The Innovative Structural Strengthening Solution

X-Wrap
Externally Bonded Composite Reinforcement Systems
Delivering **Structural Strength Through Advance Technology**

Composite fiber technology provides solutions for strengthening floors, walls, beams, columns and other structural elements suffering from deterioration, additional loads or excessive deflection. A need to increase the load capability of structures can arise from damage to structural elements, construction or design defects, alteration of design regulations, or change of use.

Composite technology can also overcome problems associated with static loading, dynamic loading, creep and durability.

The high cost and major disruption caused by demolition and reconstruction make refurbishment an attractive option. The use of composites provides clients and engineers with lightweight, high durability low maintenance solutions to strengthening problems which overcome many of the disadvantages associated with steel plate bonding, which itself is a proven technique with case histories in excess 20 of years.

Composite Fiber technology has many potential applications which include:

- Bridges
- Car Parks
- Commercial Properties
- Industrial Facilities

**Design Service**

X-Calibur works with several specialist consultants experienced in the design of structural strengthening to provide a full design of supply solution.
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X-Wrap Plate Systems

**X-Wrap PP Strip**

X-Wrap PP Strip are carbon fiber pultruded strip (plate) designed for the strengthening of structural members against tensile, shear and impact forces. The strips are used in conjunction with a high performance epoxy adhesive. They are black in color.

<table>
<thead>
<tr>
<th>HS Grade</th>
<th>IM Grade</th>
<th>HM Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength (MPa)</td>
<td>3000</td>
<td>2400</td>
</tr>
<tr>
<td>Tensile Modulus (GPa)</td>
<td>165</td>
<td>210</td>
</tr>
<tr>
<td>Nett Thickness</td>
<td>1.2/1.4mm</td>
<td>1.2mm</td>
</tr>
</tbody>
</table>

**X-Wrap Pultruded Rod**

X-Wrap Pultruded Rods are ready to use pultruded carbon fiber rods which provide a lightweight, high tensile strength material suitable for the reinforcement or strengthening of concrete, masonry and timber elements of existing structures.

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Tensile Strength (MPa)</td>
<td>2500</td>
</tr>
<tr>
<td>Tensile Modulus (GPa)</td>
<td>158</td>
</tr>
<tr>
<td>Diameter (mm)</td>
<td>6, 8, 10 and 12</td>
</tr>
</tbody>
</table>

**X-Wrap Plate Adhesive**

X-Wrap Plate Adhesive is a high build high performance high strength thixotropic epoxy resin used for bonding X-Wrap carbon fiber strips, plate and rods and other external strengthening materials.

**Composite Fiber Wrapping Systems**

**X-Wrap C300**

X-Wrap C300 is a carbon fiber uni-directional sheet designed for the strengthening of structural members against tensile, shear and impact forces. The sheet is used in conjunction with a primer and lamination resin. It is black in color.

<table>
<thead>
<tr>
<th>Intermediate Modulus (C300IM)</th>
<th>High Modulus (C300HM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength (MPa)</td>
<td>4900</td>
</tr>
<tr>
<td>Tensile Modulus (GPa)</td>
<td>210</td>
</tr>
</tbody>
</table>

The high strength grade is also available in fabric weights of 200gsm (C300HS), 230gsm (C303HS) and 600gsm (C600HS).

**X-Wrap Primer**

X-Wrap Primer is a high penetration primer suitable for use with X-Wrap Lamination Adhesive and X-Wrap structural strengthening fabrics.

**X-Wrap Laminated Plates**

X-Wrap Laminated Plates are carbon fiber pultruded plate (strip) designed for the strengthening of structural members against tensile, shear and impact forces. These plates are used in conjunction with a high performance epoxy adhesive. They are black in color.

<table>
<thead>
<tr>
<th>Other Fabrics Available:</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-Wrap AR Fabric (aramid), X-Wrap EG Fabric (E-glass) and X-Wrap BS Fabric (Basalt)</td>
</tr>
<tr>
<td>X-Wrap AR</td>
</tr>
<tr>
<td>Tensile Strength (MPa)</td>
</tr>
<tr>
<td>Tensile Modulus (GPa)</td>
</tr>
</tbody>
</table>

Note: Fabric tensile data is for the fibers used to produce the fabric.

Also Available

**X-Wrap Laminated Plates**

High performance laminated composite plates custom manufactured from carbon and other fibers.

Note: The above information is for guidance only. Please refer to the current product data sheet for the latest technical data and product information.
The Innovative Structural Strengthening Solution

X-Calibur® is a structural strengthening solution that offers a range of benefits to its users. The solution is designed to be flexible and adaptable, allowing for customization to meet specific project requirements. The materials used in the solution are high-quality and durable, ensuring longevity and reliability.

Key Features:
- **High Strength**: The materials used in the solution are designed to withstand significant loads and stress, making it ideal for strengthening structures.
- **Durability**: The solution is designed to be long-lasting, reducing maintenance costs over time.
- **Versatility**: The solution can be applied to a wide range of structures, from bridges to buildings.
- **Ease of Application**: The materials are easy to apply, reducing the time and cost associated with structural strengthening.
- **Sustainability**: The materials are environmentally friendly, making it a sustainable choice for structural strengthening.

Applications:
- **Bridge Strengthening**: The solution is ideal for strengthening bridges, improving their load-bearing capacity and extending their service life.
- **Building Strengthening**: It can be used in the strengthening of buildings, improving their structural integrity and safety.
- **Industrial Structures**: The solution is suitable for strengthening industrial structures, ensuring their safety and functionality.

Benefits:
- **Cost-Effective**: The solution is designed to be cost-effective, reducing overall project costs.
- **Time-Saving**: The application process is quick, allowing for timely completion of projects.
- **Safety**: The solution enhances the safety of structures by improving their resistance to external forces.

Technical Support:
- **Expert Advice**: X-Calibur® offers expert advice on the selection of the most appropriate solution for specific projects.
- **Training**: Training sessions are available to ensure proper application of the solution.
- **Monitoring**: The company provides monitoring services to ensure the solution is working effectively.

Contact Information:
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- **Phone**: +1 (555) 123-4567

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*The above projects were carried out by Exchem Polymer Systems Ltd. (now called 2K Polymer Systems Ltd.) who transferred the technology for the X-Wrap Structural Strengthening Systems to X-Calibur International FZC.*