

# SeaShield™ Marine Systems

## SeaShield™ 550 Epoxy Grout (USA)

### Encapsulation and Repair Grout for Concrete, Timber and Steel

SeaShield™ 550 is a 3-component water displacing epoxy resin aggregate formulation which provides a durable, well bonded repair to concrete, timber and steel below water.

#### Uses

SeaShield™ 550 Epoxy Grout is designed for underwater application. Because of its relatively long pot life, it is easy to handle yet still provides high early strength.

It can either be placed by pouring into forms or pumped into place and is typically used for rebuilding piers, jetties and barrier walls. It is also very effective for chemical anchoring of bolts and anchors in rails, equipment bases and other structural applications.

Compliant to AS/NZS 4020:2005 for contact with potable water, up to an exposure rate of 8,400 mm<sup>2</sup>/L at 20°C.

#### Physical Properties

(unmixed) @ 25°C

##### Component "A" (resin):

Specific Gravity	1.13
Viscosity	700 cP
Colour	Clear
Ratio by Weight	66%

##### Component "B" (hardener):

Specific Gravity	0.96
Viscosity	400 cP
Colour	Amber
Ratio by Weight	33%

##### Component "C" (Aggregate):

Free Flowing Non-Dusting Powder	
Colour	Neutral

#### Mixing Ratios

For 5:1 Mixing Ratio - Hand Placing or Pumping for Aggregate

Aggregate Bag Weight	Solid to Liquid Ratio	A - Volume L	B - Volume L	Yield m <sup>3</sup>
22.7	5.0	2.7	1.6	0.01

These mix designs are given as a guide. Site temperature, material temperature, placing thickness may cause these to be amended. A trial mix should always be checked before proceeding.

**NOTE:** Component "C" (Aggregate) is a silica sand with a proprietary formula of fine and course grades. When fully cured, the epoxy resin is chemically bonded to the silica surface. This provides higher physical properties such as compressive tensile and impact strength.

#### Cure Schedule

Pot Life 200 g.	@ 77°F (25° C)	100 to 120 Minutes
Pot Life 200 g.	@ 100°F (38° C)	35 to 45 Minutes
*Tack-free time	@ 60°F to 80°F (16° C to 26° C)	10 to 20 Hours
*Tack-free time	@ 40°F to 59°F (4° C to 15° C)	20 to 40 Hours
Full cure	@ 60°F to 80°F (16° C to 26° C)	30 to 60 Hours
Full cure	@ 40°F to 59°F (4° C to 15° C)	+120 Hours

Cure time is considerably longer at colder temperatures.

**When mixed in 5 gallon (19 liter) pails, pot life could be shorter due to volume of material.**

*\*Based on 2 inch (50 mm) cubes.*

#### Recommended Temperatures

Application: 0°C, preferable 15°C to 30°C.

Service: -10°C to 65°C

Peak Intermittent Temperature: 75°C

#### Moisture Sensitivity

SeaShield™ 550 Epoxy Grout has good wet adhesion and good water displacement capabilities.

## Physical Properties of Cured System

(7 day cure @ 22°C) w/ 5:1 mix ratio)

Compressive Strength	ASTM C579	72 MPa
Tensile Strength	ASTM C307	15 MPa
Bond / Shear Strength	ASTM C882	13.7 MPa
Shrinkage	ASTM C531	0.07% Max.
Water Absorption	ASTM C413	0.45% Max.

## Surface Preparation

Surface preparation is very important and will improve the adhesion and extend the life of the grout:

- Must be cleaned free of old existing coatings. New concrete should hydrate a minimum of 5 days prior to placement of grout.
- Remove all oils, greases, dirt and wax solutions from surface.
- High-pressure waterblast, sandblast or shot blast surface to remove contaminants which will interfere with proper adhesion. Water blast shall be done at a minimum of 24 MPa.

## Mixing

Pour component "A" resin & component "B" hardener into a 5 gallon (19 L) pail. Agitate with a low speed mixer (200-300 rpm) for at least 3 minutes. When mixing, occasionally scrape the sides & bottom to make sure the entire product is mixed consistently. Slowly add the aggregate when mixing. The product is mixed properly when an even color is achieved without streaks and all the aggregate has been mixed with the resin.

## Yield

5:1 : 4.3 L of 550 A & B with 22.7 kg of Aggregate yields = 0.0130 m<sup>3</sup>

## Equipment

The epoxy grout shall be pre-mixed and pumped through a peristaltic pump or rotor stator pump. The equipment shall be capable of delivering mixed grout through hoses into the jackets at a rate 3.8 L per minute or greater. Contact pump equipment manufacture to make sure pump is capable of pumping epoxy grout.

Prior to using the pump, all hose lines shall be primed by circulating minimum 1 gallon (3.8 L) of the SeaShield™ Hose Lubricant. The maximum hose length should be no longer than 15 m. The minimum hose diameter should be 32 mm ID.

**INHERENT RISK:** *Purchaser assumes all risk associated with the use or application of the product, including any possible damage to equipment during pumping.*

## Application

### Placing by Hand Pouring into Forms

Once mixed, pour into formwork, ensuring it is well compacted, vibrating where possible. When using wood forms, use paraffin wax or polyethylene sheet to ensure easy formwork removal after pouring.

### Placing by Pumping

All three components shall be mixed thoroughly and shall be pumped through a minimum 1-1/4" (32 mm) hose ID with a suitable pump such as a peristaltic or rotor stator pump.

A bottom plug of 6" – 12" (150 - 300 mm) of epoxy grout shall first be pumped into the lowest injection port. The epoxy grout shall be allowed to cure before proceeding with subsequent lifts.

Once epoxy grout is cured the grout injection shall begin at the bottom injection port and proceed upwards. As the jacket is filled to each port, the lower port shall be capped off and repeated until the top of the jacket is reached. The injection process shall be continuous except when the injection hose is moved from port to port.

## Clean Up

Pumping equipment is best cleaned with SeaShield™ Equipment Cleaner or Simple Green Concentrate Cleaner. Recirculating using a sponge "pig" is always recommended and an efficient cleaning procedure.

## Storage

Store all 3 components in a dry, well-ventilated area at temperatures between 40°F (4.4°C) and 105°F (40.5°C). Shelf life of unopened components is 2 years.

It is recommended that SeaShield™ 550 A, B & C should be stored at 68°F to 86°F (20°C to 30°C) for 24 hours prior to use for optimum pumping and productivity.

## Packaging

(5:1 Ratio)

SeaShield™ 550 - 4.3 L (Part A & B),

Aggregate (Part C) - 22.7 kg bag



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