



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

Technical Data Sheet
SEASHIELD 510
UNDERWATER GROUT (Australian)

Description:	A high performance underwater pumpable, cementitious based, non shrink grout. Specially formulated for minimal washout and is salt water resistant.																		
Composition:	A specific blend of Portland cement, high quality graded aggregates and additives designed for maximum fluidity and strength.																		
Characteristics:	<ul style="list-style-type: none"> Shrinkage compensated Does not wash out in water/ displaces water Gaseous expansion while in plastic state eliminates shrinkage and settlement Grouting from 20 mm to 175 mm in a single application Non-metallic - eliminates staining Pumpable for larger applications non shrink for maximum durability and adhesion Dimensionally stable Water requirement (L/bag): 3.0-3.4 (trowellable), 3.6-4.0 (flowable) Expansion characteristics (plastic state): Expansion 1-2% Expansion time (plastic state): 15 min (start), finish (3 h) <table style="margin-left: auto; margin-right: auto; border: none;"> <thead> <tr> <th colspan="3" style="text-align: center;">Yields</th> </tr> <tr> <th style="text-align: left;">Consistency</th> <th style="text-align: center;">Trowellable</th> <th style="text-align: center;">Flowable/pourable</th> </tr> </thead> <tbody> <tr> <td>Liters of water per 20 kg bag</td> <td style="text-align: center;">3.0-3.4</td> <td style="text-align: center;">3.6-4.0</td> </tr> <tr> <td>Yield per bag (L)</td> <td style="text-align: center;">10.6</td> <td style="text-align: center;">11.0</td> </tr> <tr> <td>Fresh wet density (kg/m³)</td> <td style="text-align: center;">2220</td> <td style="text-align: center;">2190</td> </tr> <tr> <td>Bags required per (m³)</td> <td style="text-align: center;">94</td> <td style="text-align: center;">91</td> </tr> </tbody> </table>	Yields			Consistency	Trowellable	Flowable/pourable	Liters of water per 20 kg bag	3.0-3.4	3.6-4.0	Yield per bag (L)	10.6	11.0	Fresh wet density (kg/m ³)	2220	2190	Bags required per (m ³)	94	91
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Uses:	<p>Denso SeaShield 510 Underwater Grout is designed for underwater use or in tidal zones in applications requiring a non shrink, non metallic, washout resistant grout from 20 mm up to about 175 mm coating thicknesses.</p> <p>Used in underwater grouting of bridge columns, concrete pilings, concrete tanks, dam repairs, seawalls, piers and other marine structures, re-instatement of dam walls/wharf columns, anchor bolts filling, grouting underneath precast panels and concrete sections.</p>																		
Surface Preparation & Application:	<p>The substrate must be clean and sound, free of all marine growth, foreign material, including laitance or other surface contaminants. All loose material must be removed. Permanently immersed substrates should be sand blasted or cleaned with a high pressure water jet. Substrates in the splash zone or above can also be prepared by sand blasting or high pressure water jet. Scabblers or brush hammering may also be used.</p> <p><u>Mixing:</u> mix 3.6 - 4.0 L of fresh clean water per 20 kg bag of material to achieve flowable consistency of grout. Always add the grout powder to pre-measured water. Cold water is recommended. Water quantity is critical to obtaining uniform consistency. Excess water will cause grout to segregate and bleed. Mix for 3-5 mins until a consistent mix is obtained using a forced action mixer. For small quantities, an electric drill with a spiral mixing paddle is suitable. The speed drill should be approx. 500-600 rpm. DO NOT MIX BY HAND.</p>																		



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<p>Surface Preparation & Application: (continued)</p>	<p>Mix only what can be applied within the pot life period of approximately 20 minutes. Pass the mixed grout through a #4 sieve to remove any lumps immediately prior to placement.</p> <p><u>Placement:</u> place the Denso 510 UW Grout into the prepared area, ensuring intimate contact with the bonding surface. Continuous grout flow is required. The UW Grout should be poured or pumped into place through a flexible hose, which is a minimum diameter of 12 mm, into the lowest point of the form work. When commencing restrict the flow to prevent any air entrapment. The hose should be maintained at a minimum of 150 mm below the surface level of the grout in the formwork to optimise performance.</p> <p>The grout can be placed in thicknesses of up to 100 mm in one pour for above water applications. When under water up to 175 mm can be placed in one pour.</p> <p><u>Large volume applications:</u> for thicker applications, up to 250 mm above water and 500 mm below water Denso 510 UW Grout can be extended using clean rounded and well graded 9.5 to 12 mm aggregate up to 50% by weight of the grout. For such mixes a concrete agitator must be used. A positive displacement pump is recommended for large placement application. For large grout pours ensure that the grout is pumped from bottom upwards as this will minimise air entrapment and ensure complete void filling.</p> <p><u>Weather extremes:</u> in cold weather tidal applications exposed to air, protect the Denso UW Grout from freezing until it reaches 6.9 MPa. Do not allow repairs to freeze until the material has reached a minimum of 6.9 MPa compressive strength. This should occur within 24 hours.</p> <p>In hot weather applications above water level and exposed to air, keep the grout wet until final set time by covering with and maintaining wet cloths over the grout.</p> <p>Unrestrained exposed surface areas should be kept to a minimum.</p> <p>Contact Denso for special grout applications and placements</p>
<p>Recommended Temperatures:</p>	<p>Application: 10°C to 30 °C In instances where the temperature is greater than 30°C, grouting should be conducted early in the day or late in evening and sheltered from sunlight/heat Service: - 20 to 65 °C</p>
<p>Shelf Life: Storage:</p>	<p>≥ 9 months when stored in unopened bags. Large temperature differentials or high humidity can shorten shelf life. Store in a cool, dry area away from heat and direct sunlight.</p>
<p>Product code/ Available sizes:</p>	<p>S985222OZ: 20 kg bags</p>



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Physical Properties:	Test	Test Method	Units	Value
	Set Time @ 20°C, 50% RH Initial Set/Final set: (Trowellable) (Flowable)	AS 1012.18	hours	3.0 / 4.5 4.5 / 6.5
	Compressive Strength (@20°C, flowable) 1 day 3 days 7 days 28 days	AS 1012.9 and AS2073	MPa	> 20 > 30 > 40 > 55
	Flexural Strength (@20°C, flowable) 1 day 3 days 7 days 28 days	ASTM C348-86	MPa	> 1.5 > 3.5 > 8.5 > 9.5
	Bond Strength 7 days 28 days	ASTM C882- 1987	MPa	> 5.0 > 10
Limitations:	<p>Do not exceed recommended mix water amount. Use only clean mixing water. Denso UW Grout is a fast setting product, so mixing equipment should be cleaned with water as soon as possible.</p> <p>Contains Portland Cement and sand. Cement will cause irritation. Dust respirator, safety goggles and rubber gloves are recommended. Avoid prolonged contact with skin.</p> <p>In case of contact with eyes, immediately flush with water for at least 15 minutes and seek prompt medical attention.</p> <p>Do not wear contact lenses when working with this product. Do not take internally. Keep out of reach of children. Follow all precautions found in any available Safety Data Sheets, product labels and technical literature.</p>			
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