

SAFETY DATA SHEET

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TRADE NAME

ZOLTEK™ PX CARBON FIBER

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

1.1 Product identifier

Product name	ZOLTEK™ PX Carbon Fiber
Synonyms	n/a
Chemical family	carbon fiber
Product description	Various forms including continuous tow, chopped, milled, yarns, fabric and/or felt.

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

1.2.1 Relevant uses	industrial applications
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1.2.2 Uses advised against	none known
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1.3 Details of the supplier of the safety data sheet

Company	Zoltek Companies, Inc. 3101 Mckelvey Road St. Louis, MO 63044 USA (314) 291-5110 www.zoltek.com
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E-mail enquiry	sds@zoltek.com
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1.4 Emergency telephone number	+1 (314) 291-5110 8AM-5PM / M-F
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SECTION 2: Hazards Identification

2.1 Classification of the substance or mixture

Product definition article

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]

not classified

2.1.2 Classification according to Regulation 67/548/EEC or 1999/45/EC

Hazard symbols none

R-phrases none

The product does not require a hazard warning label, in accordance with OSHA HazCom and EC-directives

2.2 Label elements

Labeling according to Regulation 67/548/EEC or 1994/45/EC

Hazard symbols none

R-phrases none

S-phrases none

Special labeling not applicable

2.3 Other hazards

Physio-chemical hazards see SECTION 10
In the supplied form the product itself is not explosive at all; however, the build-up of fines and dust can lead to a risk of dust explosions.

Human health dangers see SECTION 11 and below

Eye Dust may cause temporary irritation.

Skin Dust may cause mild irritation. In some cases, the dust may cause allergic skin reactions.

Inhalation Dust may cause mild irritation.

Environmental hazards see SECTION 12

Other hazards This product and its dusts are electrically conductive

SECTION 3: Composition/information on ingredients

3.1 Product-type article

<u>Component</u>	<u>CAS. #</u>	<u>EC #</u>	<u>%</u>
Carbon fiber, polyacrylonitrile (PAN)-based (carbon)	308063-67-4 (7440-44-0)	N/A (251-153-3)	91.0-100
Sizing	proprietary		0.0-9.0

SECTION 4: First aid measures

4.1 Description of first aid measures

General information	not applicable
Inhalation	Remove from the area of the dust to fresh air. Seek medical attention if you feel unwell.
Skin contact	Wash affected areas thoroughly with soap and water.
Eye contact	Flush eyes with water for 15 minutes.
Ingestion	In the event of deliberate ingestion, do not induce vomiting unless directed to do so by consulting with a doctor.

4.2 Most important symptoms and effects, both acute and displayed

no data available

4.3 Indication of any immediate medical attention and special treatment

no data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	normal firefighting media and procedures
Unsuitable extinguishing media	dependent on processing plant conditions

5.2 Special hazards arising from the substance or media

airborne fibers are electrically conductive
CO₂, CO and a minute amount of N₂, HCN and H₂O

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

6.1.1 For non-emergency personnel not applicable

6.1.2 For emergency responders not applicable

6.2 Environmental precautions not applicable

6.3 Methods and material for containment and cleaning up

6.3.1 For containment In case of spill, collect the spilled materials. If the material is not contaminated, put it into a clean container and it can be reused. Otherwise, dispose of it properly.

6.3.2 For cleaning up Because the dust is electrically conductive and may become airborne, clean up with a vacuum. If an electrical appliance is used, take the steps necessary to avoid the risk of electrical shock.

SECTION 7: Handling and storage

7.1 Precautions for safe handling No special measures necessary if used properly.

7.2 Conditions for safe storage, including any incompatibilities

Airborne particles and filaments should be controlled so as to minimize skin irritation and electrical shorts in switch gears, etc. due to conductivity of fiber.

Do not store together with oxidizing agents

7.3 Specific end use(s) see section 1.2

SECTION 8: Exposure controls/personal protection**8.1 Control parameters****Occupational exposure limits**

OSHA and ACGIH (USA) have not established air contamination for carbon fibers. Under certain conditions this substance may be a nuisance dust. OSHA has an established standard for particulates not otherwise regulated (nuisance dust) set at 5 mg/m³ (respirable fraction) and 15 mg/m³ (total dust). ACGIH has established an exposure value of 3 mg/m³ (respirable fraction) and 10 mg/m³ (total).

NHFPC (PRC) has an established standard for carbon fiber's particulates not otherwise regulated set at 6mg/m³ ESTL (total dust) and 3mg/m³ TWA (total dust),

Belgium has established an Occupational Exposure Limit for carbon fiber as 2 fiber/cm³ TWA.

8.2 Exposure controls

8.2.1 Appropriate engineering controls local exhaust for airborne fiber removal.

8.2.2 Personal protection equipment

8.2.2.1 Eye and face protection safety glasses

8.2.2.2 Skin protection

Hand protection protective gloves

Other skin protection Recommend disposable protective garments to eliminate possible skin irritation.

8.2.2.3 Respiratory protection Personal dust respirators applicable if high degree of fiber fly is experienced.

8.2.2.4 Thermal hazards not applicable

8.2.3 Environmental exposure controls see SECTION 6 & 7

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	black fiber
Odor	odorless
pH	not applicable
Melting point / freezing point	~ 3,500°C
Initial boiling point and boiling range	not applicable
Flashpoint	not applicable
Evaporation rate	not applicable
Flammability (solid, gas)	not applicable
Upper/lower flammability or explosive limits	not applicable
Vapor pressure	not applicable
Vapor density	not applicable
Specific gravity (relative density)	1.81 (H ₂ O @ 4°C = 1.00)
Solubility(ies)	
water	negligible (dispersible)
Partition coefficient	
n-octanol/water	not applicable
Auto ignition temperature	not applicable

Decomposition temperature (in Air)sizing preparation;
carbon fiber;

>240°C

>650°C

Viscosity

not applicable

Explosive properties:

potential for weak explosion with milled fiber or dusts

Class St 1* / <50 K_{st} (bar·m/s)*OSHA CPL 03-00-008 – *Combustible Dust National Emphasis Program***Oxidizing properties**

not applicable

9.2 Other information

no other information available

SECTION 10: Stability and reactivity**10.1 Reactivity**

see SECTION 10.3

10.2 Chemical stability

stable under normal ambient and anticipated storage and handling conditions of temperature and pressure

10.3 Possibility of hazardous reactions

can react with strong oxidizing agents

10.4 Conditions to avoid

see SECTION 7

10.5 Incompatible materials

see SECTION 10.3

10.6 Hazardous decomposition productsProducts of combustion and decomposition will depend on other materials present in the fire and the fire conditions. Burning will produce CO₂, CO, and minute amounts of N₂, HCN and H₂O.**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity**

no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

not an inhalation hazard

filament diameter >3µm / non-respirable (IARC)

SECTION 12: Ecological information**12.1 Toxicity**

not data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential	no data available
12.4 Mobility in soil	no data available
12.5 Results of PBT and nPvB assessment	no data available
12.6 Other adverse effects	ecological data not available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste materials must be disposed of in accordance with the Directive on waste 2008/98/EC and any other applicable national or local regulations.

SECTION 14: Transport information

14.1 UN number	see SECTION 14.2
14.2 UN proper shipping name	not Dangerous Goods ADR/RID (land) ADN (inland navigation) IMDG (marine)
14.3 Transport hazard class(es)	see SECTION 14.2
14.4 Packing group	see SECTION 14.2
14.5 Environmental hazards	see SECTION 14.2
14.6 Special precautions to user	see SECTION 6 to 8
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code	not applicable

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	
TSCA Status	Exempt - satisfies 'article' definition under 40 CFR 704.3
15.2 Chemical safety assessment	has not been carried out

SECTION 16: Other information

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Abbreviations and acronyms	<p>ADN = Accord européen relative au transport international des marchandises dangereuses par voie de navigation intérieure</p> <p>ADR = Accord européen relative au transport international des marchandises Dangereuses par Route</p> <p>CAS = Chemical Abstracts Service</p> <p>CLP = Classification, Labelling and Packaging</p> <p>EEC = European Economic Community</p> <p>EINECS = European Inventory of Existing Commercial Chemical Substances</p> <p>ELINCS = European List of Notified Chemical Substances</p> <p>IBC-Code = International Coder for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk</p> <p>IMDG = International Maritime Code for Dangerous Goods</p> <p>MARPOL = International Convention for the Prevention of Marine Pollution from Ships</p> <p>OSHA = Occupational Safety and Health Administration</p> <p>PBT = Persistent, Bioaccumulative and Toxic substance</p> <p>RID = Règlement concernant le transport international ferroviare de marchandises dangereuses</p>

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