative	0,5 mg/m³	Workers	Local
DNEL long-term inhalative	0,027 mg/m³	Consumers	Local
PNEC aquatic, freshwater	6,5 µg/l		
PNEC sediment, freshwater	205,7 mg/l		
PNEC soil	21,1 mg/l		

Silicon (7440-21-3)

Type	Value	User	Effect
DNEL long-term inhalative	4 mg/m³	Workers	Local

Molybdenum (7439-98-7)

Type	Value	User	Effect
DNEL long-term oral (repeated)	3,4 mg/kg bw/day	Consumers	Systemic
DNEL long-term inhalative	11,17 mg/m³	Workers	Systemic
DNEL long-term inhalative	3,33 mg/m³	Consumers	Systemic
PNEC aquatic, freshwater	11,9 mg/l		
PNEC aquatic, marine water	2,28 mg/l		
PNEC sediment, freshwater	21200 mg/l		
PNEC sediment, marine water	2370 mg/l		
PNEC soil	9,9 mg/l		
PNEC sewage treatment plant (STP)	21,7 mg/l		

8.2 - Exposure controls

Appropriate engineering controls

- Provide adequate ventilation as well as local exhaustion at critical locations.

- Technical measures and the use of suitable working procedures take precedence over the use of personal protective equipment.

Individual protection measures, such as personal protective equipment

- Wear respiratory protection.

- Filter type:
- FFP3
- Goggles.
- Wear protective gloves.

Environmental exposure controls

- No information available.

SECTION 9: Physical and chemical properties

9.1 - Information on basic physical and chemical properties

Physical state	Solid	Appearance	Powder
Colour	grey	Odour	odourless

Odour threshold	Not applicable
pH	Not applicable

Melting point	1400 °C < V < 1430 °C
Freezing point	Not applicable
Boiling point	Not applicable
Flash point	Not applicable
Evaporation rate	Not applicable
flammability	No ignition.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapour pressure	Not applicable
Vapour density	Not applicable
Relative density	No information available.
Density	8 g/cm³
Solubility (Water)	Insoluble
Solubility (Ethanol)	No information available.
Solubility (Acetone)	No information available.
Solubility (Organic solvents)	No information available.
Log KOC	No information available.
Auto-ignition temperature	No information available.
Decomposition temperature	No information available.
Kinematic viscosity	Not applicable
Dynamic viscosity	Not applicable

Particle characteristics

Particle size	< 125 µm
Dustiness	No data available
Specific surface area	No data available
Shape	Spherical

9.2 - Other information

VOC content	No data available
Minimum ignition energy	< 1 J
Conductivity	No data available
Refractive index	No data available
Solids content	No data available
Surface tension	No data available
Saturation concentration	No data available

- No information available.

- Glow temperature: >400 °C

SECTION 10: Stability and reactivity

10.1 - Reactivity

- This material is considered to be non-reactive under normal use conditions.

10.2 - Chemical stability

- The product is chemically stable under recommended conditions of storage, use and temperature.

10.3 - Possibility of hazardous reactions

- No hazardous reaction when handled and stored according to provisions.

10.4 - Conditions to avoid

- Stable under recommended storage and handling conditions.

10.5 - Incompatible materials

- No information available.

10.6 - Hazardous decomposition products

- No information available.

SECTION 11: Toxicological information

11.1 - Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity - Not classified

Toxicity : Mixture

ATE oral : 13888,89 ATE dermal : - ATE Inhalation Dust/Mist : -
ATE Inhalation Vapor : - ATE Inhalation Gas : -

LD50 oral (rat)	No data available
LD50 dermal (rat)	No data available
LD50 dermal (rabbit)	No data available
LC50 inhalation gas (rat)	No data available
LC50 inhalation dusts and mists (rat)	No data available
LC50 inhalation vapours (rat)	No data available

Toxicity : Substances

Nickel (7440-02-0)	
LD50 oral (rat)	> 9000 mg/kg

Iron (7439-89-6)	
LD50 oral (rat)	30000 mg/kg

Manganese (7439-96-5)	
LD50 oral (rat)	> 2000 mg/kg
LC50 inhalation dusts and mists (rat)	> 5,14 mg/l

Chromium (7440-47-3)	
LD50 oral (rat)	> 3400 mg/kg
LC50 inhalation dusts and mists (rat)	> 5410 mg/l

Silicon (7440-21-3)	
LD50 oral (rat)	3160 mg/kg

Molybdenum (7439-98-7)	
LD50 oral (rat)	> 2000 mg/kg
LD50 dermal (rat)	> 2000 mg/kg

Skin corrosion/irritation - Not classified

Serious eye damage/eye irritation	- Not classified
Respiratory or skin sensitisation	- Skin sensitization - Category 1 - May cause an allergic skin reaction. - Skin sensitization - Category 1A - May cause an allergic skin reaction. - Skin sensitization - Category 1B - May cause an allergic skin reaction.
Germ cell mutagenicity	- Not classified
Carcinogenicity	- Carcinogenicity - Category 2 - Suspected of causing cancer.
Reproductive toxicity	- Not classified
STOT-single exposure	- Not classified
STOT-repeated exposure	- STOT-repeated exposure - Category 1 - Causes damage to organs <|[MLO=LISTORGAN]|><|[EXP= or state all organs affected, if known]|> through prolonged or repeated exposure <|[MLO=LISTROUTEXP]|><|[EXP= state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]|>.
Aspiration hazard	- Not classified

11.2 - Information on other hazards

- No information available.

SECTION 12: Ecological information

12.1 - Toxicity

Toxicity : Mixture

EC50 48 hr crustacea	No data available
LC50 96 hr fish	No data available
ErC50 algae	No data available
ErC50 other aquatic plants	No data available
EL50 48 hr crustacea	No data available
LL50 96 hr fish	No data available
NOEC chronic fish	No data available
NOEC chronic crustacea	No data available
NOEC chronic algae	No data available
NOEC chronic other aquatic plants	No data available

- Harmful to aquatic life with long lasting effects.

Toxicity : Substances

Nickel (7440-02-0)	
EC50 48 hr crustacea	1 mg/l
LC50 96 hr fish	40 mg/l
Manganese (7439-96-5)	
EC50 48 hr crustacea	40 mg/l
Chromium (7440-47-3)	
EC50 48 hr crustacea	0,07 mg/l

LC50 96 hr fish	40,5 mg/l
ErC50 algae	8,75 mg/l 72 h

Molybdenum (7439-98-7)	
LC50 96 hr fish	1060 mg/l

12.2 - Persistence and degradability

Biochemical oxygen demand (BOD)	No data available
Chemical oxygen demand (COD)	No data available
% of biodegradation in 28 days	No data available

- The study does not need to be conducted because the substance is inorganic.

12.3 - Bioaccumulative potential

Bioconcentration factor (BCF)	No data available
Log KOC	No information available.

- No information available.

12.4 - Mobility in soil

- No information available.

12.5 - Results of PBT and vPvB assessment

- The substances in this mixture do not meet the PTB/vPvB criteria of REACH annex XIII.

12.6 - Endocrine disrupting properties

- This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

12.7 - Other adverse effects

- No information available.

SECTION 13: Disposal considerations

13.1 - Waste treatment methods

Waste treatment methods	- Dispose of waste according to applicable legislation. - Handle contaminated packages in the same way as the substance itself. - Recycling/reclamation of metals and metal compounds
Sewage disposal	- Do not spill into sewers or waterways.
Special precautions for waste treatment	- Consult the appropriate local waste disposal expert about waste disposal.
Community or national or regional provisions	- Dispose of waste according to applicable legislation.
Waste codes / waste designations according to Regulation 2014/955/UE	20 01 40 - Metals

SECTION 14: Transport information

14.1 - UN number or ID number
Not applicable

14.2 - UN proper shipping name
Not applicable

14.3 - Transport hazard class(es)
Not applicable

14.4 - Packing group
Not applicable

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

SECTION 15: Regulatory information

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

Substances REACH candidates	None
Substances Annex XIV	None
Substances Annex XVII	Nickel (Index No.: 028-002-01-4 - EC No.: 231-111-4 - CAS No.: 7440-02-0)
VOC content	No data available

15.2 - Chemical Safety Assessment

Chemical safety assessment carried out for the product	- A chemical safety assessment has not been carried out for this mixture.

SECTION 16: Other information

SDS versions

Version	Issue date	Author	Description of the amendments
6	04/05/2026		

Abbreviations and acronyms

- ADR: The Agreement concerning the International Carriage of Dangerous Goods by Road
- ATE: Acute Toxicity Estimate.
- LC50: Lethal Concentration to 50 % of a test animals.
- LOEC: Lowest Observed Effect Concentration.
- LD50: Lethal Dose to 50% of a test animals.
- LOEL: Lowest Observed Adverse Effect Level.
- DNEL: Derived no-effect level.
- EC50: Effective concentration of the substance that causes adverse effects in 50% of test animals.

- IATA: International Air Transport Association.
- IMDG: International Maritime Dangerous Goods.
- EC No: European Community number
- NOEC: No Observed Effect Concentration.
- NOEL: No observable effect level.
- CAS No.: Chemical Abstracts Service number.
- ICAO: International Civil Aviation Organization
- PBT: Persistent, Bioaccumulative and Toxic.
- PNEC: Predicted no-effect concentration.
- RID: International Carriage of Dangerous Goods by Rail.
- STEL: Short-term exposure limit
- TWA: Time weighted average
- OEL: Occupational exposure limit.
- vPvB: very Persistent and very Bioaccumulative.

literature infomation

ECHA - European Chemical Agency

Classification of mixtures and assessment method used according to Regulation (EC) No 1272/2008 [CLP]

Supplier information

Texts of the regulatory sentences

Aquatic Chronic 3	Hazardous to the aquatic environment - Aquatic Chronic 3
Carc. 2	Carcinogenicity - Category 2
H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.
Skin Sens. 1	Skin sensitization - Category 1
Skin Sens. 1A	Skin sensitization - Category 1A
Skin Sens. 1B	Skin sensitization - Category 1B
STOT RE 1	STOT-repeated exposure - Category 1

Training advice

- Employees must be regularly instructed in the handling of CMR substances (nickel/cobalt) and combustible metal dusts.
- DISCLAIMER - The information contained in this sheet comes from sources which we believe to be reliable. However, they are provided without any guarantee, express or implied, of their accuracy.

The information provided in this Safety Data Sheet (SDS) is current on the date the SDS was prepared or revised. Implementation of measures that are provided on SDS is under downstream user companies' responsibility. Downstream users may change the measures in the SDS according to the conditions in their own business.

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