



Approved Quality Management System
AS/NZS ISO 9001:2008
Lloyds Register-Certificate
No. MEL 0927759

Technical Data Sheet
C-GRID® 450

Description:	C-GRID® 450 is a high strength carbon-fiber/epoxy grid for structural repairs of timber piles. C-GRID® 450 requires less grout fill, leading to a much lighter structure when compared to typical steel reinforced repairs.
Composition:	Composed of carbon-fiber and epoxy resin.
Characteristics:	<ul style="list-style-type: none"> • Provides double the strength of original timber pile • Reduced weight when compared to steel reinforced repairs • Lightweight and easy to install • High tensile strength and modulus • Requires significantly less grout than steel reinforced repair • Requires only 6.4 mm (1/4") grout cover • C-GRID® 450 has excellent bond to grout • C-GRID® 450 geometry is longitudinal and transverse 60 mm x 60 mm spacing • Independently tested by Texas A&M University, Department of Civil Engineering, Structural and Materials Testing Laboratory
Uses:	<p>C-GRID® 450 is a component of the Denso SeaShield 400 System.</p> <p>Denso SeaShield Series 400 encapsulation system protects timber piles from aggressive saltwater environments and marine borers, as well as increase the strength of deteriorated piles with a durable, lightweight and non-corrosive reinforcement. This system can be used for splash or tidal zone protection of marine timber piles which are subject to organism attack in sheltered environments.</p>
Surface Preparation & Application:	<p>The C-GRID® 450 shall be unrolled and cut using tin snips or other suitable method. The cut width of C-GRID® 450 shall be determined by including enough material to be imbedded within the grout and a 150 mm (6") overlap along vertical seam. The grid will require a minimum of 6 mm (1/4") grout cover.</p> <p>Locate the C-GRID® 450 between the elevations indicated in the specification and drawings (Refer to Denso SeaShield 400 Application Instructions). The C-GRID® 450 shall be wrapped around the timber pile with a minimum 150 mm (6") overlap along the vertical seam. Use nylon zip ties, plastic clips or other plastic accessories to secure vertical seam and maintain the position of the grid during the pumping of grout.</p> <p>On long length repairs, which require more than one panel of grid, the C-GRID® 450 shall be overlapped 150 mm (6") above or below the first panel of grid. The fiberglass jacket shall be installed around the pile and C-GRID® 450.</p> <p>Please refer to Denso SeaShield Series 400 Application Instructions for complete installation guidelines.</p>
Available Sizes:	Arranged by request
Product Code:	Product code: S985318



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Physical Properties:	Property	Unit	Longitudinal	Transverse
	Individual strand cross-sectional area	mm ²	2.07	2.07
	Average number of strands per unit width	strands/m	16.6	16.6
	Area of strands per unit width	mm ² /m	50.9	50.9
	Strand tensile strength	kN	3.7	3.2
	Grid tensile strength per unit width	kN/m	66.4	58.4
	Tensile modulus of elasticity	MPa	234,500	234,500
	Elongation at break	%	0.99	0.94

Notes:

1. Centerline-to-centerline spacing between strands is nominal and based on the average number of strands per unit width. Actual spacing may vary by ± 2.5 mm.
2. The longitudinal direction is in the direction of the roll and the transverse direction is across the width of the roll. For example, if a roll of C-GRID® 450 is 1.2 m wide, the carbon strands in the transverse direction are 1.2 m in length. If a roll of C-GRID® 450 is 457 m long, the longitudinal strands are 457 m in length.
3. Individual strand cross-sectional area is normalized to the cross-sectional area of the fibers in accordance with ACI 440.2R. The actual measured thickness and width are larger and shall not be used for design purposes.
4. Reported tensile strengths are typical or average properties based on testing. Tensile modulus values are based on properties reported by the carbon fiber supplier. C-GRID® 450 exhibits linear elastic behaviour so failure strains are estimated using Hooke's Law.
5. C-GRID® 450, utilised by Denso (Australia) Pty Ltd in the SeaShield Series 400 System, is protected under the following US and European Patents: 6,263.629; 5836,715; 6,123,879;6,454.889;6,632,309;0861353;1094171.