1. Information on the product and manufacturer

Fabrics made from carbon yarns / semi-finished products for industrial processing

C. Cramer & Co. GmbH
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2. Possible dangers

A product is not subject to classification according to Regulation (EC) No 1272/2008.

Hazard overview

The product is not expected to present an immediate, acute health, reactivity, flammability or environmental hazard.

Other dangers

- If the handling instructions described are observed, no particular hazards to health and the environment are known.
- Carbon fiber dust can cause a short circuit if it comes into contact with electrical appliances.
- At temperatures above ≥ 200 °C, hazardous decomposition and degradation products such as carbon oxides (CO_x) and nitrogen oxides (NO_x) can be released from the matrix. The product is not explosive as supplied, but the accumulation of fine dust could cause a dust explosion.
- Wear protective gloves.
- Contains "Reaction product: bisphenol-A-(epichlorohydrin); epoxy resin (number average molecular weight ≤ 700)". May cause allergic reactions.
- Finely dispersed carbon fibers can irritate the skin, eyes and mucous membranes.
- During mechanical processing, fine dust may form due to abrasion, which may contain respirable and/or alveolar fractions as defined by the WHO.

3. Composition

The fabric consists of yarn made of carbon fibers containing an epoxy resin-based sizing..

Components	CAS	Share of the finished article
Carbon	7440-44-0	≥ 97 %
Partially polymerized epoxy resin		≤ 3 %

The product contains epoxy resin based on bisphenol-A-epichlorohydrin with different molecular weights (number average molecular weight ≤ 700)

OSHA and ACGIH have not established air contaminant limits for carbon fiber. Under certain conditions, this material can be a dust nuisance. OSHA has set a standard for particles not otherwise regulated (nuisance dust) which is 5mg/m³ (respirable fraction) and 15mg/m³ (total dust). The ACGIH has set an exposure value of 3mg/m³ (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 by mouth to an unconscious person. Seek medical advice if you feel unwell.
Eye contact:	Mechanical irritation due to product particles. Rinse immediately with running water for at least 15 minutes with the eyelids open. Remove contact lenses if possible. Do not rub the eyes. If eye irritation persists, consult an ophthalmologist.
Skin contact:	Mechanical irritation due to product particles. Wash affected areas with soap and water. If symptoms persist, consult a doctor.
Inhalation:	Mechanical irritation due to product particles. Coughing, discomfort or breathing difficulties possible. Thermal decomposition can lead to the release of irritating and toxic gases and vapors. Provide fresh air. Consult a doctor if symptoms persist
Ingestion:	DO NOT induce vomiting. Do not give anything to drink. Rinse out mouth. If symptoms persist, consult a doctor.

Exposure to the decomposition products of the plastic may cause damage to health.

5. Fire-Fighting measures

Suitable extinguishing agents	Powder Foam (alcohol-resistant) Water spray jet Carbon dioxide (CO2)
Not suitable	Full water jet

In the event of a fire, irritating and toxic gases or vapors may be released, e.g. carbon monoxide, nitrogen oxides and hydrocarbons. In case of fire, wear self-contained breathing apparatus. Use fire-resistant protective clothing and protective equipment for firefighters.

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

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

6. Measures in the event of accidental release

Manual pick-up. Avoid dust formation or wear a dust mask. Do not allow to enter the environment. Prevent the product from entering drains, watercourses or the ground. Wear suitable protective equipment.

Crushed or ground carbon fibers can be slippery if spilled, posing an accident risk.

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

7. Handling and Storage

Protect from damage and abrasion. Keep away from food, drink and animal feed. Store at normal room temperature, dry and dark. Protect from dirt, weather, cold, heat, sparks and naked flames, sunlight and other UV light and from mechanical and chemical stresses. The generally applicable occupational hygiene measures apply. Wash hands before breaks and at the end of work. Do not eat, drink or smoke while working.

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

8. Exposure limitation/ personal protective measures

Since carbon and glass fibers are marketed as materials with fiber diameters of > 3 µm, they are not classified. Only mechanical processing produces respirable fibrous splinters with WHO dimensions. [1]

Relationship between limit values and exposure categories for assessing exposure to respirable carbon fibers (according to [2]):

Exposure to		Exposure Category		
Carbon Fibers (with WHO dimensions)	General Dust (A- and E-Fraction	1	2	3
< 50.000 F/m³	A und E < 1/10 AGW*	X		
50.000 – 250.000 F/m²	And/or A or E > 1/10 AGW*		X	
> 250.000 F/m³	And/or A or E > AGW*			X

*AGW = occupational exposure limit

If dust is generated and ventilation is insufficient, it is recommended to wear a dust mask, eye protection, gloves and clean and dry work clothing. Use a protective mask with a P3 filter if dust is generated.

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

9. Physical and Chemical Properties

Carbon fiber	
Form	Solid
Color	black
Odor	NA
Density	1.6 to 2.2 g/cm³
Boiling point	NA
Melting point	approx. 3500°C
FlammabilityOnly	resin is flammable
Flash point	NA
Self-combustion point	NA
Vapor pressure	NA
Vapor density	NA
Decomposition temperature:	≥ 650 °C CF [Ambient Air] ≥ 200 °C resin matrix [Ambient Air]
Solubility (water)	NA
Solubility (Other)	Sizing soluble in chlorinated solvents, acetone, DMF
Other	Electrically conductive

10. Stability and reactivity

Stable, no hazardous 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. Decomposition of this product may release irritating and/or toxic gases and fumes. On decomposition, this product releases carbon monoxide, carbon dioxide and/or hydrocarbons.

Hazardous reactions: Polymerization of Sizing.

11. Toxicological information

Toxicological effects	Toxicological data are not available.
Acute toxicity	Not determined
Risks of exposure:	
Inhalation	Inhalation may cause the following symptoms: Coughing, discomfort, and difficulty breathing.
Skin contact	May cause skin irritation in sensitive individuals. Symptoms may include redness, itching, drying of the skin. Contact with molten material may cause thermal burns.
Eye contact	May cause eye irritation in sensitive individuals. This product may cause burning, tearing, redness, swelling and blurred vision.

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

12. Environmental information

Toxicity	Not determined
Results of PBT and vPvB	Not classified as PBT or vPvB based on all available information

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

Not classified as PBT or vPvB based on all available information. The product is inert to the substances present in the soil. Due to its resistance to decomposition, there is no release of the substance into the environment or into the sewage system

13. Notes on disposal

Product residues should be disposed of in accordance with the Waste Directive 2008/98/EC and national and regional regulations. No waste code number according to the European Waste Catalog (EWC) can be defined for the product, as only the intended use by the customer enables an assignment. The waste code number must be determined within the EU in consultation with the local disposal company.

Do not incinerate carbon fibers, as airborne fibers can cause electrical malfunctions. All disposal practices must comply with federal, state and local requirements.

14. Transport details

Not applicable.

15. Legislation

EU - Regulations

Regulation (EC) No 1272/2008	CLP products are not covered by the Regulation
REACH VO (EU) 1907/2006	Possible restrictions for ingredients according to Annex XVII of REACH do not apply to this product.

This information is based on our current knowledge and that of our suppliers and describes the product only with regard to safety requirements. We assume that it is correct to the best of our knowledge and belief. It does not constitute a guarantee of properties and makes no claim to completeness. They do not take into account all the circumstances under which the product may be used, nor all the physical and psychological characteristics of the persons responsible for the transportation or processing of 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 to prepare a safety data sheet as required by Article 31 of the REACH Regulation. This document has been prepared voluntarily in accordance with Annex II of the Regulation under the aspect of "Responsible Care".

References:

[1] Mattenklott, M., van Gelder, R.: Carbonfasern und carbonfaserverstärkte Kunststoffe (CFK). Teil 1: Charakterisierung, Exposition, Bewertung und Schutzmaßnahmen. Gefahrstoffe – Reinhalt. Luft 79 (2019) Nr. 9, S. 317-321. https://www.dguv.de/medien/ifa/de/pub/grl/pdf/2019_124.pdf
[2] DGUV Information: Bearbeitung von CFK Materialien. Orientierungshilfe für Schutzmaßnahmen (FB HM-074). Ausg. 10/2014 Hrsg: Deutsche Gesetzliche Unfallversicherung e.V. (DGUV), Berlin 2014

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