

## PRODUCT INFORMATION for safe handling



### Carbon fibres and fabrics made of carbon fibres

Version 1

## 1. Product and Company Information

### Product information

Trade name:	Carbon fibres and fabrics made of carbon fibres (carbon fabrics, carbon scrims, carbon fabric tapes, braided hoses / strands) Semi-finished products for industrial processing
Company:	HP-Textiles GmbH Otto-Hahn-Straße 22 48480 Schapen -Germany-
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## 2. Possible dangers

This product is not subject to classification within the meaning of Regulation (EC) No 1272/2008.

### Hazard overview:

It is not to be expected that there will be an immediate, acute risk to health, reactivity, flammability, or a danger to the environment if properly handled/processed and used by the product as intended.

### Other hazards:

- If the handling instructions described above are observed, there are no known special hazards to health and the environment.
- Carbon fiber dust can cause a short circuit when it comes into contact with electrical appliances. - At temperatures above  $\geq 200$  °C, dangerous decomposition and degradation products such as carbon oxides (COx) and nitrogen oxides (NOx) can be released from the matrix. The product is not explosive when delivered, but the accumulation of fine dust could cause a dust explosion. - Wear protective gloves. - Contains "reaction product: bisphenol-A-(epichlorohydrin); Epoxy resin (molecular weight numerical mean  $\leq 700$ )". May cause allergic reactions. - Finely distributed carbon fibers can irritate the skin, eyes and mucous membranes. - During mechanical processing, particulate matter can form due to abrasion, which can contain lung and/or alveoliferous fractions according to the WHO definition

## 3. Composition / information on the ingredients

The surface product consists of yarn made of carbon fibres containing an epoxy resin-based aviage.

Components	CAS	Share of finished article
Carbon	7440-44-0	$\geq 97\%$
Partially polymerized epoxy resin		$\leq 3\%$

## PRODUCT INFORMATION for safe handling



The product contains epoxy resin based on bisphenol-A-epichlorohydrin with different molecular weights (molecular weight numerical mean  $\leq 700$ )

OSHA and ACGIH have not set air pollutant limits for carbon fibers. Under certain conditions, this substance can be a dust nuisance. OSHA has set a standard for non-regulated particles (nuisance dust) that is  $5\text{mg}/\text{m}^3$  (respirable fraction) and  $15\text{mg}/\text{m}^3$  (total dust). The ACGIH has set an exposure value of  $3\text{mg}/\text{m}^3$  (respirable fraction) for particles not otherwise classified. General limit values for dust can be found in TRGS 521 and TRGS 900.

### 4. First aid measures

General:	Never give anything through the mouth of an unconscious person. If you feel unwell, seek medical advice.
Eye contact:	Mechanical irritation by product particles. Rinse immediately with the eyelid gap open for at least 15 minutes with running water. If possible, remove contact lenses. Do not rub your eyes. If eye irritation persists, consult an ophthalmologist.
Skin contact:	Mechanical irritation by product particles. Wash off affected areas with soap and water. If symptoms persist, consult a doctor.
Inhale:	Mechanical irritation by product particles. Cough, malaise or difficulty breathing. Thermal decomposition can lead to the release of irritating and toxic gases and vapors. Provide fresh air. If symptoms persist, consult a doctor
Swallow:	DO NOT induce vomiting. Don't give anything to drink. Rinse mouth. If symptoms persist, consult a doctor.

The effect of the decomposition products of the plastic can cause damage to health.

### 5. Firefighting measures

Suitable extinguishing agents	Powder Foam (alcohol-resistant) Water spray jet Carbon dioxide (CO <sub>2</sub> )
Unsuitable	Full water jet

In the event of a fire, irritating and toxic gases or vapours can be released, e.g. carbon monoxide, nitrogen oxides and hydrocarbons. In the event of a fire, wear an ambient air-independent breathing apparatus. Use fire-resistant protective clothing and equipment for firefighters.

Collect contaminated extinguishing water separately. Do not dispose of in the sewer.

When the product is burned, fine carbon fiber particles can be produced, which can cause short circuits. At high temperatures, hazardous decomposition and degradation products are formed according to the WHO fiber particle definition (respirable carbon fiber particles) and/or dangerous pyrolysis residues.

## PRODUCT INFORMATION for safe handling



### 6. Accidental Release Measures

Manual recording. Avoid dust formation or wear a dust mask. Do not allow it to enter the environment. The penetration of the product into the sewer system, watercourses or the ground should be prevented. Wear appropriate protective equipment. Shredded or ground carbon fibers can be slippery if spilled, posing a risk of accidents.

Vacuum contaminated clothing. Do not blow off or brush off contamination.

### 7. Handling and storage

Protect from damage and abrasion. Keep away from food, drink and feed. Store at normal room temperature, dry and dark. Protect against dirt, weather, cold, heat, sparks and open flames, sunlight and other UV light and against mechanical and chemical stresses. The generally customary occupational hygiene measures apply. Wash your hands before breaks and after work. No eating, drinking, smoking at work.

Electrically conductive material, keep away from power sources and protect from electrostatic charge.

### 8. Exposure limitation and personal protective equipment

Since carbon and glass fibers are placed on the market as materials with fiber diameters of  $> 3 \mu\text{m}$ , there is no classification for them. Only mechanical processing produces respirable fibrous splinters with WHO dimensions. [1]

Relationship between limit values and exposure categories for the assessment of exposure to respirable carbon fibres (according to[2]):

Carbonfasern (mit WHO-Abmessungen)	Exposition gegenüber Allgemeinem Staub (A- und E-Fraktion)	Expositionskategorie		
		1	2	3
$<50\ 000\ \text{F}/\text{m}^3$	A und E $< 1/10\ \text{AGW}$	X		
50 000 bis 250 000 F/m <sup>3</sup>	und/oder A oder E $> 1/10\ \text{AGW}$		X	
$>250\ 000\ \text{F}/\text{m}^3$	und/oder A oder E $> \text{AGW}$			x

If dust is generated and ventilation is inadequate, it is recommended to wear a dust mask, eye protection, gloves and clean and dry work clothes. In case of dust swirling, use a protective mask with filter type P3.

Process in well-ventilated rooms (ventilation systems should be equipped with a filter that prevents the release of loose fibers and dust into the indoor air) where there are no electrical appliances or where the devices are protected in sealed or pressurized enclosures. Insulating varnish can be applied to printed circuit boards and electrical connections.

### 9. Physical and Chemical Properties

#### Carbon fibre

Form	Firm
Color	Black
Smell	N/A
Density	1.6 to 2.2 g/cm <sup>3</sup>
Boiling point	N/A
Melting point	approx. 3500°C

## PRODUCT INFORMATION for safe handling



Inflammability	Only resin is flammable
Flash point	N/A
Self-immolation point	N/A
Vapor pressure	N/A
Vapor Density	N/A
Decomposition Temperature:	≥ 650 °C CF [Ambient Air] ≥ 200 °C resin matrix [Ambient Air]
Solubility (water)	N/A
Solubility (Other)	Avivage soluble in chlorinated solvents, acetone, DMF
Other	Electrically conductive

### 10. Stability and reactivity

Stable, no dangerous reactions when handled as directed. Chemically stable under normal conditions. Avoid heat, flames and sparks.

The accumulation of dust can pose a risk of dust explosion in the presence of air.

Reacts with strong oxidizing agents, nitric acid, strong acids. When this product decomposes, irritant and/or toxic gases and flue gases may be released. When decomposed, this product releases carbon monoxide, carbon dioxide and/or hydrocarbons.

Dangerous reactions: polymerization of the avivage

### 11. Toxicology information

Toxicological effects: Toxicological data are not available.  
Acute toxicity: Not determined

#### Risks of exposure:

##### Inhalation

Inhalation can cause the following symptoms: coughing, malaise, and difficulty breathing.

##### Skin contact

May cause skin irritation in sensitive individuals. Symptoms can include redness, itching, drying out of the skin. Contact with molten material can cause thermal burns.

##### Eye contact

: May cause eye irritation in sensitive individuals. This product may cause burning, tearing, redness, swelling and blurred vision.

##### Swallow

Ingestion of large amounts of fiber can cause gastrointestinal disorders and constipation, which can lead to stomach pain.

### 12. Environmental claims

Toxicity: Not determined

## PRODUCT INFORMATION for safe handling



Results of PBT and vPvB: Based on all available information, not classified as PBT or vPvB.

This product is considered non-biodegradable.

This product is not expected to cause significant ecotoxicity in contact with aquatic organisms or aquatic ecosystems.

Based on all available information, not classified as PBT or vPvB. The product is inert to the substances present in the soil. Due to its resistance to rotting, the substance is not released into the environment or into the sewer system.

### 13. Disposal Instructions

Product residues should be disposed of in accordance with the Waste Directive 2008/98/EC and national and regional regulations. It is not possible to set a waste code number for the product in accordance with the European Waste Catalogue (EWC), as it is only the intended use by the customer that allows it to be assigned. The waste code number must be determined within the EU in consultation with the local disposal company.

Carbon fibers do not burn, as airborne fibers can cause electrical malfunctions. All disposal practices must comply with federal, state, and local requirements.

### 14. Transport details

Not applicable.

### 15. Regulations

#### EU Regulations

VO (EG) Nr. 1272/2008 CLP

REACH VO (EU) 1907/2006

Products are not covered by the Regulation

Any restrictions on ingredients according to Annex XVII of the REACH Regulation do not apply to this product.

### 16. Other information

This information is based on our current knowledge and the information provided by our suppliers and describes the product only with regard to safety requirements. We assume that they are correct to the best of our knowledge and belief. They do not constitute a guarantee of characteristics and do not claim to be complete. They do not take into account all the circumstances in which the product may be used, nor all the physical and psychological characteristics of the persons responsible for transporting or processing the product.

According to Regulation (EC) No. 1907/2006 [REACH] Article 3(3), this product is classified as an article, therefore there is no obligation to register the ingredients or prepare a safety data sheet, as required by Article 31 of the REACH Regulation. This document was prepared voluntarily in accordance with Annex II of the Regulation under the aspect of "Responsible Care".

**PRODUCT INFORMATION  
for safe handling**



*Bibliography:*

- [1] *Mattenklott, M., van Gelder, R.: Carbon fibres and carbon fibre reinforced plastics (CFRP). Part 1: Characterisation, exposure, assessment and protective measures. Hazardous substances – clean. Luft 79 (2019) No. 9, pp. 317-321. [https://www.dguv.de/medien/ifa/de/pub/grl/pdf/2019\\_124.pdf](https://www.dguv.de/medien/ifa/de/pub/grl/pdf/2019_124.pdf)*
- [2] *DGUV Information: Processing of CFRP materials. Guidance for protective measures (FB HM-074). ed. 10/2014 Publisher: Deutsche Gesetzliche Unfallversicherung e.V. (DGUV), Berlin 2014*

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