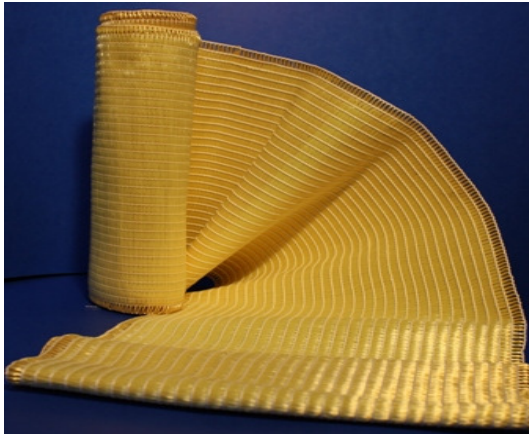


# Fortec 5680-BD Kevlar®

**Kevlar® fiber bi-directional fabric for crack repair, water-proofing and structural reinforcement**



**Product Description** Fortec 5680-BD Kevlar® is a bi-directional fabric system comprised of highly durable 5,680 denier Kevlar® yarns, producing a superior and dense weave. The system is designed for heavy duty crack repair, crack control, and structural strengthening of concrete and masonry structures where durability, impact resistance and protection of water intrusion is needed. The system of Fortec 5680-BD Kevlar® textile used with Fortec Lo-Mod 526 Flexible epoxy resin is the best alliance of strength and bonding that seals out moisture, transfers loads and allows temperature and stress related movements to occur without brittleness.



### Key Features

- ❖ 0° and 90°, equal bi-directional strength
- ❖ High bond strength
- ❖ Conforms to irregular surfaces
- ❖ Easy gun-applied epoxy resins
- ❖ Strongest duty Kevlar® system available
- ❖ Excellent crack control

### PRODUCT USE

#### Target Applications

- ❖ Transverse cracks in bridge decks
- ❖ Post-tensioned segmental bridge joints
- ❖ Longitudinal cracks and joints
- ❖ Rigid pavement joint and dowel protection
- ❖ Cast-in-place water storage structures
- ❖ Cyclical loading applications
- ❖ Where crack control with water protection is needed

#### Repair Applications

- ❖ Collision and impacts
- ❖ Excessive movement
- ❖ Elastomeric joint failures
- ❖ Age
- ❖ Overuse

#### Benefits

- ❖ Protection from corrosion
- ❖ Increased strength
- ❖ Water and chloride prevention
- ❖ Ride quality
- ❖ Long term repairs
- ❖ Increased service life

### SPECIFICATIONS

#### Typical Data

|   |  |
|---|--|
| <b>Base Material</b>                                      | 5,680 denier Kevlar® yarns woven into a dense, bidirectional weave |
| <b>Storage</b>  | Product shall be kept from direct sunlight                         |
| <b>Shelf Life</b>   | Unlimited  |
| <b>Color</b>  | Yellow   |
| <b>Filament Tensile Strength, ksi (MPa)</b>               | 522 (3,600)  |
| <b>Filament Tensile Modulus, ksi (MPa)</b>                | 17,985 (124,000)   |
| <b>Fabric Nominal Width, in (mm)</b>                      | 8 (200)  |
| <b>Fabric Nominal Thickness, in (mm)</b>                  | 0.040 (1.0)  |
| <b>Primary Fiber Direction</b>                            | 0° and 90°, bidirectional plain weave                              |
| <b>Fabric Weight, oz/yd<sup>2</sup> (g/m<sup>2</sup>)</b> | 26.6 (900)   |

#### Mechanical and Physical Properties

| 0° / 90°       | Ultimate Tensile Strength <sup>1</sup> $f_{tu}$<br>ksi (MPa) | Modulus of Elasticity <sup>1</sup> $E_f$<br>ksi (GPa) | Ultimate Tensile Strength per Unit Width $p_{tu}$<br>kips/in (kN/mm) | Tensile Elastic Modulus per Unit Width $E_{t_f}$<br>kips/in (kN/mm) | Ultimate Strain at Rupture $\epsilon^*_{tu}$<br>in/in (mm/mm) |
|----------------|--|---|--|---|---|
| Average Values | 100 (0.69)   | 3,450 (23.8)  | 4.0 (0.69)   | 138 (23.8)  | 0.029 (0.029)   |
| Design Values  | 60 (0.41)  | 2,070 (14.3)  | 2.4 (0.41)   | 82.8 (14.3)   | 0.029 (0.029)   |

<sup>1</sup>ASTM D3039

**Packaging:** 8-inch (200 mm) width x 200-ft (61 m) length standard. Custom widths and lengths are available.

## HOW TO USE

**Preparation.** Protect the work area from standing water and inclement weather. Surfaces may be damp. Surfaces must be clean and sound. Spalling or other damaged substrate must be removed to solid material. Laitance must be removed. Grinding, chipping, scarifying, shot blasting, sand blasting, or water jet are all acceptable methods. For concrete and masonry applications, patch all uneven surfaces with Fortec #4550 LPL or #1276 Hi-Modulus Fiber Matrix epoxy resins. Broadcast silica sand on patches to avoid amine blush. Use oil-free compressed air to remove any dust debris immediately prior to application of epoxy resins. Keep Fortec 5680-BD Kevlar® from contamination. Store in a clean and dry area away from direct sunlight. Keep in original packaging until installation and protect from physical damage. Remove dust, dirt, and any other foreign materials. Remove water, grease, wax, oil or any other liquids with an appropriate solvent.

**Cutting.** Fortec 5680-BD Kevlar® fabric may be cut to a desired length with sharp scissors or a sharp utility knife. Dull tools tend to fray the ends of the product and should be avoided. Do not cut with circular or reciprocal saws.

**Epoxy Resin.** Fortec Lo-Mod 526 Flexible epoxy resin is recommended for all applications.

**Applications.** Horizontal and vertical applications may use either the dry or wet lay-up techniques. The wet lay-up technique using an automated impregnator will provide best results for overhead applications. An automated impregnator will typically provide more uniform application of resin using less resin, and improved results with fewer voids and less waste.

**Dry Lay-Up Application.** Apply resin to the substrate at a uniform rate of approximately 45 ft<sup>2</sup>/gal (35 mils). Coverage yield will vary with substrate roughness. Using gloved hands and a plastic laminating roller, press Fortec 5680-BD Kevlar® fabric into the resin pressing out any wrinkles and air voids. Allow the resin to squeeze through the grid to assure a proper bond. For a single grid layer, apply a epoxy resin top coat at a rate of approximately 160 ft<sup>2</sup>/gal (10 mils) while the base resin is still within its working limit (depending on temperature) and smooth for a finished appearance. If more than one layer of Tow Sheet textile is used, apply intermediate epoxy resin layers at a rate of approximately 100 ft<sup>2</sup>/gal (15 mils). A good measure for dry lay-up applications will use approximately twice the weight of resin to textile. After cure, perform sounding to locate any voids. Inject epoxy resin as needed to fill all voids.

**Wet Lay-Up Application.** Prior to applying the wetted Fortec 5680-BD Kevlar® Fabric, apply Fortec Lo-Mod 526 Flexible epoxy resin at a rate of approximately 160 ft<sup>2</sup>/gal (6 mils) to a prepared substrate to seal the surface and to provide a tacky surface to apply the textile. Resin will tack at 30 minutes at 70 °F. Saturate and infuse the 5680-BD Kevlar® Fabric with Fortec Lo-Mod 526 Flexible epoxy resin. For uniform application, the resin infusing process should be completed using an automated impregnator. Apply the saturated 5680-BD Kevlar® Fabric textile to the sealed substrate and press out any wrinkles and air voids with a plastic laminating roller. Apply additional saturated 5680-BD Kevlar® Fabric textile while the previous layer is still within its resin working limit if multiple layers are desired. Finally, apply a top coat of epoxy resin a rate of approximately 160 ft<sup>2</sup>/gal (10 mils) and smooth for a finished appearance. After cure, perform sounding to locate any voids. Inject epoxy resin as needed to fill all voids.

**Surface Coating.** Because Kevlar® and all other aramid fibers absorb and are degraded by ultraviolet light, the finished Fortec 5680-BD Kevlar® system must be protected from UV light. Fortec 105 Superstick Hi-Build 100% epoxy is an excellent, corrosive resistant coating designed for this application. Apply Fortec 105 Superstick Hi-Build as directed.

**Qualifications.** Each structural and life safety application requires the design and certification of a licensed, professional engineer.

**Cautions** An externally applied Kevlar® and epoxy system is a vapor barrier. Consult with a licensed, professional engineer to evaluate results of encapsulating porous substrates. Installation should be performed only by a Fortec trained and approved installer. Caution must be used when handling Fortec 5680-BD Kevlar® Fabrics. As with any cutting and adhesive operation, proper eye protection should be used. Always follow OSHA and site safety requirements.

---

**Keep Out Of Reach of Children - Keep Container Tightly Closed – Not For Internal Consumption – For Industrial Use Only**

The information contained herein is included for illustrative purposes only and is, to the best of our knowledge, accurate and reliable. Fortec cannot however under any circumstances make any guarantee of results or assume any obligation or liability in connection with the use of this information. As Fortec has no control over the use to which others may put its product, the products are to be tested to determine if suitable for a specific application and to verify if our information is valid for a particular application. Responsibility remains with the specifier, contractor, installer, user, and owner for the design, application and proper installation of each product. Fortec reserves the right to change the properties of its products without notice. **Prior to each use of any Fortec product, the user must always read, understand, and follow the**

warnings and instructions on the product's most current Technical Product Data Sheet, product label and Material Safety Data Sheet available at [www.FortecStabilization.com](http://www.FortecStabilization.com) .

**LIMITED WARRANTY, DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY:** Fortec Stabilization Systems. ("Seller") warrants its products to be free of defects in material and workmanship for a period of ONE (1) YEAR from the date of purchase. Under this Warranty and limitation of liability, Fortec will provide, at no charge, product and containers to replace any product. Fortec's obligation hereunder, is limited solely to such replacement and is subject to receipt by Fortec of a written notice of any alleged defects, promptly after discovery thereof, within the warranty period. Absence of such notice in writing during the warranty period constitutes a waiver of all claims with respect to such product. This Warranty excludes discoloration or change in visual appearance of the product due to the accumulation of or streaking of dirt or other airborne materials deposited on the surface from the atmosphere. Fortec does not warrant the color-fastness of any product unless specifically stated otherwise. Before application, the Buyer shall determine the suitability of the product for the intended use and Buyer assumes all risks and liabilities whatsoever in connection therewith. THIS WARRANTY IS MADE IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IT IS UNDERSTOOD AND AGREED THAT BUYER'S SOLE REMEDY, AND THEREFORE SELLER'S LIABILITY, WHETHER IN CONTRACT, TORT, WARRANTY, IN NEGLIGENCE, OR OTHERWISE, SHALL BE LIMITED TO THE RETURN OF THE PURCHASE PRICE PAID BY PURCHASER OR REPLACEMENT OF ANY DEFECTIVE GOODS SOLD BY SELLER AND UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES. THE PRICE STATED FOR THE GOODS IS A CONSIDERATION IN LIMITING SELLER'S LIABILITY. The terms of this paragraph may not be orally modified. THERE ARE NO WARRANTIES, WHICH EXTEND BEYOND THE FACE HEREOF.



800-207-6204 <http://www.FortecStabilization.com> 184 West 64<sup>th</sup> Street, Holland, Michigan 49423 USA

Made in MICHIGAN