Leviat
A CRH COMPANY

Thermomass TL Series Connectors

Division 3

Manufacturer:

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Product Description

Thermomass TL Series fiber-composite connectors are designed for the construction of vertically cast concrete walls and serves two critical purposes. During construction, the connectors locate the insulation within the wall, allowing both concrete layers to be placed to the specified thickness. During transportation and service, they transfer lateral and gravity loads from the fascia concrete layer to the structural concrete layer. The incredible tensile strength and low thermal conductivity of the patented TL Series allows the insulation to extend edge-to-edge and creates a thermally efficient concrete sandwich wall.

Composition and Material

The TL Series includes both the connectors and rigid insulation with pre-installed twist-lock retainer rings. The connectors are comprised of E-CR glass fiber and cured vinyl ester resin, as well as a polymer wing that controls the position of the connector within the twist-lock retainer ring. When installed, the connectors position the insulation between forms during concrete placement.

Types & Sizes

TL Series connectors are designed to allow rigid insulation to span the entire wall area, and are intended to be securely positioned across the full thickness of the wall.

The overall length of the TL Series connector is dependent upon the wall thickness, the individual concrete wythes and the depth of architectural features, such as form liners. The retainer rings are typically spaced 12 inches (300 mm) on center in the rigid insulation. The minimum insulation thickness is 2 inches (50 mm) and the maximum single sheet thickness is 4 inches (100 mm). The insulation sheet size varies based upon the contractor's preferred forming method. For example, with hand-set forms, a 36 inches (90 cm) wide x 120 inches (300 cm) tall sheet is typical. For larger forming systems, 48 inches (120 cm) wide x 96 inches (240 cm) tall is common. The minimum concrete wythe thickness is 3 inches (75 mm). The maximum concrete thickness is driven by the forming system and is not limited by the TL Series.

Please contact Leviat for all available connector sizes and insulation types.

Installation & Application

TL Series connectors are utilized in Thermomass System CIP and System MP for cast-in-place and modular precast construction. In either application, the connectors are inserted in the rectangular hole in the retainer ring until the wing comes to rest against the face of the assembly. Using the wing for leverage, the connector is turned 90 degrees until an internal detent in the retainer stops the rotation.

Using the notches on the fiber-composite connectors, structural reinforcing bars can be tied in place. Alternatively, the connectors can be pre-installed and the insulation system can be secured within the reinforcing cage before installation in the form.

Material & Physical Properties	Value
Tensile Strength	869 N/mm^2 (120 ksi)
Elongation at Fracture	2.1%
Flexural Strength (Strong Axis)	827 N/mm^2 (120 ksi)
Compressive Strength (12.7 mm (½") Specimen Long)	465 N/mm^2 (67.4 ksi)
Flexural Elasticity Modulus	32,800 N/mm^2 (4,764 ksi)
Tensile Elasticity Modulus	40,000 N/mm^2 (5,800 ksi)
Rockwell Hardness E, minimum	70
Cross Section	5.7 x10 mm (0.22 x 0.39 in)
Cross Sectional Area at Least Section	50.5 mm^2 (0.078 in^2)
Moment of Inertia at Least Section	243 mm^4 (0.0005858 in^4)

Table 1: Physical Properties of Thermomass TL Series wythe connectors

Technical Data

Thermomass TL Series connectors have been exhaustively tested since their introduction in the 1980s. When tested according to the standards below, the connectors exhibit the properties and characteristics indicated in Table 1 above.

- ASTM C581 Standard Practice for Determining Chemical Resistance of Thermosetting Resins Used in Glass-Fiber-Reinforced Structures Intended for Liquid Service.
- ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- ASTM D3039/D3039M Standard Test Methods for Tensile Properties of Polymer Matrix Composite Materials.
- ASTM E488 Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements.

Warranty

Thermomass warrants that the connectors will not vary by more than 10% from the performance specifications specified herein. All other warranties, expressed or implied, including the warranty of merchantability and fitness for a particular purpose, are excluded. No endorsement or promotion of any particular system or contractor is intended. Leviat makes no representation as to the performance of any wall constructed using Thermomass TL Series fiber-composite connectors.

More information:

For more information about Leviat's Thermomass concrete insulation products, installation guides, or warranty details, please call (800) 232-1748 or visit www.thermomass.com.

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