

# UGW<sup>TM</sup>

## Unidirectional Glass Wrap



Building  
&  
Transportation



Oil, Gas  
&  
Industrial



Offshore  
&  
Onshore



Water  
&  
Wastewater



### PRODUCT DESCRIPTION

CTech-LLC<sup>®</sup> Unidirectional Glass Wrap (**UGW<sup>TM</sup>**) is a high strength glass fabric with fibers oriented in the 0° direction. GFRP is the abbreviation form of the phrase “glass fiber reinforced polymer”. Today GFRP systems are extensively being used for structural, industrial and research and development purposes due to their weight and durability. We can use glass fibers in different fields like strengthening and retrofitting of structures, sport equipment and automotive sectors, making sport car bodies and boats, bridge building and many other important fields.

### ADVANTAGES

- Lightweight, flexible, high-strength fiber can be used in different surfaces like circular columns and other arched surfaces.
- Chemical and corrosion resistant.
- With excellent electrical and thermal insulation properties, fibers can be used as a suitable material in electrical equipment.
- Compatible with different materials and standard adhesive resins.
- Easy to impregnate using wet or dry lay-up methods.
- Low aesthetic impact.
- UGW<sup>TM</sup> glass fibers are available in different types and can be used depending on your needs. For example, S-glass is used when tensile strength is important and E-glass is useful in Electrical application.

### TYPICAL USES

- Seismic retrofit and strengthening of masonry elements.
- Confinement of repaired elements.
- Additional protection from environmental conditions.
- Insulation barrier between exposed steel and carbon fiber.

### DESIGN

Design calculations shall be made and sealed by a licensed, independent engineer knowledgeable with the design of FRP strengthening systems.

### INSTALLATION PROCEDURE

Installation of CTech-LLC<sup>®</sup> glass fabrics should be performed by licensed and specially trained groups of installers. The Installation must be compatible with existing relevant international codes. This section

outlines the procedure to install CTech-LLC<sup>®</sup> Unidirectional Glass Wrap (UGW<sup>TM</sup>).

### PREPARATION OF SUBSTRATE

- Substrate preparation can highly effect on the quality of the performance of CFRP systems.
- All the surfaces must be cleaned from dirt, grime, dust, curing compounds, oils, grease, waxes and all the other contaminated materials which may cause voids behind the CTech-LLC<sup>®</sup> composites.
- Repair mortar must be used to repair all the eroded or damaged concrete surfaces.
- An industrial vacuum cleaner must be used to remove dust and dirt.
- All the surfaces need grinding, sandblasting, shot blasting, pressure wash or other common mechanical methods to reach an even concrete Substrate.
- The sharp edges must be smooth and rounded to a minimum radius of 30 mm.
- Note that concrete surfaces must be fully dried or cured so adhesive can properly dry.

### MIXING

Epoxy resins (or other resins) are required to make GFRP systems. Epoxy compounds are usually supplied in two different containers. Before pouring the contents of component B into contents of component A, each part should be stirred separately to avoid deposit in container. Then part A and B should be mixed

**TECHNICAL DATA**

	Unit	UGW™2.0h	UGW™4.0h	UGW™6.0h	UGW™8.8h	UGW™12h
Elastic modulus*	GPa	70	70	70	70	70
Ultimate strength*	MPa	2200	2200	2200	2200	2200
Ultimate strain*	-	0.045	0.045	0.045	0.045	0.045
Thickness**	mm	0.08	0.16	0.24	0.35	0.48

\* In accordance with the standard ISO 10618

\*\* Based on total unidirectional fiber content

NOTE: Please ask the supplier for product number including type of yarn, textile width, warn type etc.

together depending on the required quantity. Process of mixing should take 3-5 minutes with a low speed mixer.

**TREATMENT**

Glass fabrics can be cut with knives, commercial quality heavy-duty

scissors, and rulers. These are proper tools for cutting GFRP systems to obtain an ideal length and width. Any of the other cutting instruments can damage the fabrics.

**APPLICATION**

The substrate must be clean and eroded or damaged concrete surfaces must be repaired by CTech-LLC<sup>®</sup> epoxy mortar. Cover the substrate with suitable form of ERP™ epoxy primer. Saturate the fabrics by a mechanical saturator. The saturator controls fiber-resin ratio in operation and converts glass fibers into prepreg fabrics, so they can be used instantly on the surface of different elements. Installation of all the layers of saturated fabrics must be done according to the design requirements. If required, additional fabrics can be used on top of previous layers. Using a roller can ensure all pockets are removed between fabric and substrate and there is a good bonding between them. This process should be performed by licensed and specially trained groups of installers.

**PROTECTIVE COATINGS**

A protective coating must be applied on the surface of FRP system. The coating should be non-vapor-barrier and complies with the FRP system. Plaster final coating, paint final coating and fireproofing coating are three common methods which can be used to make barrier between damaging environment and structures. Painting should be done between 24 to 72 hours after final application of epoxy. The protective coating can protect surface against corrosion, decaying, cracking, chipping, fading and other typical problems which may

happen for the structure.

**STORAGE & SHELF LIFE**

Glass fibers should be stored at +5°C to +35°C and should not be exposed to direct sunlight. Keep the glass fabrics in a dry place.

**CAUTION**

All components of FRP systems may cause skin irritation and sensitization. Use of chemical resistant gloves is recommended. Avoid breathing vapors and dust. Get medical attention if you are breathing with difficulty. Resins products can cause strong eye irritation. Avoiding eye contact and Using safety goggles is necessary.

**CTech-LLC<sup>®</sup>**

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**IMPORTANT NOTE:**

Before using any CTech-LLC<sup>®</sup> product, the user must review the most recent version of the product's technical data sheet, material safety data sheet and other applicable documents, available at [www.ctech-llc.com](http://www.ctech-llc.com).

**WARANTY:**

CTech-LLC<sup>®</sup> warrants its products to be free from manufacturing defects. Buyer determines suitability of product for use and assumes all risks. Buyer's sole remedy shall be limited to replacement of product. Any claim for breach of this warranty must be brought within one month of the date of purchase. CTech-LLC<sup>®</sup> shall not be liable for any consequential or special damages of any kind, resulting from any claim or breach of warranty, breach of contract, negligence or any legal theory. The Buyer, by accepting the products described herein, agrees to be responsible for thoroughly testing any application to determine its suitability before utilizing.