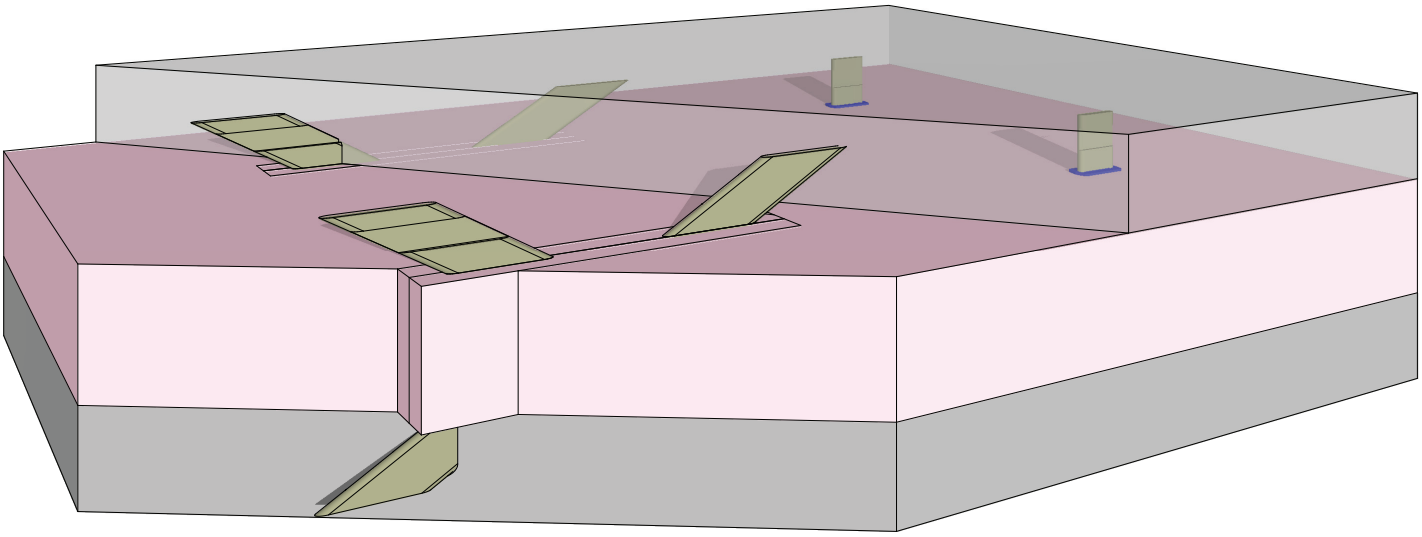
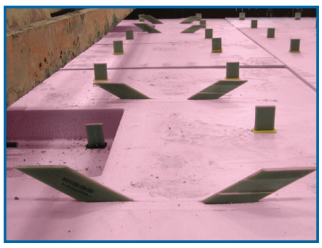
Thermomass® | X Series



Division 3



Distributor:

Construction Systems Marketing Ltd.

Postfach 3075
64625 Bensheim, Germany

Tel.: +49-6251-790890
Fax: +49-6251-790892

e-Mail: info@thermomass.de
Internet: www.thermomass.de,
www.megablock.de

Product Description:

Thermomass X series fiber-composite connector is a load transfer device designed to work in unison with Thermomass CC series connectors in the construction of structurally composite (System SC) sandwich wall panels and Thermomass MC/MS series connectors in the construction of non-composite (System NC) concrete sandwich wall panels. The X series wythe ties allow a wall fabricator to suspend the fascia wythe of non-composite sandwich wall panels, insulated with more than 4" (100mm) of insulation, or create highly composite, load bearing or cladding sandwich wall panels.

Composition & Materials:

Thermomass X series connectors include structural wythe ties composed of E-CR glass fiber and cured vinyl ester resin, as well as an insulating lock box capable of setting the depth of the fiber-composite wythe ties. The wythe ties are manufactured with a vinyl ester matrix which impregnates the fiber strands, thereby creating a composite material that has been tested and shown to be resistant to chemical attack. The insulating lock box is designed to be a positioning mechanism, with each lock box designed to match the thickness of the integral insulation. To achieve this unique design, the fiber-composite wythe ties are inserted through pre-cut slots in the insulation lock box until they are locked in at the proper depth.

Installation & Application:

The X series wythe ties are designed for use in both site-cast tilt-up and plant pre-cast applications. In either application, the connectors are installed through the pre-cut slots in the insulation lock box. The wythe ties should be pushed through the holes until the locks snaps in at the proper depth. For complete installation instructions, please contact Thermomass.

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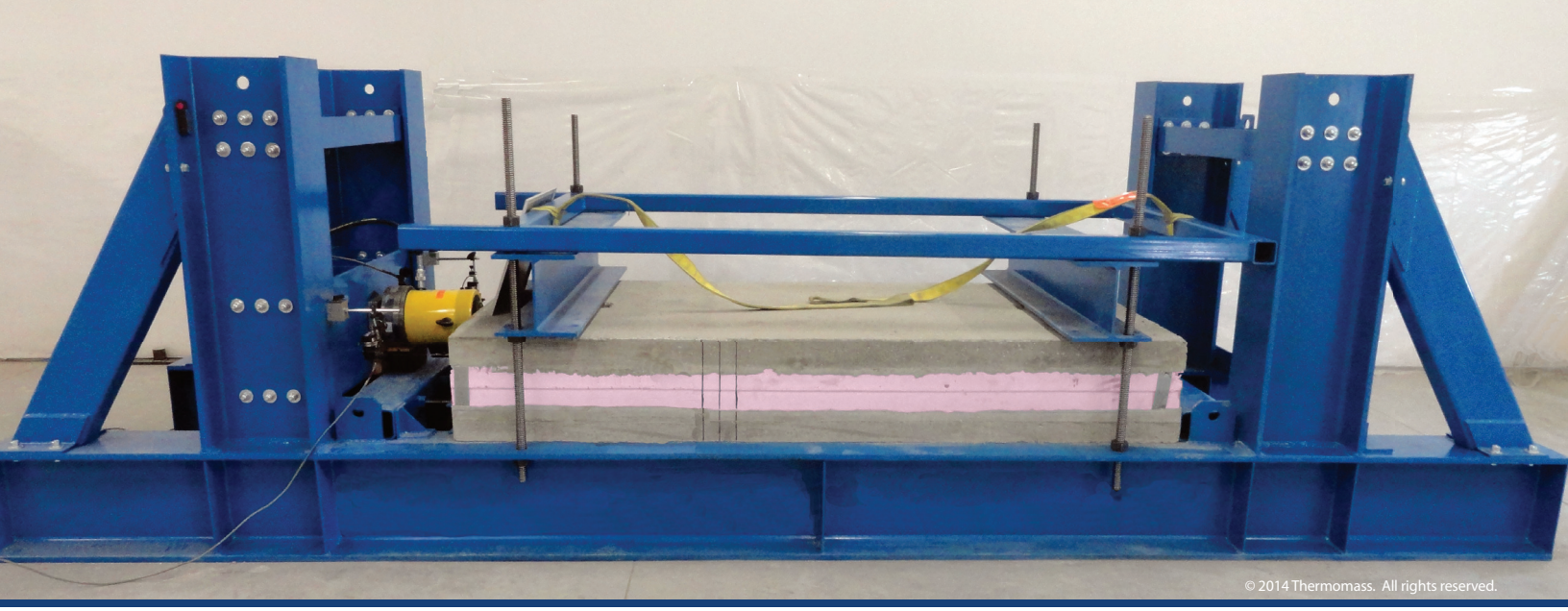

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Sizes:

The X series wythe ties provide 2" (50 mm) of embedment parallel to the concrete surface in each wythe of concrete. The connector can be used in any insulation thickness from 2" (50 mm) to 6" (150 mm) for System SC and up to 8" (200 mm) for System NC. The minimum concrete wythe thickness for System SC is 3" (75 mm). The minimum concrete wythe thickness for System NC is 2 3/8" (60 mm). The overall wythe tie lengths are determined based on the insulation thickness.

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Warranty:

Thermomass warrants that the wythe ties will not vary by more than 10% from 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 panel system or fabricator is intended. Thermomass makes no representation as to the performance of any panel fabricated using Thermomass X series fiber-composite wythe ties. The concrete wall panel fabricator is solely responsible for the performance of the building system panel. For further warranty information, please contact a Thermomass representative.

Technical Data:

Large scale samples were tested by an independent testing laboratory in order to determine shear capacity of the Thermomass X series wythe ties.

The wythe ties exhibit the properties and characteristics indicated in Table 1 when tested.

-ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

-ASTM D3039/D3039M Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials

-ASTM E488 Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements

Table 1: Physical Properties of Thermomass X Series Connectors

	Results		Concrete strength	Results
Material Properties		**Physical Properties**		
Tensile strength	126.1 ksi (870 N/mm^2)	Wythe tie size	N/A	1.575 x 0.315 in (40 x 8 mm
Elongation at fracture	2.1 %	Cross sectional area	N/A	0.475 in^2 (306.2 mm^2)
Flexural strenth (strong axis)	116.1 ksi (801 N/mm^2)	Moment of inertia of each bar	N/A	0.0904 in^4 (37,645 mm^4)
Compressive strength (12.7 mm (1/2") long specimen)	67.4 ksi (465 N/mm^2)			
Shear strength	58 ksi (400 N/mm^2)	Ultimate shear capacity of one X connector with 2 in (50 mm) foam	5,000 psi (35 MPa)	12,200 lbs (54.65 kN)
Flexural elasticity modulus	4,764 ksi (32,800 N/mm^2)			
Tensile elasticity modulus	5,800 ksi (40,000 N/mm^2)	Ultimate shear capacity of one X connector with 6 in (150 mm) foam	5,000 psi (35 MPa)	12,800 lbs (56.93 kN)
Rockwell "E" Hardness, minimum	70			

*Patent Pending Worldwide

For more information about Thermomass, please call us at + 49 (6251) 798090 or visit us online at www.thermomass.de.