

Safety data sheet

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BASF 3D Printing Safety data sheet according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended from time to time.

Date / Revised: 22.12.2022

Version: 3.0

Date previous version: 15.07.2022

Previous version: 2.0

Date / First version: 18.08.2020

Product: **Ultrafuse® 17-4 PH metal filament**

(ID no. 11134863/SDS_GEN_GB/EN)

Date of print 09.01.2023

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

1.1. Product identifier

Ultrafuse® 17-4 PH metal filament

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

Recommended use: 3D Printing

1.3. Details of the supplier of the safety data sheet

Company:

BASF 3D Printing Solutions B.V.
Eerste Bokslootweg 17
7821 AT Emmen, Netherlands

Contact address:

BASF plc
4th and 5th Floors, 2 Stockport Exchange
Railway Road, Stockport, SK1 3GG
UNITED KINGDOM

Telephone: +44 161 475 3000

E-mail address: product-safety-uk-and-ireland@basf.com

1.4. Emergency telephone number

International emergency number:

Telephone: +49 180 2273-112

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

For the classification of the mixture the following methods have been applied: extrapolation on the concentration levels of the hazardous substances, on basis of test results and after evaluation of experts. The methodologies used are mentioned at the respective test results.

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

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Aquatic Chronic 3

H412 Harmful to aquatic life with long lasting effects.

For the classifications not written out in full in this section the full text can be found in section 16.

2.2. Label elements

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

Hazard Statement:

H412 Harmful to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

P273 Avoid release to the environment.

Precautionary Statements (Disposal):

P501 Dispose of contents and container to hazardous or special waste collection point.

The product does not require a hazard warning label in accordance with EC Directives.

Labeling of special preparations (GHS):

| EUH208: May produce an allergic reaction. Contains: nickel, cobalt

| Hazard determining component(s) for labelling: nickel, cobalt

2.3. Other hazards

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

Upon thermal and/or chemical treatment the product can release hazardous substances.

Upon mechanical treatment like e.g. cutting, grinding and/or polishing the product can release hazardous substances.

Fine dust produced by abrasion can form explosive mixtures with air.

SECTION 3: Composition/Information on Ingredients

3.1. Substances

Not applicable

3.2. Mixtures

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Chemical nature

polymer blend based on: Alloy, metal powder, encapsulated, in a polymer matrix

Hazardous ingredients (GHS)

| Chromium

Content (W/W): $\geq 7\%$ - $< 25\%$
CAS Number: 7440-47-3
EC-Number: 231-157-5
REACH registration number: 01-2119485652-31

| nickel

Content (W/W): $\geq 3\%$ - $< 5\%$
CAS Number: 7440-02-0
EC-Number: 231-111-4
REACH registration number: 01-2119438727-29

Skin Sens. 1
Carc. 2
STOT RE 1
H317, H351, H372

| Ethylenebis(oxyethylene) bis[3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate]

Content (W/W): $> 0\%$ - $< 0.1\%$
CAS Number: 36443-68-2
EC-Number: 253-039-2
REACH registration number: 01-2119956160-44

Aquatic Chronic 1
M-factor chronic: 10
H410

| cobalt

Content (W/W): $\geq 0\%$ - $< 1\%$
CAS Number: 7440-48-4
EC-Number: 231-158-0
REACH registration number: 01-2119517392-44

Acute Tox. 4 (oral)
Resp. Sens. 1
Skin Sens. 1
Muta. 2
Aquatic Chronic 4
Repr. 1B (fertility)
Repr. 2 (unborn child)
Carc. 1B (by inhalation)
H302, H334, H317, H341, H350i, H360Fd, H413

For the classifications not written out in full in this section, including the hazard classes and the hazard statements, the full text is listed in section 16.

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SECTION 4: First-Aid Measures

4.1. Description of first aid measures

Remove contaminated clothing.

If inhaled:

Remove the affected individual into fresh air and keep the person calm. If symptoms persist, seek medical advice.

On skin contact:

Wash thoroughly with soap and water. If irritation develops, seek medical attention. Burns caused by molten material require hospital treatment.

On contact with eyes:

Wash affected eyes for at least 15 minutes under running water with eyelids held open. If irritation develops, seek medical attention.

On ingestion:

Rinse mouth and then drink 200-300 ml of water. Seek medical attention.

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

Symptoms: (Further) symptoms and / or effects are not known so far

Hazards: No hazard is expected under intended use and appropriate handling.

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

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing media

Suitable extinguishing media:

water spray, foam, dry powder, carbon dioxide

Additional information:

Water spray for suppression (heat dissipation) of incipient fires as long as the product has not yet ignited.

5.2. Special hazards arising from the substance or mixture

Endangering substances: Formaldehyde, carbon oxides

Advice: The substances/groups of substances mentioned can be released in case of fire.

5.3. Advice for fire-fighters

Special protective equipment:

Wear a self-contained breathing apparatus.

Further information:

The degree of risk is governed by the burning substance and the fire conditions. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

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SECTION 6: Accidental Release Measures

Avoid the formation and build-up of dust - danger of dust explosion. Dust in sufficient concentration can result in an explosive mixture in air. Handle to minimize dusting and eliminate open flame and other sources of ignition.

6.1. Personal precautions, protective equipment and emergency procedures

Handle in accordance with good industrial hygiene and safety practice. Avoid dust formation.

6.2. Environmental precautions

Discharge into the environment must be avoided.

6.3. Methods and material for containment and cleaning up

For small amounts: Sweep/shovel up.

For large amounts: Sweep/shovel up.

Dispose of absorbed material in accordance with regulations. Avoid raising dust.

6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

SECTION 7: Handling and Storage

7.1. Precautions for safe handling

Avoid inhalation of dusts/mists/vapours. Ensure adequate ventilation. Provide suitable exhaust ventilation at the drying process and in the area surrounding the melt outlet of processing machines. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. Avoid the formation and deposition of dust. Upon mechanical load the product can release sensitizing substances.

Further information is given in the user guidelines for the product.

Protection against fire and explosion:

The product is not an oxidizer, not self-combustible and not explosive. Avoid dust formation. Accumulation of fine dust may entail the risk of a dust explosion in the presence of air.

7.2. Conditions for safe storage, including any incompatibilities

Segregate from acids.

Suitable materials for containers: High density polyethylene (HDPE), Low density polyethylene (LDPE), Paper/Fibreboard

Further information on storage conditions: Avoid deposition of dust. Avoid extreme heat.

Storage stability:

Protect against moisture.

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7.3. Specific end use(s)

For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Components with occupational exposure limits

7440-02-0: nickel	TWA value 0.5 mg/m ³ (WEL/EH 40 (UK)) Measured as: nickel (Ni) Skin Designation (WEL/EH 40 (UK)) Measured as: nickel (Ni) The substance can be absorbed through the skin.
7440-47-3: Chromium	TWA value 0.5 mg/m ³ (WEL/EH 40 (UK)) TWA value 2 mg/m ³ (OEL (EU)) indicative
7440-50-8: Copper	TWA value 0.2 mg/m ³ (WEL/EH 40 (UK)), fumes/smoke TWA value 1 mg/m ³ (WEL/EH 40 (UK)), Inhalable dusts and mists Measured as: copper (Cu) STEL value 2 mg/m ³ (WEL/EH 40 (UK)), Inhalable dusts and mists Measured as: copper (Cu) Ceiling limit value/factor: 15 min
7440-48-4: cobalt	TWA value 0.1 mg/m ³ (WEL/EH 40 (UK)) Measured as: cobalt (Co)

The release and quantity of the stated substance is dependent on the processing conditions.

50-00-0: Formaldehyde

TWA value 2.5 mg/m³ ; 2 ppm (WEL/EH 40 (UK))
STEL value 0.74 mg/m³ (Directive 2004/37/EC)
TWA value 0.62 mg/m³ ; 0.5 ppm (Directive 2004/37/EC)
TWA value 0.37 mg/m³ ; 0.3 ppm (Directive 2004/37/EC)
STEL value 0.6 ppm (Directive 2004/37/EC)
STEL value 2.5 mg/m³ ; 2 ppm (WEL/EH 40 (UK))
Ceiling limit value/factor: 15 min

8.2. Exposure controls

Personal protective equipment

Respiratory protection:

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Breathing protection if breathable aerosols/dust are formed. Wear respiratory protection if ventilation is inadequate. Particle filter with medium efficiency for solid and liquid particles (e.g. EN 143 or 149, Type P2 or FFP2)

Hand protection:

Use additional heat protection gloves when handling hot molten masses (EN 407), e.g. of textile or leather.

Eye protection:

Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures

Wearing of closed work clothing is recommended. Ensure adequate ventilation. No eating, drinking, smoking or tobacco use at the place of work. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift.

Environmental exposure controls

Remove mechanically. Collection and delivery to recycling enterprise or other registered elimination institution.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Form:	filament
Colour:	grey
Odour:	odourless
Odour threshold:	not applicable, odour not perceivable
pH value:	not applicable, substance/mixture is non-soluble (in water)
Melting point:	not determined
Boiling point:	not applicable
Flash point:	not applicable, the product is a solid
Evaporation rate:	The product is a non-volatile solid.
Flammability:	Not a flammable solid according to UN transport regulations division 4.1 and GHS chapter 2.7.

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Lower explosion limit:	For solids not relevant for classification and labelling.
Upper explosion limit:	For solids not relevant for classification and labelling.
Ignition temperature:	not applicable
Vapour pressure:	not determined
Density:	(20 °C) not determined
Relative vapour density (air):	The product is a non-volatile solid.
Solubility in water:	insoluble
Partitioning coefficient n-octanol/water (log Kow):	not applicable for mixtures
Self ignition:	not self-igniting
Thermal decomposition:	No decomposition if stored and handled as prescribed/indicated. Prolonged thermal loading can result in products of degradation being given off.
Viscosity, kinematic:	not applicable, the product is a solid
Explosion hazard:	Product is not explosive, however a dust explosion could result from an air / dust mixture.
Fire promoting properties:	not fire-propagating

9.2. Other information

Self heating ability: It is not a substance capable of spontaneous heating.

Bulk density: not determined
Hygroscopy: Non-hygroscopic

Other Information:

If necessary, information on other physical and chemical parameters is indicated in this section.

SECTION 10: Stability and Reactivity

10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

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Corrosion to metals: Reactions with water/air:	No corrosive effect on metal.	
	Reaction with:	air
	Flammable gases:	no
	Toxic gases:	no
	Corrosive gases:	no
	Smoke or fog:	no
	Peroxides:	no
	Reaction with:	water
	Flammable gases:	no
	Toxic gases:	no
	Corrosive gases:	no
	Smoke or fog:	no
	Peroxides:	no
	Formation of flammable gases:	Remarks: Forms no flammable gases in the presence of water.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

Strong exothermic reaction with acids. May decompose violently.

The product is stable if stored and handled as prescribed/indicated.

10.4. Conditions to avoid

Avoid all sources of ignition: heat, sparks, open flame. Avoid dust formation.

10.5. Incompatible materials

Substances to avoid:

oxidizing agents, inorganic acids, plastics containing halogenated flame retardants

10.6. Hazardous decomposition products

Possible thermal decomposition products:

Formaldehyde, carbon monoxide

At prolonged and/or strong thermal stressing above the decomposition temperature dangerous decomposition products can be formed.

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:

Based on available data, the classification criteria are not met. Contact with molten product may cause thermal burns.

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| Information on: cobalt

Assessment of acute toxicity:

Of moderate toxicity after single ingestion. The inhalation of dusts represents a severe acute hazard. Virtually nontoxic after a single skin contact.

Irritation

Assessment of irritating effects:

May cause mechanical irritation.

Respiratory/Skin sensitization

Assessment of sensitization:

Based on available data, the classification criteria are not met. Study not necessary due to exposure considerations.

| Information on: cobalt

Assessment of sensitization:

May cause sensitization by inhalation. May cause sensitization by skin contact.

| Information on: nickel

Assessment of sensitization:

Sensitization after skin contact possible.

Germ cell mutagenicity

Assessment of mutagenicity:

Based on available data, the classification criteria are not met.

Carcinogenicity

Assessment of carcinogenicity:

Based on available data, the classification criteria are not met. Study not necessary due to exposure considerations.

| Information on: nickel

Assessment of carcinogenicity:

The results of various animal studies gave no indication of a carcinogenic effect. IARC (International Agency for Research on Cancer) has classified this substance as group 2B (The agent is possibly carcinogenic to humans).

| Information on: cobalt

Assessment of carcinogenicity:

In long-term studies in rats and mice in which the substance was given by inhalation, a carcinogenic effect was observed. IARC (International Agency for Research on Cancer) has classified this substance as group 2B (The agent is possibly carcinogenic to humans).

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Reproductive toxicity

Assessment of reproduction toxicity:

Based on available data, the classification criteria are not met.

| *Information on: cobalt*

Assessment of reproduction toxicity:

The results of animal studies suggest a fertility impairing effect.

Developmental toxicity

Assessment of teratogenicity:

Based on available data, the classification criteria are not met.

| *Information on: cobalt*

Assessment of teratogenicity:

Indications of possible developmental toxicity/teratogenicity were seen in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Specific target organ toxicity (single exposure)

Remarks: Based on available data, the classification criteria are not met.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

| *Information on: nickel*

Assessment of repeated dose toxicity:

The substance may cause damage to the lung after repeated inhalation.

Aspiration hazard

not applicable

SECTION 12: Ecological Information

12.1. Toxicity

Assessment of aquatic toxicity:

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Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: Ethylenebis(oxyethylene) bis[3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate]

Assessment of aquatic toxicity:

There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H₂O):

The product is not very soluble in water and can thus be removed from water mechanically in suitable effluent treatment plants.

12.3. Bioaccumulative potential

Assessment bioaccumulation potential:

The product has not been tested.

Bioaccumulation potential:

The product has not been tested. Because of the product's consistency and low water solubility, bioavailability is improbable.

12.4. Mobility in soil

Assessment transport between environmental compartments:

Adsorption in soil: Adsorption to solid soil phase is possible.

12.5. Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria.

12.6. Other adverse effects

The product does not contain substances that are listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

12.7. Additional information

Add. remarks environm. fate & pathway:

The product has not been tested. The statements on environmental fate and pathway have been derived from the properties of the individual components.

Other ecotoxicological advice:

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The product has not been tested. The statements on ecotoxicology have been derived from the properties of the individual components.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Dispose of in accordance with national, state and local regulations.
Contact specialized companies about recycling.

The UK Environmental Protection (Duty of Care) Regulations (EP) and amendments should be noted (United Kingdom).

This product and any uncleaned containers must be disposed of as hazardous waste in accordance with the 2005 Hazardous Waste Regulations and amendments (United Kingdom)

Contaminated packaging:

Dispose of in accordance with national, state and local regulations.

Contaminated packaging should be emptied as far as possible and disposed of in the same manner as the substance/product.

SECTION 14: Transport Information

Land transport

ADR

	Not classified as a dangerous good under transport regulations
UN number or ID number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

RID

	Not classified as a dangerous good under transport regulations
UN number or ID number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

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Inland waterway transport

ADN

	Not classified as a dangerous good under transport regulations
UN number or ID number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user:	None known

Transport in inland waterway vessel

Not evaluated

Sea transport

IMDG

	Not classified as a dangerous good under transport regulations
UN number or ID number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user:	None known

Air transport

IATA/ICAO

	Not classified as a dangerous good under transport regulations
UN number or ID number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user:	None known

14.1. UN number or ID number

See corresponding entries for "UN number or ID number" for the respective regulations in the tables above.

14.2. UN proper shipping name

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See corresponding entries for "UN proper shipping name" for the respective regulations in the tables above.

14.3. Transport hazard class(es)

See corresponding entries for "Transport hazard class(es)" for the respective regulations in the tables above.

14.4. Packing group

See corresponding entries for "Packing group" for the respective regulations in the tables above.

14.5. Environmental hazards

See corresponding entries for "Environmental hazards" for the respective regulations in the tables above.

14.6. Special precautions for user

See corresponding entries for "Special precautions for user" for the respective regulations in the tables above.

14.7. Maritime transport in bulk according to IMO instruments

Maritime transport in bulk is not intended.

SECTION 15: Regulatory Information

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

Directive 2012/18/EU - Control of Major Accident Hazards involving dangerous substances (EU):
Listed in above regulation: no

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

The data should be considered when making any assessment under the Control of Substances Hazardous to Health Regulations (COSHH), and related guidance, for example, 'COSHH Essentials' (United Kingdom).

15.2. Chemical Safety Assessment

Advice on product handling can be found in sections 7 and 8 of this safety data sheet.

SECTION 16: Other Information

Any other intended applications should be discussed with the manufacturer.

Full text of the classifications, including the hazard classes and the hazard statements, if mentioned in section 2 or 3:

Aquatic Chronic

Hazardous to the aquatic environment - chronic

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Skin Sens.	Skin sensitization
Carc.	Carcinogenicity
STOT RE	Specific target organ toxicity — repeated exposure
Acute Tox.	Acute toxicity
Resp. Sens.	Respiratory sensitization
Muta.	Germ cell mutagenicity
Repr.	Reproductive toxicity
H412	Harmful to aquatic life with long lasting effects.
H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.
H302	Harmful if swallowed.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341	Suspected of causing genetic defects.
H350i	May cause cancer by inhalation.
H360Fd	May damage fertility. Suspected of damaging the unborn child.
H413	May cause long lasting harmful effects to aquatic life.

Abbreviations

ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road.
 ADN = The European Agreement concerning the International Carriage of Dangerous Goods by Inland waterways. ATE = Acute Toxicity Estimates. CAO = Cargo Aircraft Only. CAS = Chemical Abstract Service. CLP = Classification, Labelling and Packaging of substances and mixtures. DIN = German national organization for standardization. DNEL = Derived No Effect Level. EC50 = Effective concentration median for 50% of the population. EC = European Community. EN = European Standards. IARC = International Agency for Research on Cancer. IATA = International Air Transport Association. IBC-Code = Intermediate Bulk Container code. IMDG = International Maritime Dangerous Goods Code. ISO = International Organization for Standardization. STEL = Short-Term Exposure Limit. LC50 = Lethal concentration median for 50% of the population. LD50 = Lethal dose median for 50% of the population. TLV = Threshold Limit Value. MARPOL = The International Convention for the Prevention of Pollution from Ships. NEN = Dutch Norm. NOEC = No Observed Effect Concentration. OEL = Occupational Exposure Limit. OECD = Organization for Economic Cooperation and Development. PBT = Persistent, Bioaccumulative and Toxic. PNEC = Predicted No Effect Level. PPM = Parts per million. RID = The European Agreement concerning the International Carriage of Dangerous Goods by Rail. TWA = Time Weight Average. UN-number = UN number at transport. vPvB = very Persistent and very Bioaccumulative.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

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