

# HyGrout™ UW Epoxy

## Underwater Epoxy Grout with Extended Pot Life

### Description

HyGrout™ UW Epoxy is a three-component underwater curing, extended pot life, structural epoxy grout. The HyGrout™ UW Epoxy is a low viscosity resin and hardener system mixed with blended aggregate to produce a pumpable or pourable epoxy grout. The HyGrout™ UW Epoxy can be used for filling of QuakeWrap® PileMedic® jacket and SPiRe™ systems, void filling in timber and concrete substrates, and other underwater grouting applications.

### Technical Summary

- Structural epoxy grout for the infill of PileMedic®, and SPiRe™ Systems and other underwater grouting applications.
- Restores structural integrity and provides protection for steel, wood and concrete piles.
- Extended pot life of between 1–1.5 hours @ 25 °C.
- Thickness 25 mm to 120 mm.

### Application Summary

- Can be applied by pumping or pouring.
- Designed to have a high flow consistency for ease of placement without segregating.
- 1 to 1.5 hours working time and ultimate compressive strength of  $\geq 65$  MPa.

### Typical Applications

- Filling of annulus in the PileMedic® jacket systems for structural retrofit applications of marine piles.
- Repair & corrosion protection when used in conjunction with PileMedic® and SPiRe™ Systems.
- Underwater grouting and repair of piers, jetties, wharves and walls.
- Non-compressive void filler in timber piles and structural components.

### Advantages

- Extended pot life of 1 to 1.5 hours @ 25 °C.
- High-strength, high-modulus, low-viscosity structural adhesive.
- Fully compatible and excellent adhesion to PileMedic® Jacket and SPiRe™ Systems.
- Convenient mix ratio, by weight.
- Pourable and pumpable at low pump pressure.
- 100% solvent free.
- High bond strength to steel and concrete.
- Low toxicity during cure.
- Underwater curing.

### Design Criteria

HyGrout™ UW Epoxy exhibits a series of performance characteristics designed to ensure complete and permanent filling of the annulus between the PileMedic® Jacket and SPiRe™ Systems, thereby restoring structural integrity and providing corrosion protection to steel, wood and concrete piles and other marine structures / equipment.

### Compatible Materials

**Substrates:** Concrete, steel and timber.

**System components:** Can be used as a standalone underwater epoxy grout or with QuakeWrap® PileMedic® Jacket and SPiRe™ Systems.

### Product Data

Characteristic	Result
Appearance	Resin – Part A: Clear; Hardener – Part B: Amber; Mixed & Cured: Light Beige
Viscosity of liquids mixed at 25 °C	1500–1600 cps



## Underwater Epoxy Grout with Extended Pot Life

## Technical Data

The following results were obtained from samples prepared and tested in a laboratory at a temperature of approximately 25 °C.

Performance Characteristic	Test Method	Test Result
Compressive Strength – 28 days	ASTM C579 B	65.4 MPa
Tensile Strength – 7 days	ASTM C307	12.7 MPa
Flexural Strength	ASTM D790	21.4 MPa
24-hr water absorption (% gain)	ASTM D570	≤ 1%
Bond Strength to Steel – 7 days	ASTM C882	10.4 MPa
Bond Strength to Concrete – 7 days	ASTM C882	15.3 MPa

## Application Data

Property	Property Value
Suitable application methods	Pumping, or pouring
Application temperature	+4 °C minimum; +38 °C maximum (ambient air & substrate)
Mixing ratio	Part A – Resin: 13 kg Part B – Hardener: 3.6 kg Part C – Aggregate: 60 kg (3 x 20 kg bags)
Working Time	60 to 90 minutes at +25 °C

## Application Guidelines

## SUBSTRATE &amp; SURFACE PREPARATION

## Concrete

Concrete shall be cured for a minimum of 28 days.

Prepare concrete using high pressure water blasting with turbo nozzle at a minimum of 5,000 psi with a minimum of 22 litres per minute, or other suitable mechanical means to obtain sound, clean and rough surface free from loose, unsound concrete. Prepared surface should have a surface profile of 3 or greater in accordance with ICRI Technical Guideline 310.2R.

The prepared surface must be free from oil, grease, curing compounds, laitance, marine growth and other contaminants. Surface voids should be patched, and materials and coatings with low compression strengths and elastic moduli should be removed.

## Steel

Prepare steel using high pressure water blasting with turbo nozzle at a minimum of 5,000 psi with a minimum of 22 litres per minute to remove loose rust, scaling, marine growth, loose coatings and contaminants. An SSPC-SP6 commercial finish on all metal surfaces is required.

Repair structurally unsound areas with splice plates and / or patches.

## Mixing

For optimum performance, all components should be conditioned to between 18 °C and 30 °C prior to use.

Pour all Part B – Hardener into pail containing Part A – Resin. Mix thoroughly by hand with a slow speed drill and paddle mixer to avoid air entrapment and continue mixing until streak free (approximately 1 to 2 minutes).

Pour mixed liquids into a pan mixer (stationary barrel with moving blades). While mixing, slowly add Part C (aggregate) and mix only until aggregate is completely wet out & lump free. Total mixing time will be approximately 3 minutes.

Do not mix more material than can be placed within the working time of the material. The working time for HyGrout™ UW Epoxy is 60 to 90 minutes. Mixed grout must be placed immediately after mixing.

Do not exceed one-half the maximum capacity of the mortar mixer. Concrete or cement mixers must not be used for mixing epoxy grout. Full units of grout cannot be mixed properly with drill & paddle mixers.





## Underwater Epoxy Grout with Extended Pot Life

### Application Method

HyGrout™ UW Epoxy can be pumped or poured into place.

#### PUMPING

A peristaltic type pump is recommended for pumping the HyGrout™ UW Epoxy.

High pressure rubber pump hoses with a minimum ID of 1.5 inches (38 mm) are optimum for pumping HyGrout™ UW Epoxy.

Prime pump and pump hoses with a suitable primer e.g. epoxy resin, or pump hose lubricant that will not contaminate the epoxy grout.

Ensure material used for priming is discarded and not used for jacket or form filling.

Attach the pump hose to the bottom port and commence pumping. The first pump port should be placed between 300 mm and 600 mm from the bottom of the first jacket / form depending on the dimensions of the pour. Additional pump ports may be placed at between 1 and 1.5 metres if required and should be alternated side to side on the jacket / form. Contact Hychem Technical Service for guidance when pumping extended jacket lengths.

When the grout in the jacket / form reaches the next port, reverse the pump, remove the pump hose and close off the port. Attach the pump hose to the next higher port and continue pumping. Repeat this process until the jacket / form is full.

#### POURING

For placement by tremie method, insert hose into jacket to bottom and commence pouring / pumping. Keep pump hose submerged in epoxy grout and slowly raise pump hose as jacket fills with epoxy grout. Use a headbox to facilitate pouring of epoxy grout into jacket / formwork.

Mixing and pouring of epoxy grout should be a continuous process to minimize air entrapment. Pouring may be alternated from side to side to help reduce air entrapment. Grout should not be allowed to freefall for more than a metre when pouring / pumping into a jacket / form.

#### FINISHING

Grout level may be topped off using additional material placed by hand if required.

#### CURING

Protect the grout from temperatures below 4 °C for 24 hours.

### Clean Up

HyGrout™ UW Epoxy should be removed from tools, equipment and mixers in the fresh state with water and detergent immediately after use. A high-pressure washer and sand will aid in the cleaning of the mixer. Once it has cured solvent and / or mechanical cleaning will be required.

### Quality Control

The execution of the work shall be carried out in accordance with the project quality plan. Standards recommend the accurate recording of times and dates, batch numbers, consumption rates and environmental conditions including substrate and air temperatures, humidity levels and dew point readings during both the application and curing processes.

### Limitations

Minimum temperature of substrate for placement is 4 °C and maximum temperature is 38 °C. Materials should be pre-conditioned to between 18–30 °C for optimum placement.

Mix full units of material as supplied. Do not add or reduce aggregate, add other additives, or thin with solvents. For clearances outside the 25 mm to 120 mm range and / or large volume placements greater than 2 m<sup>3</sup> contact Hychem Technical Service for guidance.

Protect freshly applied material from freezing. If any doubts arise concerning suitability for use, application, temperature or substrate conditions, contact Hychem Infrastructure for advice.

### Estimating

HyGrout™ UW Epoxy grout will yield approximately 44.5 litres of cured grout when mixed with 3 x 20 kg bags of aggregate.

### Packaging

HyGrout™ UW Epoxy is a three-component system consisting of:

Part A – Resin: 13 kg Steel Pail

Part B – Hardener: 3.6 kg Tin

Part C – Aggregate: 3 x 20 kg bags

### Storage

Shelf life is 2 years when stored indoors in unopened original packaging at temperatures between 13 °C and 38 °C.



**EDITION: 10062026**

**Technical Data Sheet**

# HyGrout™ UW Epoxy



**Underwater Epoxy Grout with Extended Pot Life**

## **Safety**

In an emergency, contact 000, the Poisons Information Centre (13 11 26 within Australia) or a doctor for advice. Please refer to the current SDS (Safety Data Sheet) and follow the prescribed safety precautions and handling procedures for the product.

## **Warranties and Disclaimers**

Hychem® warrants that this product shall conform to the technical specifications published in the product literature. The quality and fitness of the product are dependent upon its proper use and application by the applicator. Hychem's role is limited to the manufacture and supply of the product and its components and does not extend to supervision or control of its application. It is vital that the person applying this product understands its properties and limitations and is appropriately trained and competent in the use of the equipment, methods and materials associated with its application. There are no warranties that extend beyond the description contained herein, except where provided in writing directly by Hychem® and executed under seal by a company officer.

## **Technical & Field Support**

Technical and field support, where provided, does not constitute supervisory responsibility. Suggestions made by Hychem®, whether verbal or written, may be followed, modified or rejected by the owner, engineer or contractor, as they, and not Hychem®, are responsible for determining and carrying out procedures appropriate to a specific application.

## **Customer Responsibility**

The technical information and application advice contained in this publication are based on the best information available at the time of publication. As the information herein is of a general nature, no assumption can be made as to the suitability of the product for a particular use or application, and no warranty as to its accuracy, reliability or completeness, either express or implied, is given other than those required by Commonwealth or State legislation. The owner, their representative or the contractor is responsible for determining the suitability of the product for its intended use.

