

Brand name	Production site	Fiber family & tensile properties	Sizing properties	Number of filaments	Nominal linear density (without sizing)	Additional information	Tensile strength [MPa]	Tensile modulus [GPa]	Elongation at break [%]	Filament diameter [μm]	Density [g/cm³]	Sizing	Size level [%]
Tenax®-J	HTA40	E15	1K	67tex	15S		4100	240	1.7	7.0	1.77	EP	2.5
Tenax®-E	HTA40	E13	3K	200tex			4100	240	1.7	7.0	1.77	EP	1.3
Tenax®-E	HTA40	E13	3K	200tex	15Z		4100	240	1.7	7.0	1.77	EP	1.3
Tenax®-J/E	HTA40	E13	6K	400tex			4100	240	1.7	7.0	1.77	EP	1.3
Tenax®-E	HTA40	E13	6K	400tex	10Z		4100	240	1.7	7.0	1.77	EP	1.3
Tenax®-J	HTS40	E13	3K	200tex			4400	240	1.8	7.0	1.77	EP	1.3
Tenax®-J	HTS40	E13	6K	400tex			4400	240	1.8	7.0	1.77	EP	1.3
Tenax®-E	HTS40	F13	12K	800tex			4400	240	1.8	7.0	1.77	PU	1.0
Tenax®-E	HTS40	F13	12K	800tex	10Z		4400	240	1.8	7.0	1.77	PU	1.0
Tenax®-E	HTS40	F13	24K	1600tex			4400	240	1.8	7.0	1.77	PU	1.0
Tenax®-E	HTS40	F13	24K	1600tex	5Z		4400	240	1.8	7.0	1.77	PU	1.0
Tenax®-E	HTS45	E23	3K	200tex			4500	245	1.8	7.0	1.76	EP	1.2
Tenax®-E	HTS45	E23	3K	200tex	15Z		4500	245	1.8	7.0	1.76	EP	1.2
Tenax®-E	HTS45	E23	12K	800tex			4500	240	1.9	7.0	1.77	EP	1.3
Tenax®-E	HTS45	E23	12K	800tex	10Z		4500	240	1.9	7.0	1.77	EP	1.3
Tenax®-E	HTS45	P12	12K	800tex			4500	240	1.9	7.0	1.77	TP	0.5
Tenax®-E	STS40	E23	24K	1600tex			4300	250	1.7	7.0	1.78	EP	1.3
Tenax®-E	STS40	F11	24K	1600tex			4300	240	1.8	7.0	1.78	PU	0.17
Tenax®-J/E	STS40	F13	24K	1600tex			4300	240	1.8	7.0	1.78	PU	1.0
Tenax®-J/E	STS40	F13	48K	3200tex			4300	250	1.7	7.0	1.77	PU	1.0
Tenax®-J	UTS50	F13	12K	800tex			5100	245	2.1	7.0	1.78	PU	1.0
Tenax®-J	UTS50	F22	12K	800tex	S		5100	245	2.1	7.0	1.78	PU	0.8
Tenax®-J/E	UTS50	F24	24K	1600tex	DCP		5100	245	2.1	7.0	1.78	PU	2.0
Tenax®-E	ITS50	F23	24K	1600tex	D		5100	265	1.9	7.0	1.80	PU	1.0
Tenax®-E	ITS55	E23	24K	1600tex			5100	280	1.8	7.0	1.75	EP	1.2
Tenax®-J	IMS60	E13	24K	830tex			5800	290	2.0	5.0	1.79	EP	1.3
Tenax®-E	IMS65	E23	24K	830tex			6000	290	2.1	5.0	1.78	EP	1.3
Tenax®-E	IMS65	P12	24K	830tex			6000	290	2.1	5.0	1.78	TP	0.8
Tenax®-J	UMS40	F23	24K	800tex	S		4700	390	1.2	4.9	1.79	PU	1.0
Tenax®-J	UMS45	F22	12K	385tex			4600	425	1.1	4.7	1.83	PU	0.8
Tenax®-J	HTS40	A23	12K	1420tex	MC		2900	230	1.3	7.5*	2.70	PU	1.3

* inkl. 0,25 μm Nickel

- Please contact our sales team any time, for choosing the right type. The stated numbers are typical values. For design purposes please request a fiber specification.
- The export or transfer of carbon fibers can be subject to authorization, depending on end-use and final destination.

Cylindrical bobbins

		Tenax®-J		Tenax®-E
Tube length	[mm]	182	280	290
Tube internal diameter	[mm]	77	77	77
Tube weight	[g]	110	160	190
Stroke	[mm]	152	254	254

Net weight [kg] **0.5** **1.0** **2.0** **4.0** **6.0** **8.0** **10.0**

External diameter	[mm]	105	120	145	180	205	225	245
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(typical values)

Bobbins per packaging [kg] **0.5** **1.0** **2.0** **4.0** **6.0** **8.0** **10.0**

Tenax®-J	carton	20/24	20	12	6	6	-	4
	large packaging		-	-	-	75	60	54

Tenax®-E	carton	-	16	11/12	6	6	3	-
	large packaging		-	150	90	69	60	-

Packaging (L x W x H)

Tenax®-J	carton	[mm]	640	x	520	x	290
	carton (4 kg)	[mm]	550	x	370	x	290
	carton (8 kg, 10 kg)	[mm]	570	x	570	x	290
	large packaging incl. palett	[mm]	1200	x	1100	x	1200

Tenax®-E	carton	[mm]	600	x	420	x	320
	large packaging incl. palett	[mm]	1000	x	1200	x	1040

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According to Regulation (EC) No 1907/2006 [REACH] Article 3(3) this product is classified as article, hence no obligation exists to create a safety data sheet as required by REACH Article 31/32. This Product Information was created in the style of REACH Annex II/Regulation (EU) 2015/830 to inform about a safe and careful handling with this product.

Section 1: Identification of the article and of the company

- 1.1 **Product Identifier**
Tenax® Carbon Filament Yarn
- 1.1.1 **Product type**
Tenax® HTA
Tenax® HTS*
Tenax® HMA
Tenax® STS*
Tenax® IMS*
Tenax® ITS
Tenax® UMS
Tenax® UTS
- 1.1.2 ***Exceptions**
Tenax®-J HTS40 A23, nickel-coated
Tenax®-E ... P12
Tenax®-E ... P22
Tenax®-E ... X030
- 1.1.3 **REACH-registration status**
This product is treated as an article. Articles are exempted from registration in accordance with Regulation (EC) No 1907/2006.
- 1.2 **Relevant identified uses of the article and uses advised against**
Manufacturing of Carbon Composites.
- 1.2.1 **Uses advised against**
None known.
- 1.3 **Details of the supplier**
- 1.3.1 **Supplier**
Teijin Carbon Europe GmbH
Kasinostr. 19-21
42103 Wuppertal
GERMANY
Tel: +49 202 32-3225
Homepage: www.teijincarbon.com
- 1.3.2 **Responsible department/competent person**
Dr Axel Leuchter
General Manager Quality & Change Management
E-Mail: safety@teijincarbon.com

Section 2: Hazards identifications

- 2.1 **Classification**
This product is an article, and hence does not require a classification and labelling according to EU regulations.
- 2.1.1 **Self-Classification according to Regulation (EC) No 1272/2008 [CLP]**
Not classified as hazardous. See chapter 3
- 2.2 **Self-Labeling elements according to Regulation (EC) No 1272/2008 [CLP]**
Not subject to classification.
- 2.2.1 **Precautionary instruction**
P280: Wear protective gloves.
- 2.2.2 **Hazardous ingredients**
Depending on the product type, epoxy constituents may be present in the product:
Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700).

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2.2.3 Supplemental hazard information (EU)

EUH208: Contains „reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700)“. May produce an allergic reaction.

EUH210: Safety Data Sheet available on request.

2.3 Other hazards

2.3.1 Classification acc. to Annex XIII of REACH Reg. (EC) No 1907/2006 as PBT or vPvB

Not applicable.

2.3.2 Other hazards which do not result in classification

As delivered the product is not explosive at all; however, accumulation of fine dust could be caused a risk of dust explosion. See chapter 10

Section 3: Composition/information of ingredients

3.1 Product type

This product is an **article** acc. to regulation (EC) 1907/2006 [REACH].

It does not contain any substances that are intended to be released under normal or foreseeable applications.

3.1.1 Description

Carbon filament yarn with different polymer mixtures as sizing.

3.2 Composition/information of ingredients

Substance	EU-INDEX EINECS/ELINCS CAS No	Content by weight % (w/w)	GHS/CLP		M-factor/ specific limit value	Notice
Carbon fiber based on polyacrylonitrile (PAN)	- Polymer: (231-153-3) 308063-67-4 / 7440-44-0	≥ 95	Not classified		-	[A] [2]
Reaction product: bisphenol-A- (epichlorhydrin); epoxy resin (number average molecular weight ≤ 700)	603-074-00-8 500-033-5 25068-38-6	0.1 - < 1.0	Skin Irrit. 2 Skin Sens.1 Eye Irrit. 2 Aquatic Chronic 2	H315 H317 H319 H411	C ≥ 5 % C ≥ 5 %	[A] [1]

[A] = Ingredient.

[B] = Impurity.

[1] = Substance classified as hazardous to health or the environment.

[2] = Substance with an occupational exposure limit value.

3.2.1 Additional information

None known.

Section 4: First aid measures

4.1 Description of first aid measures

4.1.1 General information

No special measures necessary. Avoid contact with unprotected body parts.

4.1.2 Following inhalation

In the case of fibre dust inhalation, bring affected person to fresh air. If respiratory irritation persist, seek medical attention.

4.1.3 Following skin contact

In the case of contact with skin, rinse affected area thoroughly with lot of cold water. Do not use warm water since it aggravates the skin itching/irritation. Consult a doctor if skin irritation persists.

4.1.4 Following eye contact

In the case of eye contact, rinse the affected eye thoroughly for a few minutes. Remove contact lenses, if present and easy to do, continue rinsing. If eye irritation persist, seek medical attention.

4.1.5 Following ingestion

Seek medical care. Rinse mouth out with water then give plenty of water to drink.

- 4.1.6 Self-protection of the first aider**
Self-aiders: Pay attention to self-protection!
- 4.2 Most important symptoms and effects, both acute and delayed**
- 4.2.1 Symptoms and Effects**
Preexisting sensitization and skin disorders may be aggravated.
- 4.3 Indication of any immediate medical attention and special treatment needed**
- 4.3.1 Special treatment**
First aid, treatment of symptoms.
- 4.3.2 Notes for the doctor**
Treat symptomatically.

Section 5: Firefighting measures

- 5.1 Extinguishing media**
- 5.1.1 Suitable extinguishing media**
Foam, dry powder, water spray jet, carbon dioxide.
- 5.1.2 Unsuitable extinguishing media**
Full water jet.
- 5.2 Special hazards arising from the article**
- 5.2.1 Hazardous combustion products**
At temperatures above ≥ 650 °C, decomposition of the carbon fiber can cause respirable fibre particles (WHO-fibres).
- 5.3 Advice for firefighters**
- 5.3.1 Special protective equipment for firefighters**
Wear a self-contained breathing apparatus and chemical protective clothing.
- 5.4 Additional Information**
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

Section 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedure**
- 6.1.1 For non-emergency personnel**
Wear personal protective equipment, see section 8
- 6.1.2 For emergency responders**
Remove persons to safety. Isolate hazard area and deny entry. Ventilate closed spaces before entering. Use personal protective equipment, see section 8.
- 6.2 Environmental precautions**
No special measures are required.
- 6.3 Methods and material for containment and cleaning up**
- 6.3.1 For containment**
None known.
- 6.3.2 For cleaning up**
Clean contaminated objects with damp cloth (once a day). Dispose of contaminated material in accordance with regulations.
- 6.3.3 Other information**
None known.
- 6.4 Reference to other sections**
Handling and storage, see section 7.
Personal protection, see section 8.
Disposal considerations, see section 13.

Section 7: Handling and storage

7.1 Precautions for safe handling

7.1.1 Protective measures

Wear personal protective equipment. See Section 8.

7.1.2 Measures to prevent fire

Keep the product away from heat, sparks and open flames.

7.1.3 Measures to prevent aerosol and dust generation

Fibre dust shall be extracted at the point of origin by an integrated extraction or vacuumed by an industrial vacuum cleaner. Filter recommendation: class B1 IP65 or type 22 IIIC according to DIN IEC 62784, at least filter class cat. M.

7.1.4 Measures to protect the environment

None known.

7.1.5 Advice on general occupational hygiene

General hygiene rules must be observed: Wash hands before breaks and at the end of work. Wash contaminated clothing prior to re-use.

7.2 Conditions for safe storage, including any incompatibilities

7.2.1 Technical measures and storage conditions

Recommended storage temperature: $\leq 50\text{ }^{\circ}\text{C}$, relative humidity $\leq 85\text{ }\%$.

7.2.2 Requirements for storage rooms and vessels

Store the product in in dry rooms in the original packaging.

7.2.3 Further information on storage conditions

Store and keep away from direct sunlight and other UV-light source.

7.3 Specific end use(s)

7.3.1 Recommendations

Recommended use, see Section 1.2.

7.3.2 Specific end uses

See chapter 1.3.

Section 8: Exposure controls/personal protection

8.1 Control parameters

8.1.1 Occupational exposure limits

Substance	CAS No	Occupational exposure limits (OEL)		Monitoring and observation processes	Sources Limit value type Country of origin
		Limit value Eight hours	Limit value Short term (15 min)		
Workplace limits for dust in general (ASGW)	-	-	1.25 A mg/m ³ 10 E mg/m ³	Exceedance factor = 2	TRGS 900, 521 GESTIS Limit Values Germany (AGS)
Carbon fibre	-	2 fibre particles/cm ³			GESTIS Limit Values Belgium VLEP/GWBB
		3 E mg/m ³			GESTIS Limit Values China

8.1.2 Biological limit values

Not applicable.

8.1.3 DN(M)EL-Values

Not specified.

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8.1.4 PNEC-Values

Not specified.

8.2 Exposure controls

Individual protection measures when processing the product, such as personal protective equipment:



8.2.1 Appropriate protective equipment

Ensure adequate ventilation on workplace. Mechanical processing should be preferable taken place in confined areas or separate facilities. Technical machinery, electric and electronic devices should be protected against static charge and short circuit.

8.2.2 Personal protective equipment

8.2.2.1 Eye and face protection

Suitable eye protection

Safety glasses are not absolutely necessary, but highly recommended.

Other eye protection measures

None known.

8.2.2.2 Skin protection

Hand protection

Wear protective gloves when handling the product. For sufficient protection use gloves according to EN 374. Nevertheless, before using protection gloves for the first time, they should be tested for their workplace-specific suitability (e.g. mechanical resistance, product compatibility and antistatic properties). For further information, please contact the glove supplier.

Glove material: Nitrile rubber, thickness ≥ 0.4 mm

Penetration time: ≥ 6 h (480 min)

Body protection

Wear clothes with long sleeves. A work coat is recommended when handling the product.

Other skin protection measures

None known.

8.2.2.3 Respiratory protection

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection should be worn. In case of vapors and/or dust, use breathing apparatus. Short time (max. 20 min).

Half-/quarter mask with P2 filter.

Particle-filtering semi-/ fine dust masks FFP2 or

PAPR with TH 1 P protection level

8.2.2.4 Thermal hazards

No specific hazards.

8.2.3 Environmental exposure controls

Not specified.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

9.1.1 Appearance

Form	Color	Odor	Odor threshold
Solid, continuous fibre	Black	Not specified	Not available

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9.1.2 Basic physical and chemical properties

Parameter	Value	Method	Remarks
pH level [20 °C]	Not applicable		
Melting point/ freezing point [°C]	≈ 3500 °C carbon fiber		
Initial boiling point/ Boiling range [°C]	Not specified		
Flash point [°C]	Not applicable		
Evaporating rate	Not available		
Inflammability (solid, gaseous)	Not available		
Lower explosion limits	Not available		
Upper explosion limits	Not available		
Vapor pressure [Pa]	Not available		
Vapor density [°C]	Not available		
Relative Density [°C]	1.7 – 2.0 g/cm³		At 23 °C
Solubility (solvents) [°C]	Not available		
Partition coefficient: n-Octan/Water [K _{ow}]	Not applicable		
Auto-ignition temperature [°C]	Not applicable		
Decomposition temperature [°C]	≥ 650 °C CF ≥ 200 °C Sizing		Ambient air
Viscosity, flow time [23 °C]	Not applicable		
Viscosity, dyn. [mPas/20 °C]	Not applicable		
Explosive properties	Not available		
Oxidizing properties	None known		

9.2 Other information

Parameter	Value	Method	Remarks
Carbon fibre filament diameter	≥ 5,0 µm		

Section 10: Stability and reactivity

10.1 Reactivity

Product is not reactive under conditions for transfer, storage and applications. See Chapter 7.2

10.2 Chemical stability

Product is stable under conditions for transfer, storage and applications. See Chapter 7.2

10.3 Possibility of hazardous reactions

Accumulation of dust may entail the risk of a dust explosion in the present of air.

10.4 Conditions to avoid

Do not heat up above decomposition temperature mentioned. See Section 5.2, 9.1.2.

10.5 Incompatible materials

No information available.

10.6 Hazardous decomposition products

None known if used for intended purpose.

Section 11: Toxicological information

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11.1 Information on toxicological effects

Toxicological effects of the product are not studied.

11.1.1 Acute toxicity

Practical experience / human evidence

No data available.

Animal data

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) (CAS 25068-38-6)						
Parameter	Effect dose/concentration	Value	Species	Result / evaluation	Method	Remark
Acute oral toxicity	LD50	> 2 000 mg/kg bw	Rat	-	Echa	Nontoxic
Acute dermal toxicity	LD50	> 2 000 mg/kg bw	Rabbit	-	Supplier	Nontoxic

Other information

No data available.

Assessment / Classification

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

11.1.2 Skin corrosion/irritant

Practical experience / human evidence

No data available.

Animal data (InVivo)

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) (25068-38-6)						
Exposure time	Observation time	Species	Method	Result / evaluation	Source	Remark
4 h	1 h, 24 h, 72 h, 7 d	Rabbit	-	Negative	Echa	Not irritating

InVitro skin test

No data available.

Other information

No data available.

Assessment / Classification

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

11.1.3 Serious eye damage/eye irritation

Practical experience / human evidence

No data available.

Animal data (InVivo)

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) (25068-38-6)						
Exposure time	Observation time	Species	Method	Result / evaluation	Source	Remark
-	1 h, 24 h, 72 h, 7 d	Rabbit	OECD 405	Positive, fully reversible within 7 days	Echa	Irritating

InVitro eye test

No data available.

Other information

No data available.

Assessment / Classification

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

11.1.4 Sensitisation to the respiratory tract/skin

11.1.4.1 Sensitisation to the respiratory tract
Practical experience / human evidence

No data available.

Other information

No data available.

Assessment / Classification

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

11.1.4.2 Skin Sensitisation
Practical experience / human evidence

According to expert judgement, sensitivity to epoxy resins may possibly worsen.

Animal data (InVivo)

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) (25068-38-6)					
Effect dose/ concentration	Value	Species	Method Source	Result / evaluation	Remark
-	-	-	-	Positive	Sensitizing

Other information

No data available.

Assessment / Classification

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

11.1.5 Germ cell mutagenicity
InVivo Mutagenität / Gentoxizität

No data available.

InVitro mutagenicity/genotoxicity

No data available.

Other information

No data available.

Assessment / Classification

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

11.1.6 Carcinogenicity
Practical experience / human evidence

No data available.

Animal data

No data available.

Other information

No data available.

Assessment / Classification

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

11.1.7 Reproductive toxicity
Adverse effects on sexual function and fertility

No data available.

Adverse effects on developmental toxicity

No data available.

Effects on or via lactation

No data available.

Other information

No data available.

Assessment / Classification

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

Overall assessment on CMR properties

This product does not meet the criteria for classification as CMR category 1A or 1B according to CLP.

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11.1.8 Specific target organ toxicity (single exposure)

Practical experience / human evidence

No data available.

Animal data

No data available.

Other information

No data available.

Assessment / Classification

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

11.1.9 Specific target organ toxicity (repeated exposure)

Practical experience / human evidence

No data available.

Animal data

No data available.

Other information

No data available.

Assessment / Classification

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

11.1.10 Aspiration hazard

Practical experience / human evidence

Not applicable.

Experimental data

Viscosity data. See Section 9.

Other information

No data available.

Assessment / Classification

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

11.1.11 General information

Fibre and dust abrasion can cause mechanical irritation of the skin and respiratory tract.

However, Carbon fiber itself does not emit WHO-fibre particles that are respirable (IARC). Definition of WHO-fibre particle: length $\geq 5 \mu\text{m}$, diameter $\leq 3 \mu\text{m}$ and length-to-diameter ratio 3:1.

Section 12: Ecological information

12.1 Toxicity

12.1.1 Aquatic toxicity

12.1.1.1 Acute (short-term) fish toxicity

No data available.

12.1.1.2 Chronic (long-term) fish toxicity

No data available.

12.1.1.3 Acute (short-term) toxicity to crustacean

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) (25068-38-6)						
Effect dose/ concentration	Value	Test duration	Species	Result / evaluation	Method/ Source	Remark
EC50	2 mg/L	48 h	Daphnia magna	Limited mobility	OECD 202 Echa	Static

12.1.1.4 Chronic (long-term) toxicity to crustacean

No data available.

12.1.1.5 Acute (short-term) toxicity to algae and cyanobacteria

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Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) (25068-38-6)						
Effect dose/ concentration	Value	Test duration	Species	Result / evaluation	Method/ Source	Remark
EC50	9 mg/L	48 h	Scenedesmus capricornutum	Growth retardation	-	Static

12.1.1.6 Toxicity to other aquatic plants and organisms

No data available.

12.1.1.7 Toxicity to microorganisms

No data available.

Assessment / Classification

Not classifiable due to data lacking.

12.1.2 Sediment toxicity

No data available.

12.1.3 Terrestrial toxicity

No data available.

12.1.3.1 Toxicity to soil microorganisms except arthropods

No data available.

12.1.3.2 Toxicity to terrestrial arthropods

No data available.

12.1.3.3 Toxicity to terrestrial plants

No data available.

12.1.3.4 Toxicity to birds

No data available.

Assessment / Classification

Not classifiable due to data lacking.

12.2 Persistence and degradability

12.2.1 Abiotic Degradation

12.2.2 Biodegradation

Reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight ≤ 700) (25068-38-6)					
Inoculum	Parameter	Degradation rate	pH -value	Method/ Source	Remark
Activated sludge	BSB (28 d)	5 %	-	OECD 301F Echa	Readily degradable

Assessment / Classification

Epoxy resin is based on available data readily degradable.

12.3 Bioaccumulative potential (BCF)

Assessment / Classification

Not classifiable due to data lacking.

12.4 Mobility in soil

Not available.

Assessment / Classification

Not classifiable due to data lacking.

12.5 Results of the PBT and vPvB assessment

Not applicable.

12.6 Other adverse effects

None known.

Section 13: Disposal considerations

13.1 Waste treatment methods

Product residues should be disposed of in compliance with Directive on Waste 2008/98/EC as well as national and regional regulations. For the product, it is not possible to determine a waste code number according to the European Waste Catalogue (EWC) as only the intended use by the customer enables an allocation. The waste code number has to be determined within the EU in accordance with the local waste disposer.

13.1.1 Product / Packaging disposal

List of proposed waste codes/waste designations in accordance with AVV.

13.1.2 Waste treatment-relevant information

Not specified.

13.1.3 Sewage disposal-relevant information

Not specified.

13.1.4 Other disposal recommendations

Non-contaminated packaging may be taken for recycling.

Contaminated packaging must be disposed of like the product.

Section 14: Transport information

	Land transport (ADR/RID)	Inland waterways (ACN)	Marine transportation (IMDG)	Transport by air (ICAO-TI / IATA-DGR)
14.1	UN-Number			
14.2	UN proper shipping name			
14.3	Transport hazard class			
14.3.1	Label			
14.4	Packing group			
14.5	Environmental hazards			

14.6 Special precautions for user

See Section 6 to 8.

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

Not applicable.

14.8 Additional information

Not applicable.

14.8.1 Limited quantities (LQ)

Not applicable.

14.8.2 Classification code

Not applicable.

14.8.3 Hazard Number

Not applicable.

14.8.4 Tunnel restriction code

Not applicable.

Section 15: Regulatory information

15.1 Safety, health and environmental regulations/specific legislations

15.1.1 EU regulations

15.1.1.1 Authorizations and/or restrictions on use

Not applicable.

15.1.2 Other EU regulations

15.1.2.1 VOC directive (2004/42/EG)

The product does not emit volatile organic components.

15.1.2.2 Ozone layer (Reg. EC No. 1005/2009)

Product does not contain substances that deplete the ozone layer.

15.1.2.3 Employment restriction

None known.

15.1.2.4 Fluorinated greenhouse gases (Reg. EU No. 517/2014)

Product does not contain fluorinated greenhouse gases.

15.1.2.5 SVHC (candidate list)

The product does not contain Substances of Very High Concern acc. to REACH Reg. (EC) No 1907/2006, Art. 57 above legal concentration limits of $\geq 0.1\%$ (w/w).

15.1.2.6 RoHS 2011/65/EU and amendments

This product does not contain any substances listed in RoHS (or contains in concentrations below the limits as specified therein).

15.1.3 National regulations

15.1.3.1 Water pollution class

Not applicable.

15.2 Chemical safety assessment

Chemical safety assessments for substances in this product were not carried out.

Section 16: Other information

16.1 Indication of changes

Compare to the previous version, completely revised and updated.

Section 2: EUH210 has been added, Section 3, 11 and 12: Epoxy resin as ingredient has been added.

16.2 Abbreviations and acronyms

H315	Causes skin irritation
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H411	Toxic to aquatic life with long lasting effects
AGS	German Committee on Hazardous Substances
ASGW	Workplace limits for dust in general
ATE	Acute Toxicity Estimated value
AVV	European List of Waste
AwSV	Regulation on facilities for handling substances hazardous to water
A	Alveolar fraction
AK	Average concentration
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
AGS	German Committee on Hazardous Substances
ASGW	Workplace limits for dust in general
ATE	Acute Toxicity Estimated value
AVV	European List of Waste
AwSV	Regulation on facilities for handling substances hazardous to water
BCF	Bioaccumulation factor

BLF	Biological Limit Value
BGV	Biological Guidance Value
BSB	Biochemical oxygen demand
bw	Body weight
CAS No	Registration Number of the Chemical Abstracts Service
CLP	Classification, Labelling and Packaging
DGUV	Institute for Work and Health of the German Social Accident Insurance
DMEL	Derived Minimum Effect Level
DNEL	Derived No Effect Level
dw	Dry weight (Dry basis)
E	Inhalable fraction
EC	European Council
EC50	Median effective concentration
ECHA	European Chemical Agency
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EU	European Union
EUH	EU-Hazard Statements
EWG	European Waste Catalogue
GHS	Globally Harmonized System
IARC	International Agency for Research of Cancer
IATA	International Air Transport Association
IC50	Inhibition concentration, 50 %
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 %
LD50	Median lethal dose
LO(A)EL(C)	Lowest Observed (Adverse) Effect Level (Concentration)
MAK	Maximum Workplace Concentrations
MARPOL	International Convention for the Prevention of Marine Pollution from Ships
MW	Molecular weight
NOAEL(C)	No Observed Adverse Effect Level (Concentration)
NOELR	No Observable Effect Loading Rate
N.O.S.	Not otherwise specified
OEL	Occupational Exposure Limit(s) (Values)
PBT	Persistent, Bioaccumulative and Toxic substance
PEL	Permissible Exposure Limits
PNEC	Predicted No Effect Concentration
P _{ow}	Partition coefficient n-octanol/water
QSAR	Quantitative structure-activity relationship
RE	Repeated dose toxicity
REACH	Registration, Evaluation, Authorization and Restriction of Chemicals
REL	Recommended exposure limits
RID	International Carriage of Dangerous Goods by Road
SCOEL/EU	European Scientific Committee on Occupational Exposure Limits
STOT	Specific target organ toxicity
STP	Sewage treatment plant
SVHC	Substances of Very High Concern for Authorization
TRK	Technical Guidance Concentrations
TRGS	German Technical Rule for Hazardous Substances
vPvB	Very Persistent and very Bioaccumulative
AwSV	German Regulation on Installations for Handling Substances Hazardous to Water
WHO	World Health Organisation

Tenax® Carbon Fiber

Carbon Filament Yarn

Product Information on Safe Handling

Revision 05 (en), effective date 1 October 2015, updated 1 January 2020

WHO-fibre	length $\geq 5 \mu\text{m}$, diameter $\leq 3 \mu\text{m}$ and length-to-diameter ratio 3:1
% (w/w)	Weight Percent

16.3 Key literature references and sources for data

http://www.bgbau.de/gisbau
http://www.dguv.de
http://www.dguv.de/gestis
http://www.echa.europa.eu/candidate-list-table
http://www.baua.de
https://echa.europa.eu/de
http://eur-lex.europa.eu

16.4 Classification for mixtures and used evaluation method according to regulation (EC) 1272/2008 [CLP]
Although the product is treated as an article, the classification used here has been determined based on a mixture and according to the technics of the calculation method set out in regulation (EC) 1272/2008.

16.5 Training advice
None known.

16.6 Additional information
None known.

16.7 Other information

16.7.1 Inventory Status
In general, articles are exempted from compulsory registration acc. to REACH regulation. Anyhow, all ingredients comply with the registration requirements acc. to REACH (registration or pre-registration), and additionally are listed in EINECS or ELINCS.

16.7.2 Disclaimer
This information is given to the best of our current knowledge and describes an article with regard to safety requirements. We would like to point out that it does not represent a guarantee of properties.