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

1.1 Product identifier:

Trade name: Fiberthree® F3 PA-CF Pro

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

Relevant identified uses:

Use of the substance/mixture: Thermoplastic performance filament for FFF 3D-printers

1.3 Details of the supplier of the safety data sheet:

Supplier:

Fiberthree GmbH
Otto-Hesse-Str. 19
64293 Darmstadt

Telephone +49 6151 734 75900
Fax: +49 6151 734 75150

Email kontakt@fiberthree.de

1.4 EMERGENCY TELEPHONE NUMBER:

Giftinformationszentrum Rheinland-Pfalz/Hessen
Telefon: 06131/1 92 40 und 23 24 66

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture:

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture

2.2 Label elements

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

Not a hazardous substance or mixture

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB) at levels of 0.1% or higher.

The hazards of this material are inherent in its processing by machine. Processing may release small amounts of respirable dust and respirable IBER particles. Combustible dust concentrations can form in the air when small particles are generated during further processing, handling or otherwise.
Resin particles, like other inert materials, are mechanically irritating to the eyes. Vapors that may be released during processing may irritate eyes. Vapors that may be released during processing may cause respiratory irritation. Prolonged inhalation of respirable dust and respirable fiber particles at high concentrations can cause lung damage. Contact with molten product can cause thermal burns. May contain traces of epsilon caprolactam.

SECTION 3. Composition/information on ingredients

3.2 Mixtures

Description of the mixture: carbon-fiber reinforced polyamide

Additional information: No dangerous ingredients according to regulation 1907/2006 (REACH), Annex II
Contains carbon fibers, polyamide.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information
Move out of dangerous area.
Never give anything by mouth to an unconscious person.
If unconscious, place in recovery position and seek medical advice.
Give oxygen or artificial respiration if needed.

Following inhalation
Move to fresh air.
If symptoms persist, call a physician.

Following skin contact
Do NOT use solvents or thinners.
Wash off with soap and water.
If symptoms persist, call a physician.

Cool melted product on skin with plenty of water. Do not re-move solidified product.
In case of burns apply cold water until pain subsides then seek medical advice.

Following eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Keep eye wide open while rinsing.

Following ingestion
If symptoms persist, call a physician.

Self-protection of the first aider:
No information available

4.2 Most important symptoms and effects, both acute and delayed
No information available

4.3 Indication of any immediate medical attention and special treatment needed
No information available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Use water spray, alcohol-resistant foam, dry chemical or car-bon dioxide.

Unsuitable extinguishing media

High volume water jet media

5.2 Special hazards arising from the substance or mixture

During firefighting

Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
Do not use a solid water stream as it may scatter and spread fire.
Build-up of dangerous/toxic fumes possible in cases of fire/high temperature.

Hazardous combustion products

carbon monoxide, carbon dioxide and unburned hydrocarbon (smoke),

Nitrogen oxides (NOx), hydrogen cyanide (hydrocyanic acid), ε-caprolactam

Under certain fire conditions, traces of other toxic substances cannot be ruled out. The formation of further fission and oxidation products depends on the fire conditions.

5.3 Advice for fire-fighters

Exposure to decomposition products may be a hazard to health. In the event of fire, wear self-contained breathing apparatus.

Additional information
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
In the event of fire and/or explosion do not breathe fumes.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions:

Ensure adequate ventilation.
Use personal protective equipment.
Avoid dust formation.
Avoid contact with skin, eyes and clothing.
Avoid breathing dust.
Avoid inhalation of vapour or mist.
Contaminated surfaces will be extremely slippery.
Treat recovered material as described in the section "Disposal considerations".

6.2 Environmental precautions

Should not be released into the environment.
Do not allow contact with soil, surface, or ground water.
Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).

6.3 Methods and material for containment and cleaning up

Sweep up or vacuum up spillage and collect in suitable container for disposal.
Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
Avoid dust formation**.**

6.4 Reference to other sections

For personal protection see section 8., For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Provide for appropriate exhaust ventilation and dust collection at machinery. The material can accumulate static charge and can therefore cause electrical ignition. Minimize dust generation and accumulation. Dust must be collected and disposed of carefully. Wear personal protective equipment. Do not breathe vapours/dust.
Fire preventions	:	Take measures to prevent the buildup of electrostatic charge. During processing, dust may form explosive mixture in air. Keep away from heat and sources of ignition. Normal measures for preventive fire protection.
Advice on general occupational hygiene	:	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Regular cleaning of equipment, work area and clothing. Keep away from food and drink. General industrial hygiene practice. When using do not eat, drink or smoke.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions

Requirements for storage areas and containers	:	Keep containers tightly closed in a dry, cool and well-ventilated place.
Further information on storage conditions	:	Keep away from heat and sources of ignition. Keep away from direct sunlight. Avoid moisture.
Advice on common storage	:	Keep away from food, drink and animal feedingstuffs.
Storage class (TRGS 510)	:	11, Combustible Solids

7.3 Specific end uses

Specific end uses
For further information refer to the product technical data sheet.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Derived No Effect Level
DNEL/PNEC-values

Name of substance	**CAS**	**EG-Nr.**
ε-Caprolactam	**105-60-2**	**203-313-2**
DNEL (long term exposure) 5 mg/m³		
DNEL (Acute/ short term exposure) 10 mg/m³		
TRGS 900 (inhalable fraction) 5 mg/m³		
TWA (ACGIH): European Union 5 mg/m³		
STEL: European Union 40 mg/m³		
Allg. Staubgrenzwert / dust limit value (CAS RR-00072-6)		
TRGS 900		
General dust limit value (see also 2.4) alveolar fraction		
Value 1,25 mg/m³		
Peak limit 2 (II)		
Remarks Y		
TRGS 900		
General dust limit value (see also 2.4) respirable fraction		
Value 10 mg/m³		
Peak Limit 2 (II)		
Remarks Y		
TWA (ACGIH)		
Occupational Exposure Limits: In dusty conditions, ACGIH recommends a TWA of 10 mg/m³ for inhalable particles and 3 mg/m³ for respirable particles for particles not otherwise specified (insoluble or poorly soluble).		

8.2 Exposure controls

Appropriate engineering controls
Provide sufficient air exchange and/or exhaust in work rooms.
Handle product only in closed system or provide appropriate exhaust ventilation at machinery.
Apply measures to prevent dust explosions.

Personal protective equipment

Eye protection
Suitable eye protection: Safety goggles with side protection (DIN EN 166)

Skin protection

Hand protection
protective gloves:
Suitable materials for protective gloves; EN374:

Polyvinyl chloride - PVC: Thickness >=0.5mm

Remark
The suitability for a specific workplace should be discussed with the producers of the protective gloves.
The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other.
As the product is a mixture of several substances, the durability of the glove materials cannot be calculated in advance and must be tested before use.
The exact break through time can be obtained from the protective glove producer and this must be observed.
The breakthrough time depends amongst other things on the material, the thickness and the type of glove and therefore must be measured for each case.
Request information on glove permeation properties from the glove supplier.
Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous sub-stance and specific to place of work.

Respiratory protection
Effective dust mask.
Use respirator with approved filter type if vapors are generated.
If dust is generated, use a filter device with the appropriate filter type in accordance with EN 143 (P2 or higher).

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : filament
Colour : black
Odour : characteristic
Odour threshold : not determined

pH	not determined
Melting point/range	230 °C
Boiling point/boiling range	not determined
Flash point	not determined
Flammability (solid, gas)	No data available
Upper explosion limit	No data available
Lower explosion limit	The product is not explosive at itself, but it may form explosive dust
Vapour pressure	not determined
Density	1,25 g /cm³
Relative density	No data available
Solubility(ies)	not determined
Partition coefficient: n- octanol/water	No data available
Ignition temperature	not determined
Decomposition temperature	> 300°C
Viscosity dynamic, kinetic	Not applicable

9.2 Other information:

Conductivity	:	Not determined

SECTION 10: Stability and reactivity

10.1 Reactivity
No decomposition if stored and applied as directed.

10.2 Chemical stability
The product is chemically stable.

10.3 Possibility of hazardous reactions
Finely dispersed particles form explosive mixtures with air.
Burning produces noxious and toxic fumes.

10.4 Conditions to avoid:
Keep away from heat and sources of ignition.
Avoid dust formation.
Avoid moisture.

10.5 Incompatible materials:
No data available

10.6 Hazardous decomposition products:
Toxic gas mixtures, which mainly contain CO and CO2, develop during smoldering or incomplete combustion.
Under the recommended processing conditions, small amounts of emissions can be released.
When processing this product, especially in the thermal process, the regulations for the listed substances must be observed.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

Acute oral toxicity	:	No data available
Acute inhalation toxicity	:	No data available
Acute dermal toxicity	:	No data available

Skin corrosion/irritation

Product:
No known irritant effect.

May cause irritation of respiratory tract.

Serious eye damage/eye irritation

Product:
Dust contact with the eyes can lead to mechanical irritation.

Respiratory or skin sensitisation

Product:
No known sensitising effect.

Germ cell mutagenicity

Product:

Genotoxicity in vitro	:	No data available
Genotoxicity in vivo	:	No data available

Carcinogenicity

Product:
This information is not available.

Reproductive toxicity

Product:

Effects on fertility	:	No data available

STOT - single exposure

Product:
No data available

STOT - repeated exposure

Product:
No data available

Aspiration toxicity

Product:
No data available

SECTION 12: Ecological information

12.1 Toxicity:

Product:

Toxicity to fish	:	No data available
Toxicity to daphnia and other aquatic invertebrates	:	No data available
Toxicity to algae	:	No data available
Toxicity to microorganisms	:	No data available

12.2 Persistence and degradability

Product:

Biodegradability	:	No data available

12.3 Bioaccumulative potential

Product:

Bioaccumulation	:	No data available
Partition coefficient: n-octanol/water	:	No data available

12.4 Mobility in soil

Product:

Mobility	:	No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment	:	This substance/mixture contains no components considered to be either persistent, bio accumulative and toxic (PBT), or very persistent and very bio accumulative (vPvB) at levels of 0.1% or higher..

12.6 Other adverse effects

Product:
Should not be released into the environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste code	07 02 13	plastic waste

The listed waste key number according to the European waste catalog (AVV) is a recommendation.
The product is suitable for recycling.

Disposal of the product

Recovery/recycling is preferred to incineration or disposal.
The product can be incinerated in accordance with the applicable local regulations.
Waste key numbers should be issued by the consumer, if possible in consultation with the waste disposal authorities.

SECTION 14: Transport information

14.1 UN number

Not regulated as a dangerous good

14.2 UN proper shipping name

Not regulated as a dangerous good

14.3 Transport hazard class(es)

Not regulated as a dangerous good

14.4 Packing group

Not regulated as a dangerous good

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

EU regulations

No ingredients that are subject to authorization according to REACH Regulation 1907/2006 Annex XIV
No ingredients that are subject to the REACH regulation 1907/2006 Annex XVII

No ingredients according to REACH Art. 57/ Art. 59 (SVHC) according to the candidate list for inclusion in Annex XIV

15.2 Chemical Safety Assessment

For this substance a chemical safety assessment is not required.

SECTION 16: Other information

Full text of the hazard statements referred to in sections 2,3 and 10 of the CLP classification (1272/2008/EC).

H226	Flammable liquid and vapour.
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	can cause allergic reactions to your skin.
H318	Causes serious eye damage.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H341	Suspected of causing genetic defects.
H360F	May damage fertility.
H361f	Suspected of damaging fertility.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic for water organisms with long-term effect.
H411	Toxic to aquatic life with long lasting effects.More information

All information is based on our current knowledge and experience to the best of our knowledge.
It is the user's responsibility to decide to what extent and whether the products are to be used or processed in accordance with applicable occupational safety measures.
The customer is not released from the need for qualified personnel to carefully check the functions or possible uses of the products. Our information only describes the nature of the products and does not represent any guarantees.
We reserve the right to make changes.

Any liability based on the information provided is expressly excluded unless it exists under mandatory product liability law. Due to the large number of different applications and possible uses, we accept no liability for the suitability of the product for the production processes used or the intended application. We assume no liability for damage arising in connection with the use or further processing of the products.