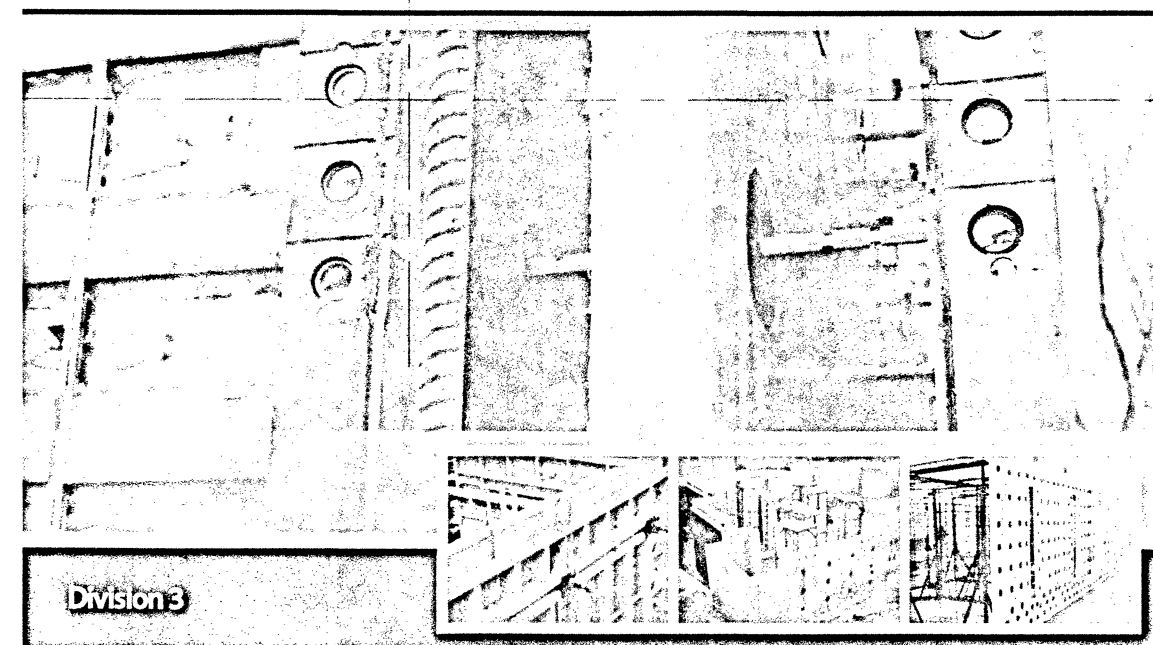


1 Upper Concrete Layout
1/4" = 1'-0"

Thermomass® | TL Series



Manufacturers:
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Boone, IA 50036
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Product Description:
Thermomass TL Series fiber composite connectors are designed for the construction of vertically cast concrete walls and serve as critical supports. 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 facer concrete layer to the structural concrete layer. The accessible steel strength and low thermal conductivity of the patented TL Series allow the insulation to extend edge-to-edge and create a thermally efficient concrete sandwich wall.

Composition and Material:
The TL Series includes both the connectors and the insulation with pre-installed bond breakers. The connectors are composed of:
a) 1/8" glass fiber and cured vinyl ester resin.
b) A polymeric ring that controls the position of the connector within the barrel lock and center ring. When installed, the connectors position the insulation between forms during concrete placement.

Types & Sizes:
The TL Series is designed to allow rigid insulation to span the entire wall area, and the connectors 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 joints. The relative wythe are typically spaced 12" (300 mm) on center in the rigid insulation. The minimum insulation thickness is 2" (50 mm) and the maximum single sheet thickness is 4" (100 mm). The insulation sheet size varies based upon the contractor's preferred forming method. For example, with hand set forms, a 30" (900 mm) wide x 120" (3000 mm) tall sheet is typical. For larger forming systems, 48" (1200 mm) wide x 96" (2400 mm) tall is common. The minimum concrete wythe thickness is 3" (75 mm). The maximum concrete thickness is driven by the forming system and is not limited by the TL Series.

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

Installation & Application:

TL Series connectors are utilized in Thermomass System CP 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 face composite connectors, structural reinforcing bars can be tied in place. Alternatively, the connection can be pre-installed and the insulation system can be secured within the reinforcing cage before installation in the form.

Technical Data:

Thermomass TL Series connectors have been exhaustively tested since their introduction in the 1990s.

- ASTM C581 Standard Practice for Determining Chemical Resistance of Thermosetting Resins Used in Glass Fiber Reinforced Structures Intended for Liquid Service.
- ASTM D709 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

Material & Physical Properties	Value
Tensile Strength	869 N/mm ² (126 ksi)
Elongation at Fracture	2.1%
Flexural Strength (Strong Axis)	827 N/mm ² (120 ksi)
Compressive Strength (12.7 mm (1/2") Specimen Long)	465 N/mm ² (67.4 ksi)
Shear Strength	400 N/mm ² (58 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 x 10 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 (0.000588 in ⁴)

Table 1: Physical Properties of Thermomass TL Series wythe connectors

- 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. Thermomass makes no representation as to the performance of any wall constructed using Thermomass TL Series fiber composite connectors.

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PROJECT NAME
Caementicium
CASE STUDY

PROJECT ADDRESS
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Lee's Summit, MO

CLIENT CONTACT
Meredith & Shane Veritasi
816.383.0100
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ISSUED FOR
Permit Set

SHEET NAME
Upper Concrete Layout

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
CODES ADMINISTRATION
LEE'S SUMMIT, MISSOURI
PROJECT NO.
1915
ISSUE DATE
12/19/2019

SHEET NO.
A2.4
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REVISION DESCRIPTION DATE

For more information about Thermomass, please call us at 800-232-1748 or visit us online at www.thermomass.com