



112 Fourth Street • P.O. Box 480
Luxemburg, WI 54217-0480
Toll Free: 1-800-666-5207 Fax: 920-845-2335
www.trimaxbp.com

Technical Data Trimax Structural Lumber

DESCRIPTION

Trimax's Structural Lumber is a high-performance construction material consisting of a patented formula of recycled plastic, fiberglass, and selective additives. The plastic raw material utilized in Structural Lumber is derived from post-consumer bottle waste such as milk and detergent bottles. This material is compounded into a consistent, reinforced plastic timber product using reactive compatibilizers, creating a strong and stable plastic/fiber matrix.

Structural Lumber is a cost-effective and high-performance timber product for marine construction and commercial applications. It has exceptional resistance to marine borers, salt spray, termites, corrosive substances, oil and fuels, fungi, and other environmental stresses. It does not absorb moisture; therefore, it will not rot, splinter or crack.

Structural Lumber products are manufactured in many dimensional lumber and timber sizes, particularly in large cross sections. Deck and dock planks, sheet piling, wale timbers, camels, fenders, and piles are all available from Trimax Building Products. The product comes in almost any transportable length and is standard in Steel Gray. It can be special ordered in colors to complement HDPE.

Structural Lumber has excellent weathering resistance; however, as with many other polyolefins, the material will fade over the service life of the product. The product requires no waterproofing, painting, staining, or similar maintenance when used in many exterior applications.

BASIC USES

Structural Lumber products are used in a variety of commercial and marine applications and are often the product of choice for exterior applications where resistance to salt and fresh water, marine borers, and other environmentally harsh conditions is required. Due to the unique composition of Trimax Structural Lumber, the product can be used for a number of structural members in commercial and shoreline timberwork. It is well suited for:

Dock and deck planks	Wale timbers
Sheet piling	Camels
Pilings	Fenders
Channel markers	Posts, beams, and joists

Mechanical Properties @ 21°C	Test Method	Average Value
Density, kg / m ³	ASTM D6111	748-831
Modulus of rupture (ultimate)	ASTM D198	20 Mpa
	ASTM D6109	20 Mpa
Modulus of elasticity (chord modulus method)	ASTM D198	2896 Mpa
	ASTM D6109	2241 Mpa
Compression parallel to grain (ultimate)	ASTM 198	12 Mpa
Compression perpendicular to grain (ultimate)	ASTM D143	5 Mpa
Shear parallel to grain	ASTM D143	5.1 Mpa
Tension parallel to grain (ultimate)	ASTM 198	8.7 Mpa
Screw withdrawal (N per 1mm of depth)	ASTM D1761	66.53
Coef. Thermal expansion mm/mm/°C	ASTM D6341	0.0000612
Coef. Of friction	Tribometer (dry)	0.61
Flame Spread	ASTM E84	"Class C"

LIMITATIONS

This type of plastic lumber product has a significantly higher modulus of elasticity (MOE) than conventional forms of plastic lumber. However, the MOE of Structural Lumber is lower than wood timber in good conditions; therefore, it is important to evaluate the suitability of this product for specific uses. It is recommended that an engineering study be performed prior to use of Structural Lumber products for structural applications. Building code regulations vary by region, so all users should consult local building and safety codes prior to installation for specific requirements.

INSTALLATION

Structural Lumber can be fabricated and installed with the same tools used to work wood lumber. The product will cut and drill very cleanly, as there is no grain to split or chip, or knots to bind tools and bend fasteners. It is reinforced with glass fibers, and precautions should be taken when fabricating this product. Maintain adequate ventilation when generating fabrication dust, and personal respiratory protection such as dust masks should be employed during fabrication, as well as safety glasses or goggles.

Pilings and sheet pilings products can be driven with pile-driving equipment such as vibratory hammers, land-based or barge-mounted drop hammers, or waterjets. For sheet piling installations, backfill soils should always be analyzed to determine that the proper amount of force would be exerted on the sheet piling system. For shoreline timberwork applications, Structural Lumber is used with conventional hardware such as stainless or galvanized bolts, tie rods, nuts, washers, and anchor systems.

When using Structural Lumber for decking, joist spacing should be in accordance with the span tables. Multiple-span data at 49°C or less are presented here:

Structural Allowable Live Load (kpa), Multiple Span, at 49°C or less			
Deflection Limit	305 mm Span	406 mm Span	610 mm Span
Structural Decking Board <i>t</i> = 38 mm			
L / 360	105	44	13
L / 240	144*	67	20
L / 180	144*	77	26

* Load limited by allowable stress of 6.9 Mpa.

Note: Table provides limiting uniform load present on three spans in (kpa) based on noted deflection criteria.

Recommended standard is to limit live load deflection for floors to L / 360 and to limit total deflection (dead + live load) to L / 240. Designers may choose less restrictive or more restrictive criteria for a given application. Except for very unusual and heavy loading, deflection criteria will control allowable plank span.

Deflection determination is based on a modulus of elasticity equal to 2241 Mpa at 21.1°C.

