SAFETY DATA SHEET

Effective date: 18 March 2021
Replaced edition from: 05 October 2015
Distribution date: 18 March 2021

TRADE NAME
ZOLTEK™ PX35 Pultruded Profile

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

1.1 Product identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>ZOLTEK™ PX35 Pultruded Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>n/a</td>
</tr>
<tr>
<td>Chemical family</td>
<td>mixture</td>
</tr>
<tr>
<td>Product description</td>
<td>continuous profile made from carbon fiber and cured resin</td>
</tr>
</tbody>
</table>

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

1.2.1 Relevant uses

industrial applications

1.2.2 Uses advised against

none known

1.3 Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Company</th>
<th>Zoltek Composite Intermediates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>27 Guenther Blvd.</td>
</tr>
<tr>
<td></td>
<td>St. Peters, MO 63376</td>
</tr>
<tr>
<td></td>
<td>(314) 291-5110</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.zoltek.com">www.zoltek.com</a></td>
</tr>
</tbody>
</table>

| E-mail enquiry                           | sds@zoltek.com                 |

1.4 Emergency telephone number

+1 (314) 291-5110 8AM-5PM / M-F
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

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

Product is non-hazardous and therefore does not require a hazard warning label, in accordance with OSHA HazCom and EC-directives

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. Upon heating (>150°C), may evolve dangerous gases & vapors

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

Product and its dusts are electrically conductive. Take necessary precautions to protect equipment and prevent potential for electrical shock.

SECTION 3: Composition/information on ingredients

3.1 Product-type article

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS. NO</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon fibers, PAN-based (carbon)</td>
<td>308063-67-4</td>
<td>65 – 75</td>
</tr>
<tr>
<td></td>
<td>(7440-44-0)</td>
<td></td>
</tr>
<tr>
<td>Polymerized Resin</td>
<td>none</td>
<td>25 – 35</td>
</tr>
<tr>
<td>Kaolin Clay</td>
<td>1332-58-7</td>
<td>0.5 – 1.5</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1 Description of first aid measures

General information not applicable

Inhalation Remove from the area of the dust or vapor/smoke generated from cutting/grinding to fresh air. Seek medical attention if you feel unwell.

Skin contact Remove clothing contaminated with dust from cutting/grinding/heating and wash affected areas thoroughly with soap and water.

Eye contact In case of contact with dust from cutting/grinding process, flush eyes with water for 15 minutes.

Ingestion In the event of ingestion of dust from cutting/grinding process, rinse mouth with water and drink plenty of additional water afterword; 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

Irritation of mucous membranes from exposure to dust from cutting/grinding process.

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 
upon intense heating, CO₂, CO and a minute amount of 
NOₓ, HCN and H₂O may be released

5.3 Advice for firefighters  
self-contained breathing apparatus (SCBA)

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  
not applicable

6.3.2 For cleaning up  
not applicable

6.4 Reference to other sections  
personal protective equipment (PPE)

See SECTION 8

disposal considerations

See SECTION 13
SECTION 7: Handling and storage

7.1 Precautions for safe handling

No special measures necessary if used correctly. Carbon fiber composite coils are under tension – do not cut banding without proper coil release controls. Dust may form an explosive mixture with air when processed. Keep away from sources of ignition and refrain from smoking in the vicinity. Carbon fiber composite dusts are electrically conductive. Electrical equipment, enclosures, circuits and power tools in or near areas where carbon fiber composite are handled should be protected against infiltration or contact with airborne particles or filaments.

Avoid breathing dust, vapors, and gases from after-treatment processes (e.g. grinding/cutting/drilling). Ensure well-ventilated area for such activities.

7.2 Conditions for safe storage, including any incompatibilities

Avoid overheating. Do not store together with oxidizing agents. Store in a dry place. Carbon fiber is electrically conductive and may cause an electrical short.

7.3 Specific end use(s)

see SECTION 1.2

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

<table>
<thead>
<tr>
<th>Standard</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA PEL</td>
<td>particulates not otherwise regulated (nuisance dust):</td>
</tr>
<tr>
<td></td>
<td>5 mg/m³ (respirable fraction)</td>
</tr>
<tr>
<td></td>
<td>15 mg/m³ (total dust)</td>
</tr>
<tr>
<td>ACGIH TLV</td>
<td>3 mg/m³ (respirable fraction) and 10 mg/m³ (total)</td>
</tr>
<tr>
<td>NHFPC (PRC)</td>
<td>6 mg/m³ ESTL (total dust) and 3 mg/m³ TWA (total dust)</td>
</tr>
<tr>
<td>Belgium</td>
<td>2 fiber/cm³ TWA</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

8.2.1 Appropriate engineering controls local exhaust for airborne dust removal emergency eyewash
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 when performing or handling pieces after cutting & grinding

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

8.2.2.3 Respiratory protection  
Personal dust respirator applicable if local engineering controls are inadequate to remove dust and vapors from cutting & grinding processes

8.2.2.4 Thermal hazards  
not applicable

8.2.3 Environmental exposure controls  
see SECTIONS 6 & 7

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- **Appearance**: solid, heterogeneous material
- **Odor**: not determined
- **pH**: not determined
- **Melting point / freezing point**: not determined
- **Initial boiling point and boiling range**: not determined
- **Flashpoint**: not determined
- **Evaporation rate**: not determined
- **Flammability (solid, gas)**: not determined
- **Upper/lower flammability or explosive limits**: not determined
- **Vapor pressure**: not determined
- **Vapor density**: not determined
- **Specific gravity (relative density)**: 1.6 (H₂O @ 4°C = 1.00)
- **Solubility(ies)**: water: not soluble
- **Partition coefficient**: n-octanol/water: not applicable
- **Auto ignition temperature**: 300–400°C
- **Decomposition temperature (in Air)**: 150–200°C
- **Viscosity**: not applicable
- **Explosive properties**: dust may form explosive mixture in air
- **Oxidizing properties**: not applicable
9.2 Other information
dust from cutting & grinding activities are electrically conductive and may cause short-circuiting of electrical equipment

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
Avoid reactions with strong oxidizing agents. The fine dust from a carbon fiber compound or composite that is cut or formed can create additional dust explosion risk depending on the resin or compounding agent.

10.4 Conditions to avoid
see SECTION 7

10.5 Incompatible materials
see SECTION 10.3

10.6 Hazardous decomposition products
No hazardous decomposition products will be formed during normal usage of carbon fiber composites. Complete or partial combustion may generate COx, NOx, and other trace chemicals.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

<table>
<thead>
<tr>
<th>Toxicological effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute toxicity</strong></td>
</tr>
<tr>
<td>no data available</td>
</tr>
<tr>
<td><strong>Skin corrosion/irritation</strong></td>
</tr>
<tr>
<td>dust from cutting &amp; grinding processes may cause skin irritation with itching and blushing</td>
</tr>
<tr>
<td><strong>Serious eye damage/irritation</strong></td>
</tr>
<tr>
<td>dust from cutting &amp; grinding processes may cause eye irritation</td>
</tr>
<tr>
<td><strong>Respiratory or skin sensitization</strong></td>
</tr>
<tr>
<td>carbon fiber filament diameter $&gt;3 \mu m$ non-respirable (IARC)</td>
</tr>
<tr>
<td>Inhalation of dust generated by cutting and grinding may irritate the mucous membranes of the upper respiratory tract and may cause coughing.</td>
</tr>
<tr>
<td>Gases and vapors generated by intense heating of the material (e.g. during cutting &amp; grinding = smoke) are dangerous to one's health and may cause nausea and uneasiness</td>
</tr>
<tr>
<td>no data available (skin sensitization)</td>
</tr>
</tbody>
</table>
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

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)
  IATA (air)
  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 SECTIONS 6 to 8

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code

not Dangerous Goods

SECTION 15: Regulatory information

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

not applicable

15.2 Chemical safety assessment

has not been carried out

SECTION 16: Other information

Revision date: 18 March 2021, CN: 2040

Previous revision: 05 October 2015, CN:1338

Abbreviations and acronyms

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

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