

# DUKTIL™ FRP ANCHOR PLATE

## Externally Bonded FRP Anchor System

### DESCRIPTION

The DUKTIL FRP Anchor Plates are a hybrid metal/FRP engineered assembly that provides an alternate load delivery from externally bonded FRP into concrete. The system bonds directly to the LOCTITE Tyfo® Composite Systems using LOCTITE Tyfo S epoxy and connects to concrete via HILTI®'s KBTZ2 wedge anchors or KH-EZ-C countersunk screw anchors.

### USE IN INFRASTRUCTURE

The DUKTIL FRP Anchor Plate systems are installed to improve anchoring and the global performance of various FRP designs.

### ADVANTAGES

- ICC-ES listed product
- System-compatible anchoring designs
- Easily incorporates into wet layup applications
- Pre-fabricated – No onsite fabrication required
- Easily inspected at any time during or after the installation

### PACKAGING

System will be delivered as a 6-inch by 6-inch plate and delivered in 50 plates per Package.

### SHELF LIFE

Anchor Plate – ten years in proper storage conditions.

### STORAGE CONDITIONS

Store plate packages in a flat surface and at temperatures below 100°F (38°C). Avoid moisture and water contamination.

### Typical Properties

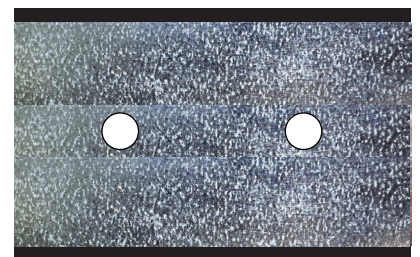
Property	Typical Test Value
Length	6in (150mm)
Width	6in (150mm)
Thickness	0.13in (3.3mm)
Density	0.58 lb/Plate (260g/Plate)

### Typical Design Properties

System	Test Method	Typical Expected Capacity	Lower Bound Capacity
D2.5 Plate (Two ½" dia. Wedge Anchors 4.5in embed.)	Shear	26.7kip/plate	21.2kip/plate
D8.25 Plate (Six 1/4" dia. Anchor Screws 2.5in embed.)	Shear	30.8kip/plate	27.2kip/plate



Duktıl D8.25 FRP Anchor Plate



Duktıl D2.5 FRP Anchor Plate

## DESIGN OF THE DUKTIL FRP ANCHOR PLATE

### DESIGN

DUKTIL FRP Anchor Plates are designed to meet specific project criteria dictated by the engineer of record and any relevant building codes and/or guidelines. DUKTIL FRP Anchor Plates are incorporated for additional development, anchorage, or end detailing of strengthening FRP systems. The type of the DUKTIL FRP Anchor Plates and number of anchors are directly correlated to the required anchorage demand. The design shall be based on the amount of tension force transferred as described in the Fyfe Design Manual for the LOCTITE Tyfo Systems. Fyfe's engineering staff may provide preliminary design, specification wording and application details based on the project requirements.

# DESIGN OF THE DUKTIL FRP ANCHOR PLATE

## INSTALLATION

The DUKTIL FRP Anchor system is to be installed by Fyfe trained and certified applicators in accordance with the installation manual, Fyfe's quality control manual, and project specifications.

### Drilling

Drill anchor holes with rotary hammer drill and carbide bit to the required depth. Holes may be deeper to account for residual dust.

### Cleaning

Plate must be free of dust and visible oils. Clean as required. Vacuum the concrete dust from around the anchor hole. If required to minimize hole depth use a vacuum collection tube to clean inside the anchor hole.

### Anchor DUKTIL D2.5- FRP ANCHOR

Typically preferred for a vertical or for an overhead applications. The system uses two 1/2" dia. HILTI KB-TZ Wedge anchors with a 4.5" minimum embedment. Drilling and installation of the wedge anchors may be installed prior to wet layup frp application. Wet layup may then be split around bolts as required. Dukttil plate and bolts are to be installed at the time of wet layup installation.

### Anchor DUKTIL D8.25- FRP ANCHOR

Typically preferred for horizontal applications. The Dukttil D8.25 plate has 8 holes but only requires six 1/4" dia. HILTI KH-EZ-C countersunk screws with a 2.5" minimum embedment. The Dukttil plate is to be installed during wet layup installation. Drilling and installation of screws is typically done a min of 12hrs after wet-layup placement.

## PROTECTIVE COATINGS

Apply a final coat of thickened LOCTITE Tyfo S Epoxy to all exposed surfaces if required for additional environmental protection.

## LIMITATIONS

The system has been designed to work with the LOCTITE Tyfo Composite Systems. Given that performance is dependent on the bonding through LOCTITE Tyfo S epoxy, all applicable limitations apply to the installation of this product. Refer to the LOCTITE Tyfo S epoxy data sheet for additional information.

# CAUTION!

## CLEANUP

Collect with absorbent material. Dispose in accordance with local disposal regulations. Uncured material can be removed with approved solvent. Cured materials must be mechanically removed.

## HAZARDS

Consult the Safety Data Sheets (SDS) for associated hazards related to the LOCTITE FRP Composite Systems. SDS will be supplied upon request. Carbon fiber is electro-conductive.

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