

# Safety Data Sheet

Version: 2.0 Date: 3<sup>rd</sup> June 2024, First Issue Date: 27<sup>th</sup> 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

<b>1.1 Product identifier</b>	
Product name	15-5PH (15-45µm)
Product code	GMP 15-5PH
Unique Formula Identifier (UFI)	not applicable
Nanoform	not applicable
<b>1.2 Relevant identified uses of the substance or mixture and uses advised against</b>	
Identified Use(s)	Additive manufacturing, hot isostatic pressing, thermal spray, metal injection moulding, binder jetting.
Uses advised against	Anything other than the above.
<b>1.3 Details of the supplier of the safety data sheet</b>	
<b>Company Identification</b>	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
<b>1.4 Emergency telephone number</b>	
Emergency Phone No.	999 / 111 (or local emergency number)
Language(s) spoken:	English (or local language)

## 2. SECTION 2: Hazards identification

<b>2.1 Classification of the substance or mixture Regulation (EC) No. 1272/2008 (CLP)</b>	Skin Sens. 1; H317 Carc. 2; H351 STOT RE 2; H373 Aquatic Chronic 3; H412
<b>2.2 Label elements</b>	According to Regulation (EC) No. 1272/2008 (CLP)
Product name	15-5PH
Contains:	Nickel
Hazard Pictogram(s)	The hazard pictograms are two red diamonds. The first diamond contains a black silhouette of a human figure with a white starburst on the chest, representing a health hazard. The second diamond contains a black exclamation mark, representing a warning.
Signal Word(s)	DANGER
Hazard Statement(s)	H317: May cause an allergic skin reaction. H351: Suspected of causing cancer. H373: May cause 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.

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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	1 - <6	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
Copper	2.5 - < 5	7440-50-8	231-159-6	Not yet assigned in the supply chain	Aquatic Acute 1; H400 Aquatic Chronic 2; H411
Manganese	0.1 - < 1	7439-96-5	231-105-1	Not yet assigned in the supply chain	Aquatic Chronic 2; H411

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. Avoid contact with skin and eyes.

Inhalation

IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. 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. Suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure.

### 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 CO<sub>2</sub>, dry chemical, or foam.

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5.2	Unsuitable extinguishing media <b>Special hazards arising from the substance or mixture</b>	Do not use water jet. Direct water jet may spread the fire. Not flammable. Combustion products:, Carbon monoxide, Carbon dioxide and Nickel carbonyl gas.
5.3	<b>Advice for firefighters</b>	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	<b>Personal precautions, protective equipment and emergency procedures</b>	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.
6.2	<b>Environmental precautions</b>	Avoid release to the environment. Do not allow to enter drains, sewers or water courses.
6.3	<b>Methods and material for containment and cleaning up</b>	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	<b>Reference to other sections</b>	See Section: 8,13.

## 7. SECTION 7: Handling and storage

7.1	<b>Precautions for safe handling</b>	When using do not eat or drink. 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.
7.2	<b>Conditions for safe storage, including any incompatibilities</b> storage temperature	Keep only in original packaging. Keep in a well ventilated place. Keep container closed. Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources.
7.3	Incompatible materials <b>Specific end use(s)</b>	Keep away from: acids and strong oxidising agents. See Section: 1.2.

## 8. SECTION 8: Exposure controls/personal protection

8.1	<b>Control parameters</b>	
8.1.1	<b>Occupational exposure limits</b>	The UK HSE (EH40) recommends the following limits for dusts: 10 mg/m <sup>3</sup> (8hr TWA) total inhalable dust; 4 mg/m <sup>3</sup> (8hr TWA) total respirable dust.

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m <sup>3</sup> )	STEL (ppm)	STEL (mg/m <sup>3</sup> )	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




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

<b>8.1.2 Biological Limit Value</b>	Not established.
<b>8.1.3 PNECs and DNELs</b>	Not established.
<b>8.2 Exposure controls</b>	
<b>8.2.1 Appropriate engineering controls</b>	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).
<b>8.2.2 Individual protection measures, such as personal protective equipment</b>	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 	<b>Hand protection:</b> 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.  <b>Body protection:</b> 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
<b>8.2.3 Environmental exposure controls</b>	Avoid release to the environment.

## 9. SECTION 9: Physical and chemical properties

<b>9.1 Information on basic physical and chemical properties</b>	
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.

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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	7.78 g/cm <sup>3</sup>
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) <sub>4</sub> , 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)
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
Reproductive toxicity	Mixture: Based upon the available data, the classification criteria are not met.
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/m <sup>3</sup> (rat) (OECD 451) dermal: No data
Aspiration hazard	Mixture: Based upon the available data, the classification criteria are not met.
Acute toxicity - Ingestion	Mixture: Based upon the available data, the classification criteria are not met.

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Calculated acute toxicity estimate (ATE) >2,000 mg/kg.

## 11.2 Information on other hazards

11.2.1 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.  
None Known

11.2.2 Other information

## 12. SECTION 12: Ecological information

<b>12.1 Toxicity</b>	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)
Copper	Aquatic Chronic 2; H411: Toxic to aquatic life with long lasting effects. EU Harmonised Classification
Manganese	Aquatic Chronic 2; H411: Toxic to aquatic life with long lasting effects. LC50: 0.17-15.61 mg/l (28 days) (U. S. National Library of Medicine, 2018)
<b>12.2 Persistence and degradability</b>	No data for the mixture as a whole.
Nickel	Not applicable for inorganic substances.
Copper	Not applicable for inorganic substances.
Manganese	Not applicable for inorganic substances.
<b>12.3 Bioaccumulative potential</b>	No data for the mixture as a whole.
Nickel	Low bioaccumulation potential. BCF: 45 (Alikhan et al. 1989)
Copper	Testing can be waived because the substance is an inorganic compound
Manganese	Low bioaccumulation potential. BCF: 19 (SOREN NORDAHL HANSEN, et.al. 1995)
<b>12.4 Mobility in soil</b>	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)
Manganese	The product is predicted to have low mobility in soil. Kd: ~994 (OECD 106)
<b>Toxicity</b>	Mixture: Aquatic Chronic 3; H412: Harmful to aquatic life with long lasting effects. estimated LC50 (Mixture): >10 - ≤ 100 mg/l
<b>12.5 Results of PBT and vPvB assessment</b>	Not classified as PBT or vPvB.
<b>12.6 Endocrine disrupting properties</b>	Does not cause endocrine disruption.
<b>12.7 Other adverse effects</b>	None known.

## 13. SECTION 13: Disposal considerations

<b>13.1 Waste treatment methods</b>	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.
<b>13.2 Additional information</b>	Avoid release to the environment.

## 14. SECTION 14: Transport information

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

	<b>ADR/RID</b>	<b>IMDG</b>	<b>IATA/CAO</b>
<b>14.1 UN number or ID number</b>	None assigned	None assigned	<b>None assigned</b>
<b>14.2 UN proper shipping name</b>	None assigned	None assigned	None assigned
<b>14.3 Transport hazard class(es)</b>	None assigned	None assigned	None assigned
<b>14.4 Packing group</b>	None assigned	None assigned	None assigned
<b>14.5 Environmental hazards</b>	Not classified	Not classified as a Marine Pollutant.	Not classified
<b>14.6 Special precautions for user</b>	See Section: 2		

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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 Copper (CAS No. 7440-50-8).  
ECHA registration dossier for Manganese (CAS No. 7439-96-5).  
Test Result, Report Number: R002912R2V1RS, 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

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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:

Skin Sens. 1; Skin Sensitisation, Category 1  
Carc. 2; Carcinogenicity, Category 2  
STOT RE 1; Specific target organ toxicity — repeated exposure, Category 1  
STOT RE 2; Specific target organ toxicity — repeated exposure, Category 2  
Aquatic Acute 1; Hazardous to the aquatic environment, acute, Category 1  
Aquatic Chronic 2; Hazardous to the aquatic environment, Chronic, Category 2  
Aquatic Chronic 3; Hazardous to the aquatic environment, Chronic, Category 3

## Hazard Statement(s)

H317: May cause an allergic skin reaction.  
H351: Suspected of causing cancer.  
H372: Causes damage to organs through prolonged or repeated exposure.  
H373: May cause damage to organs through prolonged or repeated exposure.  
H400: Very toxic to aquatic life.  
H411: Toxic to aquatic life with long lasting effects.  
H412: Harmful to aquatic life with long lasting effects.

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.