About Company

- Prepreg-ACM is a Rusnano portfolio company founded in 2009;
- The company is producing a wide range of unidirectional, bidirectional woven and non-woven fabrics and tapes, multiaxial fabrics and prepregs;
- Our products are used in wind energy, construction, automotive, shipbuilding, aerospace, medicine and other industries;
- Production facilities are located in Moscow and Dubna (Moscow region).
Our goal: replacement of traditional constructional materials in key sectors of the economy

- Constant availability of standard products in demanded range;
- Operational shipment from a warehouse in Europe of products within 1-2 weeks in Europe;
- Presence of the well-developed distribution network;
- R & D center is one of the best in Russia;
- Serial supplies for shipbuilding, automotive, sports equipment and construction;
- High-precision and high-performance equipment.
• **Multiaxial fabrics** are textile materials made of several layers of high-strength composite fibers stitched together with thin threads. Multiaxial fabric can be carbon, glass, basalt, and hybrid according to the source fibers.

• **Prepreg** is "pre-impregnated" composite fibers where a thermoset polymer matrix material, such as epoxy, is already present.

• **Unidirectional carbon tapes** are carbon fabric with at least 50% of the filaments arranged in the same direction. This structure supports the high tensile strength of the carbon tape and makes it a relevant material in demand for construction and many other applications.

• **Bidirectional carbon fabrics** are made with fibers arranged at 0 and 90 degrees. These fabrics show their highest strength in two directions. Bidirectional carbon fabrics can have various weaving patterns, twill and plain among them being our primary focus.
The company is located on the territory of the Technopolis "Moscow".

- Production of multiaxial fabrics;
- One of the world's largest lines for the production of prepregs;
- R&D center;
- Project and head office.

**Capacity:**

- Multiaxial fabrics 1 mln sq m / year;
- Prepregs 3.2 mln sq m / year.

The quality management system is certified according to ISO 9001 and EN 9100 standards.
Our capabilities – Multiaxial fabrics

- **Areal weight:** 100 – 1 200 gsm
- **Fabric width:** 1 270 mm
- **Fiber materials:** 12K to 50K industrial CF; 100 to 4800 tex GF
- **Resin compatibility:** EP, VE
- **Stitching pattern:** Tricot, pillar, other
- **Number of layers:** Up to 4
- **Possible fiber orientation:** $0^\circ/90^\circ$; $\pm 45^\circ$; $0^\circ/+45^\circ/90^\circ/-45^\circ$; $0^\circ/\pm 45^\circ$
- **Roll length:** 50 / 100 m
Our capabilities – Tapes

Max tape width: 500 mm
Areal weight: 100 – 500 gsm
Fiber materials: 12K to 50K industrial CF
Tape fixation: Powder binder
 Thermoplastic net
Fixation type: One side
 Double side
Our capabilities – Prepregs

Prepreg areal weight: 150 – 1 600 gsm
Resin content: 20 - 50 of weight, %
Material: Carbon, Glass, Aramid fibre
Production speed: Up to 20 m/min
Resin system: Epoxy, Cyanoether, Bismaleimide
Certain content of resign: ±1,5%
Viscosity: Low- and high viscosity epoxy melted resin systems
Width of prepreg: Up to 1500 mm

Permanent automatic control of the surface density of the prepreg.
## Prepregs for composite materials

<table>
<thead>
<tr>
<th>Resin</th>
<th>HCP1208</th>
<th>HCP1209</th>
<th>HCP1412</th>
<th>KC-102</th>
<th>KC-105</th>
<th>KC-104</th>
<th>HCP1405</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application</strong></td>
<td>Aesthetic</td>
<td>Aesthetic and Structural</td>
<td>Structural</td>
<td>Structural</td>
<td>Structural</td>
<td>Tooling</td>
<td>Tooling</td>
</tr>
<tr>
<td><strong>Curing temperature, °C</strong></td>
<td>120</td>
<td>125</td>
<td>180</td>
<td>130</td>
<td>120-180</td>
<td>60 / 18 h</td>
<td>60 / 18 h</td>
</tr>
<tr>
<td><strong>Curing time, minutes</strong></td>
<td>Up to 3 h</td>
<td>Up to 1 h</td>
<td>20 min</td>
<td>2 h</td>
<td>4 h</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Glass transition temperature, °C</strong></td>
<td>125 (DSC)</td>
<td>130 (DSC)</td>
<td>185 (DMA)</td>
<td>139 (DMA)</td>
<td>145 (DMA)</td>
<td>247 (DMA)</td>
<td>205 (DMA)</td>
</tr>
<tr>
<td><strong>Shelf life at room temperature, days</strong></td>
<td>45</td>
<td>30</td>
<td>30</td>
<td>60</td>
<td>30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Mechanical properties</strong></td>
<td>UD T700-12K</td>
<td>UD T700-12K</td>
<td>UD T700-12K</td>
<td>Twill 2x2 HTA40-3K</td>
<td>Twill 2x2 HTA40-3K</td>
<td>Twill 2x2 T300-3K</td>
<td>Twill 2x2 T300-3K</td>
</tr>
<tr>
<td><strong>Tensile strength (0°), MPa</strong></td>
<td>2250</td>
<td>2320</td>
<td>2230</td>
<td>880</td>
<td>870</td>
<td>360</td>
<td>360</td>
</tr>
<tr>
<td><strong>Compression strength (0°), MPa</strong></td>
<td>1020</td>
<td>1120</td>
<td>1150</td>
<td>740</td>
<td>750</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td><strong>Flexural strength, MPa</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td><strong>Interlaminar shear strength, MPa</strong></td>
<td>74</td>
<td>74</td>
<td>95</td>
<td>64</td>
<td>64</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Prepreg-Dubna produces carbon, glass, and aramid based fabrics in the special economic zone Dubna. The production site is equipped with modern weaving machines. The facility manufactures UD, BD woven fabrics and tapes.

**Capacity:**
- SRS tape and BD fabrics – 1 m sq metres / year.

The activities are focused on the development and production of new products for use in industries such as aerospace, shipbuilding, construction, energy, pipeline transportation, consumer goods and others.
Our capabilities – Unidirectional and Bi-Directional Woven Fabrics

Areal weight: 100 - 800 gsm
Fabric width: 100 – 1 600 mm
Fiber materials: 1K - 50K industrial CF
70 – 3 600 tex GF
  Aramide, hot-melt yarn weft
Resin compatibility: EP, VE
Weaving pattern: Plain, twill, and others
Roll length: 50 / 100 m
  Customized roll lengths are possible
## List of stock materials

<table>
<thead>
<tr>
<th>Product</th>
<th>Areal weight (g/m²)</th>
<th>Sizing</th>
<th>Width (mm)</th>
<th>Construction</th>
<th>Fiber type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unidirectional Tape</td>
<td>800</td>
<td>EPX, VE</td>
<td>120</td>
<td>Plain</td>
<td>24K</td>
</tr>
<tr>
<td>Balanced Fabric</td>
<td>200</td>
<td>EPX</td>
<td>1000</td>
<td>Twill 2/2, Plain</td>
<td>3K</td>
</tr>
<tr>
<td>Balanced Fabric</td>
<td>600</td>
<td>EPX</td>
<td>1000</td>
<td>Twill 2/2</td>
<td>12K</td>
</tr>
<tr>
<td>Balanced Fabric</td>
<td>400</td>
<td>EPX, VE</td>
<td>1270</td>
<td>± 45°</td>
<td>12K</td>
</tr>
<tr>
<td>Biaxial Fabric</td>
<td>400</td>
<td>EPX, VE</td>
<td>1270</td>
<td>0°/90°</td>
<td>12K</td>
</tr>
<tr>
<td>Biaxial Fabric</td>
<td>600</td>
<td>EPX, VE</td>
<td>1270</td>
<td>± 45°</td>
<td>24K</td>
</tr>
<tr>
<td>Biaxial Fabric</td>
<td>600</td>
<td>EPX, VE</td>
<td>270</td>
<td>0°/90°</td>
<td>24K</td>
</tr>
<tr>
<td>Biaxial Hybrid Fabric</td>
<td>600</td>
<td>EPX, VE</td>
<td>1270</td>
<td>± 45°</td>
<td>12K, E-Glass</td>
</tr>
<tr>
<td>Biaxial Hybrid Fabric</td>
<td>800</td>
<td>EPX, VE</td>
<td>1270</td>
<td>0/90°</td>
<td>12K, E-Glass</td>
</tr>
</tbody>
</table>
Materials for the external reinforcement system
FibArm

Carbon tapes and fabrics FibArm Tape

- Universal for all types of structures;
- Optimum for solving most problems;
- Convenient to use.

<table>
<thead>
<tr>
<th>Type of fabric</th>
<th>Weaving pattern</th>
<th>Width (mm)</th>
<th>Areal weight (g/m²)</th>
<th>Modulus of elasticity, GPa (fibers)</th>
<th>Tensile strength, GPa (fibers)</th>
<th>Estimated thickness of monolayer tape, mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>FibArm Tape 230/300</td>
<td>Plain</td>
<td>300</td>
<td>230</td>
<td>245</td>
<td>4,9</td>
<td>0,128</td>
</tr>
<tr>
<td>FibArm Tape 530/300</td>
<td>Plain</td>
<td>300</td>
<td>530</td>
<td>245</td>
<td>4,9</td>
<td>0,294</td>
</tr>
</tbody>
</table>
Two-component systems on an epoxy basis

Used as an impregnating adhesive for the FibArm reinforcement system based on carbon tapes and carbon fiber fabrics (FibArm Resin 230+, FibArm Resin 530+), as well as glue for composite carbon lamellae (FibArm Resin Laminate+).

<table>
<thead>
<tr>
<th>Name</th>
<th>FibArm Resin 230+</th>
<th>FibArm Resin 530+</th>
<th>FibArm Resin Laminate+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Component A: Ivory</td>
<td>Component A: colorless</td>
<td>Component A: white</td>
</tr>
<tr>
<td></td>
<td>Component B: dark gray</td>
<td>Component B: pale yellow</td>
<td>Component B: black</td>
</tr>
<tr>
<td>Density</td>
<td>1,3 g/cm³ (A+B)</td>
<td>1,15 g/cm³ (A+B)</td>
<td>1,65 g/cm³ (A+B)</td>
</tr>
<tr>
<td>Viability of the mixture, min., Min</td>
<td>At a temperature of 10°C – 80</td>
<td>At a temperature of 10°C – 240</td>
<td>At a temperature of 10°C – 90</td>
</tr>
<tr>
<td></td>
<td>At a temperature of 20°C – 35</td>
<td>At a temperature of 20°C – 120</td>
<td>At a temperature of 20°C – 40</td>
</tr>
<tr>
<td></td>
<td>At a temperature of 30°C – 20</td>
<td>At a temperature of 30°C – 40</td>
<td>At a temperature of 30°C – 30</td>
</tr>
<tr>
<td>Adhesion strength</td>
<td>More than 2.5 MPa, a break in concrete (B40)</td>
<td>More than 2.5 MPa, a break in concrete (B40)</td>
<td>More than 2.5 MPa, a break in concrete (B40)</td>
</tr>
<tr>
<td>Shear strength (7 days at 23 °C), not less than</td>
<td>15 MPa</td>
<td>7 MPa</td>
<td>14 MPa</td>
</tr>
</tbody>
</table>
The company Prepreg-ACM has a certificate of compliance of the quality management system with the requirements of the aerospace standard EN 9100. The certificate confirms internationally the quality of the company's products for the aerospace industry.

The company has all the certificates necessary to sell products in key industries.
Applications

- Automotive
- Sports and leisure
- Construction
- Marine
- Wind energy
- Aerospace
Prepreg-ACM JSC

Volgogradsky prospect, 42, bld. 13, Moscow, Russia
Postal code: 109316
T: +7 495 984 2224

www.prepreg-acm.com