Safety Data Sheet

Version: 2.0 Date: 3rd June 2024, First Issue Date: 27th February 2023

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

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

1.1 Product identifier

Product name	M300(15-45µm)
Product code	GMP M300
Unique Formula Identifier (UFI)	not applicable
Nanoform	not applicable

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

Identified Use(s)	Additive manufacturing, hot isostatic pressing, thermal spray, metal injection moulding, binder jetting.
Uses advised against	Anything other than the above.

1.3 Details of the supplier of the safety data sheet

Company Identification	Globus Metal Powders Ltd.
Telephone	Materials Processing Institute, Eston Road, Middlesbrough, TS6 6US
Fax	+44(0)164 238 2000
E-mail (competent person)	gmp@globusmetalpowders.com

1.4 Emergency telephone number

Emergency Phone No.	999 / 111 (or local emergency number)
Language(s) spoken:	English (or local language)

2. SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Regulation (EC) No. 1272/2008 (CLP)

Skin Sens. 1: H317
Resp. Sens. 1: H334
Muta. 2; H341
Carc. 1B; H350
Repr. 1B; H360F
STOT RE 1; H372
Aquatic Chronic 4: H413

2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)

Product name	M300
Contains:	Nickel

Hazard Pictogram(s)

Signal Word(s): DANGER

Hazard Statement(s):

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.
H360F: May damage fertility.
H372: Causes damage to organs through prolonged or repeated exposure.
H412: Harmful to aquatic life with long lasting effects.

Precautionary Statement(s)	P201: Obtain special instructions before use. P260: Do not breathe dust. P280: Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. P302+P352: IF ON SKIN: Wash with plenty of water. P308+P313: IF exposed or concerned: Get medical advice/attention. P273: Avoid release to the environment.
Supplemental information	Not applicable

2.3 Other hazards

Handling of this material may generate a dust which can cause mechanical irritation of the eyes, skin nose and throat.

3. SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

EC Classification Regulation (EC) No. 1272/2008 (CLP)

Chemical identity of the substance	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard Statement(s)
Nickel	17 - < 20	7440-02-0	231-111-4	Not yet assigned in the supply chain	Skin Sens. 1; H317 Carc. 2; H351 STOT RE 1; H372 Aquatic Chronic 3; H412
Cobalt	7 - < 10	7440-48-4	231-158-0	Not yet assigned in the supply chain	Skin. Sens. 1; H317 Resp. Sens. 1; H334 Muta. 2; H341 Carc. 1B; H350 Repr. 1B; H360F Aquatic Chronic 4; H413

Note: For full text of H phrases see section 16.

4. SECTION 4: First aid measures

4.1 Description of first aid measures

Self-protection of the first aider	Obtain special instructions before use. No action should be taken involving personal risk. Use personal protective equipment as required. Wear appropriate personal protective equipment, avoid direct contact. Ensure adequate ventilation. Do not breathe dust. Pregnant women should not be exposed to this product. Avoid all contact.
inhalation	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Keep patient at rest and give oxygen if breathing difficult. Get medical attention immediately.
Skin contact	IF ON SKIN: Gently wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Remove contaminated clothing and wash clothing before reuse.
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.If irritation develops and persists, get medical attention.

	Ingestion	IF SWALLOWED: Rinse mouth. Give plenty of water to drink. Do NOT induce vomiting. Seek medical treatment.
4.2	**Most important symptoms and effects, both acute and delayed**	May cause an allergic skin reaction. May cause cancer.Causes damage to organs through prolonged or repeated exposure. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Suspected of causing genetic defects. May damage fertility.
4.3	**Indication of any immediate medical attention and special treatment needed**	Treat symptomatically.

5. SECTION 5: Firefighting measures

5.1	**Extinguishing media**	
	Suitable extinguishing media	As appropriate for surrounding fire. Use CO2, dry chemical, or foam.
	Unsuitable extinguishing media	Do not use water jet. Direct water jet may spread the fire.
5.2	**Special hazards arising from the substance or mixture**	Not flammable. Combustion products:, Carbon monoxide, Carbon dioxide and Nickel carbonyl gas.
5.3	**Advice for firefighters**	Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

6. SECTION 6: Accidental release measures

6.1	**Personal precautions, protective equipment and emergency procedures**	Caution - spillages may be slippery. Ensure operatives are trained to minimise exposures. No action should be taken involving personal risk. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe dust. Ensure adequate ventilation. Remove contaminated clothing and wash all affected areas with plenty of water. Avoid dust generation. Pregnant women should not be exposed to this product. Avoid all contact.
6.2	**Environmental precautions**	Avoid release to the environment. Do not allow to enter drains, sewers or water courses.
6.3	**Methods and material for containment and cleaning up**	Provided it is safe to do so, isolate the source of the leak. Sweep spilled substances into containers if appropriate moisten first to prevent dusting. Use non-sparking equipment when picking up flammable spill. Collect mechanically and dispose of according to Section 13. Use non-sparking tools. Ventilate the area and wash spill site after material pick-up is complete.
6.4	**Reference to other sections**	See Section: 8,13.

7. SECTION 7: Handling and storage

7.1	**Precautions for safe handling**	Provide adequate ventilation when using the material and follow the principles of good occupational hygiene to control personal exposures. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not eat, drink or smoke when using this product. Remove contaminated clothing and wash clothing before reuse. Pregnant women should not be exposed to this product. Avoid all contact.
7.2	**Conditions for safe storage, including any incompatibilities**	Keep only in original packaging. Keep in a well ventilated place. Keep container closed.
	storage temperature	Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources.
	Incompatible materials	Keep away from: acids and strong oxidising agents.
7.3	**Specific end use(s)**	See Section: 1.2.

8. SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.1.1 Occupational exposure limits

The UK HSE (EH40) recommends the following limits for dusts: 10 mg/m³ (8hr TWA) total inhalable dust; 4 mg/m³ (8hr TWA) total respirable dust.

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Nickel	7440-02-0	-	0.5	-	-	UK WEL
Copper and compounds; dust and mists	-	0.2	-	-	-	UK WEL
Manganese	7439-96-5	- -	0.2 0.05	- -	- -	UK WEL Inhalable fraction Respirable fraction
Silicon	7440-21-3	-	10 4	10 4	10 4	UK WEL Inhalable fraction Respirable fraction

Source: WEL: Workplace Exposure Limit (UK HSE EH40).

8.1.2 Biological Limit Value

Not established.

8.1.3 PNECs and DNELs

Not established.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. Do not breathe dust. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

8.2.2 Individual protection measures, such as personal protective equipment

Obtain special instructions before use. Keep good industrial hygiene. Wear appropriate personal protective equipment, avoid direct contact. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke at the work place. Do not breathe dust.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye / face protection

Wear eye protection with side protection (EN166). Eyewash bottles should be available.

Skin protection

Hand protection: Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Protective index 6, corresponding > 480 minutes of permeation time according to EN 374.

Body protection: Wear dust-resistant protective clothing.

Respiratory protection

Not normally required. Wear suitable respiratory protective equipment if processing involves working in areas where dusts or vapours are likely to be evolved. In case of inadequate ventilation wear respiratory protection. Recommended: EN143 Type A-P2.

	Thermal hazards	not applicable
8.2.3	**Environmental exposure controls**	Avoid release to the environment.

9. SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Colour	Grey
Odour	Odourless
Melting point/freezing point	No information available.
Boiling point or initial boiling point and boiling range	No information available.
Flammability	Not flammable
Lower and upper explosion limit	Not applicable
Flash point	Not applicable
Auto-ignition temperature	Does not support combustion. (BS EN 14034) Layer ignition temperature - >400°C (BS EN 50281-2-1)
Decomposition temperature	Not applicable
pH	No information available.
Kinematic viscosity	Not applicable
Solubility	No information available.
Partition coefficient: n-octanol/water (log value)	Not applicable
Vapour pressure	Not applicable
Density and/or relative density	8.00 g/cm^3
Relative vapour density	Not applicable
Particle characteristics	15-45µm

9.2 Other information

Moisture content	0.19 % w/w
Explosive properties	Not explosive

10. SECTION 10: Stability and reactivity

10.1	**Reactivity**	Stable under normal conditions.
10.2	**Chemical stability**	Stable under normal conditions.
10.3	**Possibility of hazardous reactions**	Hazardous polymerisation will not occur.
10.4	**Conditions to avoid**	Hydrogen gas can be liberated when nickel or its alloys react with acids. In reduced atmospheres nickel can react with carbon monoxide to form Ni(CO)4, which is an extremely toxic gas.
10.5	**Incompatible materials**	Keep away from: acids and strong oxidising agents.
10.6	**Hazardous decomposition products**	Combustion products:, Carbon monoxide, Carbon dioxide and Nickel carbonyl gas.

11. SECTION 11: Toxicological information

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

Acute toxicity - Ingestion		Mixture: Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) >2,000 mg/kg.
Acute toxicity - inhalation		Mixture: Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) > 5 mg/L (Dust)
Acute toxicity - Skin contact		Mixture: Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) >2,000 mg/kg.
Skin corrosion/irritation		Mixture: Based upon the available data, the classification criteria are not met.
Serious eye damage/irritation		Mixture: Based upon the available data, the classification criteria are not met.
Respiratory or skin sensitisation		Mixture: Skin Sens. 1; H317: May cause an allergic skin reaction.
	Nickel	Skin Sens. 1; H317: May cause an allergic skin reaction.

			EU Harmonised Classification
			EU ECHA Registration Endpoint summary
			Skin sensitisation - Adverse effects observed (NiPERA Report, 2010)
		Cobalt	Skin Sens. 1; H317: May cause an allergic skin reaction.
			Adverse effects observed
	Germ cell mutagenicity		Mixture: Based upon the available data, the classification criteria are not met.
	Carcinogenicity		Mixture: Carc. 2; H351: Suspected of causing cancer.
		Nickel	Carc. 2; H351: Suspected of causing cancer.
			EU Harmonised Classification
			EU ECHA Registration Endpoint summary
		Cobalt	No data available
	Reproductive toxicity		Mixture: Repr. 1B; H360F: May damage fertility.
		Cobalt	Repr. 1B; H360F: May damage fertility.
			NOAEL: 30 mg/kg bw/day; OECD 422; Rat.
	STOT - single exposure		Mixture: Based upon the available data, the classification criteria are not met.
	STOT - repeated exposure		Mixture: STOT RE 1; H372: Causes damage to organs through prolonged or repeated exposure.
		Nickel	STOT RE 1; H372: Causes damage to organs through prolonged or repeated exposure.
			EU Harmonised Classification
			oral: NOAEL – 2.2 mg/kg/bw day (rat) (Unnamed publication, 2007)
			inhalation: LOAEC – 0.1mg/m³ (rat) (OECD 451)
			dermal: No data
	Aspiration hazard		Mixture: Based upon the available data, the classification criteria are not met.
11.2	**Information on other hazards**		
11.2.1	Endocrine disrupting properties		Does not cause endocrine disruption.
11.2.2	Other information		None known.

12. SECTION 12: Ecological information

12.1	**Toxicity**		Mixture: Aquatic Chronic 3; H412: Harmful to aquatic life with long lasting effects.
			estimated LC50 (Mixture): >10 - ≤ 100 mg/l
		Nickel	Aquatic Chronic 3; H412: Harmful to aquatic life with long lasting effects.
			EU Harmonised Classification
			NOEC: 0.057 ug/L (Birge et al. 1984)
		Cobalt	Aquatic Chronic 4; H413: May cause long lasting harmful effects to aquatic life.
			EU Harmonised Classification
			PNEC (freshwater): 1.06 µg/L
			PNEC (marine water): 2.36 µg/L
12.2	**Persistence and degradability**		No data for the mixture as a whole.
		Nickel	Not applicable for inorganic substances.
		Cobalt	Not applicable for inorganic substances.
12.3	**Bioaccumulative potential**		No data for the mixture as a whole.
		Nickel	Low bioaccumulation potential.
			BCF: 45 (Alikhan et al. 1989)
		Cobalt	Low bioaccumulation potential.
			BCF: >100 to 5000
12.4	**Mobility in soil**		No data for the mixture as a whole.
		Nickel	The product is predicted to have high mobility in soil.
			Log Kp: 4.51 (Elbaz-Poulichet et al. 1996)
		Cobalt	The product is predicted to have high mobility in soil.
			Log Kp: 3.47
12.5	**Results of PBT and vPvB assessment**		Not classified as PBT or vPvB.
12.6	**Endocrine disrupting properties**		Does not cause endocrine disruption.
12.7	**Other adverse effects**		None known.

13. SECTION 13: Disposal considerations

13.1	**Waste treatment methods**	Do not allow to enter drains, sewers or watercourses. Dispose of this material and its container as hazardous waste Disposal should be in accordance with local, state or national legislation.
13.2	**Additional information**	Avoid release to the environment.

14. SECTION 14: Transport information

Not classified according to the United Nations 'Recommendations on the Transport of Dangerous Goods'.

		ADR/RID	**IMDG**	**IATA/ICAO**
14.1	**UN number or ID number**	None assigned	None assigned	**None assigned**
14.2	**UN proper shipping name**	None assigned	None assigned	None assigned
14.3	**Transport hazard class(es)**	None assigned	None assigned	None assigned
14.4	**Packing group**	None assigned	None assigned	None assigned
14.5	**Environmental hazards**	Not classified	Not classified as a Marine Pollutant.	Not classified
14.6	**Special precautions for user**	See Section: 2		
14.7	**Maritime transport in bulk according to IMO instruments**	No information available.	No information available.	No information available.
14.8	**Additional information**	None	None	None

15. SECTION 15: REGULATORY INFORMATION

15.1	**Safety, health and environmental regulations/legislation specific for the substance or mixture**	
15.1.1	**EU regulations**	
	Authorisations and/or restrictions on use	Not restricted
15.1.2	**National regulations**	
	Germany	Water hazard class: 2
15.2	**Chemical Safety Assessment**	A REACH chemical safety assessment has not been carried out. Exposure scenarios for substances in this preparation are not available.

16. SECTION 16: Other information

The following sections contain revisions or new statements: not applicable – V1.0

References:
EU Harmonised Classification and EU ECHA registration dossier for Nickel (CAS No. 7440-02-0) and Cobalt (CAS No. 7440-48-4).
Test Result, Report Number: R 002912R1V1RS, Sigma-HSE (UK) Ltd (2022).

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

Classification of the substance or mixture According to Regulation (EC) No. 1272/2008 (CLP)	**Classification procedure**
Skin Sens. 1; H317	Threshold Calculation
Carc. 2; H351	Threshold Calculation
STOT RE 1; H372	Threshold Calculation
Aquatic Chronic 3; H412	Summation Calculation

Legend

ADR	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
BCF	Bioconcentration Factor
CAS	CAS: Chemical Abstracts Service
DNEL	Derived no effect level

EC	EC: European Community
EN	European Standard
EU	European Union
IATA	IATA: International Air Transport Association
ICAO/IATA	ICAO: International Civil Aviation Organization / IATA: International Air Transport Association
IMDG	IMDG: International Maritime Dangerous Goods
LC50	Lethal concentration 50
LD50	Lethal dose 50
LIT	Layer Ignition Temperature
LOAEC	Lowest Observed Adverse Effect Concentration
LTEL	Long term exposure limit
MIE	Minimum Ignition Energy
MIT	Minimum Ignition Temperature
NOEC	No Observed Effect Concentration
NOAEL	No Observed Adverse Effect Level
OECD	Organisation for Economic Cooperation and Development
PBT	PBT: Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL	Short term exposure limit
TWA	Time Weighted Average
UN	United Nations
vPvB	very Persistent and very Bioaccumulative
WGK	Wassergefährdungsklasse (Germany) / water hazard class

Hazard classification / Classification code:	**Hazard Statement(s)**
Skin Sens. 1; Skin Sensitisation, Category 1	H317: May cause an allergic skin reaction.
Resp. Sens. 1; Respiratory Sensitization, Category 1	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Muta. 2; Germ cell mutagenicity, Category 2	H341: Suspected of causing genetic defects.
Carc. 1B; Carcinogenicity, Category 1B	H350: May cause cancer.
Carc. 2; Carcinogenicity, Category 2	H351: Suspected of causing cancer.
Repr. 1B; Reproductive toxicity, Category 1B	H360F: May damage fertility.
STOT RE 1; Specific target organ toxicity — repeated exposure, Category 1	H372: Causes damage to organs through prolonged or repeated exposure.
Aquatic Chronic 3; Hazardous to the aquatic environment, Chronic , Category 3	H412: Harmful to aquatic life with long lasting effects.
Aquatic Chronic 4; Hazardous to the aquatic environment, Chronic , Category 4	H413: May cause long lasting harmful effects to aquatic life.

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

Disclaimers

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Annex to the extended Safety Data Sheet (eSDS)

Exposure scenarios for substances in this preparation are not available.