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

1.1. Product identifier

m4p FeCo49V2

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

Relevant identified uses: Metal powder for additive manufacturing.
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 Call: 112

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008:
Acute Tox. 4, H302; Skin Sens. 1/1A/1B, H317; Resp. Sens. 1/1A/1B, H334; Muta. 2, H341; Carc. 1A/B, H350; Repr. 1A/B, H360Fd; Aquatic Chronic 4, H413

2.2. Label elements

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

GHS07, GHS08
Signal word: Danger

Hazard statements:
H302 Harmful if swallowed.
H317 May cause an allergic skin reaction.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341 Suspected of causing genetic defects.
H350 May cause cancer.
H360Fd May damage fertility. May damage the unborn child.
H413 May be 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.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264.1	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 protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P284	[In case of inadequate ventilation] wear respiratory protection.
P301+312	IF SWALLOWED: Call a POISON CENTER/doctor/ if you feel unwell.
P330	Rinse mouth.
P501.2	Dispose of contents/container to an appropriate recycling or disposal facility.

Special labelling of particular preparations:
May cause an allergic skin reaction.

2.3. Other hazards
This substance does not meet the PBT criteria of REACH, Annex XIII.

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
Silicon	7440-21-3		max. 1,0%	-	
Manganese	7439-96-5		max. 1,0%	Flam. Sol. 1/2, H228	
Iron	7439-89-6	01-2119462838-24-XXXX	Basis	-	M = 1
Cobalt	7440-48-4	01-2119517392-44-XXXX	48,0-49,5%	Resp. Sens. 1/1A/1B, H334; Skin Sens. 1/1A/1B, H317; Muta. 2, H341; Carc. 1A/B, H350; Repr. 1A/B, H360F; Aquatic Chronic 4, H413	
Vanadium	7440-62-2	01-2119537418-34-XXXX	1,8-2,1%	-	

(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

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 thoroughly with water. Do NOT induce vomiting. No administration in cases of unconsciousness or cramps. Call a physician immediately.

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

In case of fire may be liberated: Metal oxides.

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.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

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

Take up mechanically, placing in appropriate containers for disposal.

6.4. Reference to other sections

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

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. Avoid contact with skin and eyes. Avoid generation of dust. Do not breathe dust.

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 absorbtion of humidity.

Hints on joint storage

Do not store together with: strong acids, strong bases.
Keep away from food, drink and animal feedingstuffs.

7.3. Specific end use(s)

none

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:
Manganese	7439-96-5	De	TRGS 900		0,02 A; 0,2 E	8(II)	DFG, Y, 10,20

DNEL-/PNEC-values

DNEL value

Substance:	CAS-No.:	DNEL/DMEL
Cobalt	7440-48-4	worker inhalative long-term, local 40 µg/m³ population inhalative long-term, local 6,3 µg/m³ population oral long-term, systemic 29,8 µg/kg bw/day
Iron	7439-89-6	worker inhalative long-term, local 3 mg/m³ population inhalative long-term, local 1,5 mg/m³
Manganese	7439-96-5	worker inhalative long-term, systemic 0,2 mg/m³ worker dermal xxx(langfrisitg, systemisch) 0,004 mg/kg bw/day population inhalative long-term, systemic 0,041 mg/m³ population inhalative long-term, local 0,041 mg/m³ population dermal long-term, systemic 0,002 mg/kg bw/day

PNEC Value

Substance:	CAS-No.:	PNEC
Cobalt	7440-48-4	aquatic, freshwater 0,62 µg/l aquatic, marine water 2,36 µg/l sediment, freshwater 53,8 mg/kg dw sediment, marine water 69,8 mg/kg dw soil 10,9 mg/kg dw

Manganese	7439-96-5	aquatic, freshwater 0,034 mg/l intermittent release, freshwater 0,028 mg/l aquatic, marine water 0,003 mg/l sediment, freshwater 3,3 mg/kg dw sediment, marine water 0,34 mg/kg dw soil 3,4 mg/kg dw
Vanadium	7440-62-2	aquatic, freshwater 7,6 µg/l aquatic, marine water 2,5 µg/l sewage treatment plant 450 µg/l sediment, freshwater 240 mg/kg dw sediment, marine water 79 mg/kg dw soil 7,2 mg/kg dw secondary poisoning 0,167 mg/kg food

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. Suitable respiratory protection apparatus: particulates filter device (DIN EN 143).

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

Eye/face protection
Tightly sealed safety glasses.

Body protection:
Suitable protective clothing:
Overall.
For the protection against direct skin contact, body protective clothing is essential (in addition to the usual working clothes).
Only wear fitting, comfortable and clean 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

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	
Physical state:	solid: Powder
Colour:	grey
Odour:	odourless
Odour threshold:	not applicable
Safety relevant basis data	
Melting point/freezing point:	> 1000 °C
Initial boiling point and boiling range:	not determined
Flammability:	not determined
lower flammability or explosive limits:	not determined
Upper flammability or explosive limits:	not determined
Flash point:	not applicable
Ignition temperature:	not determined
Decomposition temperature:	not determined
pH:	not applicable
Kinematic viscosity:	not applicable
Water solubility (g/L):	insoluble
Partition coefficient: n-octanol/water:	not applicable
Vapour pressure:	not applicable
Density:	not determined
Relative density:	not applicable
Particle properties:	No data available

9.2. Other information
none

SECTION 10: Stability and reactivity

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

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
No further relevant information available.

10.5. Incompatible materials
No further relevant information available.

10.6. Hazardous decomposition products
In case of fire may be liberated:
Metal oxides

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Harmful if inhaled.

M-factor: - **Acute toxicity (dermal):** -
Acute toxicity (oral): - **Acute toxicity (inhalative):** -

Acute toxicity

Substance:	CAS-No.:	Toxicological information
Iron	7439-89-6	LD50 oral (rat) 30000 mg/kg
Cobalt	7440-48-4	LD50 Oral 550 mg/kg LC50 inhalative < 50 µg/L

Skin corrosion/irritation:
Frequent and prolonged skin contact may cause skin irritation.

Serious eye damage/irritation:
strongly irritant. Risk of serious damage to eyes.

Respiratory or skin sensitisation:
May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)
Carcinogenicity:
May cause cancer if inhaled.
Germ cell mutagenicity:
Based on available data, the classification criteria are not met.
Reproductive toxicity:
May harm the unborn child and affect fertility.

STOT-single exposure:
Based on available data, the classification criteria are not met.

STOT-repeated exposure:
May cause damage to organs through prolonged or repeated exposure.

11.2. Information about other hazards
May cause allergy or asthma symptoms or breathing difficulties if inhaled.

SECTION 12: Ecological information

12.1. Toxicity
May cause long lasting harmful effects to aquatic life.

Ecotoxicity

Substance:	CAS-No.:	Ecotoxicity
Iron	7439-89-6	LC50 fish (96 h) 1,29 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.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Appropriate disposal/Product:
Dispose of waste according to applicable legislation.

Appropriate disposal / Package
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.

SECTION 14: Transport information

14.1. UN number
UN No.: n.a. no dangerous goods in the sense of the transport regulations

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:	☐	☒
Marine pollutant:	☐	☒

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

Restriction of use according to REACH Annex XVII:

Nr. 28: Produkt (Carc. 1B); Nr. 30: Produkt (Repr. 1A)

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

Regulation (EU) No 649/2012 on the export and import of dangerous chemicals

not relevant

National regulations

Observe in addition any national regulations!

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.
H302 Harmful if swallowed.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341 Can probably cause genetic defects.
H350 May cause cancer.
H360Fd May impair fertility. May harm the unborn child.
H413 May be harmful to aquatic organisms with long lasting effects.

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
Suppliers information

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