September 2022

GENERAL PURPOSE EPOXY MORTAR BINDER (133)

Multi-Purpose Epoxy Mortar and Concrete Binder

Description:

EPIREZ® General Purpose Epoxy Mortar Binder is a solventless epoxy mortar or concrete binder designed for applications demanding high structural integrity and a proven history of successful use.

General Purpose Epoxy Mortar Binder offers low mixed viscosity, hydrophobic characteristics (bonds to wet surfaces) and fast hardening to produce mortars and concretes exhibiting excellent adhesion, high compressive and tensile strengths and exceptional resistance to the entry and passage of water and corrosive ions.

High strength mortars and concretes are conveniently prepared by combining **General Purpose Epoxy Mortar Binder** and **Epirez® Aggregates.**

EPIREZ® General Purpose Epoxy Mortar Binder has been independently tested and complies to AS/NZS4020 – 2018 for use with Potable Water.

EPIREZ® General Purpose Epoxy Mortar Binder Primer Sealer was previously named **EPIREZ® 133.**

Intended Use:

- Structural bonding of new to old concrete lining
- Structural repair of spalled concrete and masonry
- Grouting load bearing bolts and supports into concrete
- Splash zone repairs to concrete and timber structures
- Bonding steel to concrete

Product Features:

- **Multi-purpose use**
- **Low viscosity**
- **Excellent adhesion to wet or dry concrete**
- **Low temperature cure**
- **High mechanical strength**
- **High chemical resistance**
- **Non-shrink**
- **Aggregate extendable**

Estimating Data:

1L **EPIREZ® General Purpose Epoxy Mortar Binder** = 1 m^2 @ 1 mm DFT

4 L **EPIREZ® General Purpose Epoxy Mortar Binder** (133) + 16 L **EPIREZ® Patching & Flooring Mortar Aggregate** (QA2) = 4 m^2 at 4 mm thick.

Typical Physical Properties:

Pot Life @ 25°C	**30 minutes**
Mixing Ratio	**1 Hardener : 3 Compound**
Tack Free Time @25°C	**6 hours**
Hardening Time @25°C	**24 hours**
Full Chemical Resistance*	**7 days @ 25°C**
Solids Content	**100%**
VOC Content	**0 g per L**
Mixed Viscosity	**12 000 – 18 000 cP**
Application temperature	**10 – 30°C**

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Cured at 7 days at 24˚C

Compressive Strength, Ultimate	**95 MPa**
Compressive modulus	**3.4 GPa**
Tensile Strength, Ultimate	**55 MPa**
Water permeability	**2.0 x 10^{-17} m.s^{-1}**
Temperature Resistance	**Wet: 65°C; Dry: 120°C**

Chemical Resistance:

Chemical resistance tested after 112 day, room temp. cure @ 25° C

Sulphuric Acid 98%	Good
Sulphuric Acid 30%	Good
Hydrochloric 32%	Very Good
Nitric Acid 20%	Excellent
Mineral Spirits	Excellent
Acetic Acid 10%	Poor
Lactic Acid 5%	Very Good
Phosphoric Acid 20%	Very Good

Sodium Hydroxide 20%	Excellent
Sodium Hydroxide 50%	Very Good
Sodium Hypochlorite	Very Good
Ammonia Solution 10%	Very Good
MEK	Very Good
Hexane	Very Good
Toluene	Very Good
Ethyl Acetate	Very Good

Surface Preparation:

Remove all loose, crumbly and drummy areas to obtain a sound surface. Captive blast clean or acid etch to expose firmly held aggregate. Ensure that surfaces are free of dust, oil and grease. Dampness can be tolerated.

Mixing Instructions:

Measure sufficient Hardener and Compound to be used in 30 minutes. Mix thoroughly using a low-speed power mixer. Ensure that all the material on the sides and on the stirrer are incorporated. Take care to avoid air entrapment in the mix.

If extending with **Epirez® Patching & Flooring Mortar Aggregate (QA2)** follow guide in table below. **Epirez® Patching & Flooring Mortar Aggregate (QA2)** is kiln dried (with a moisture content below 0.2%) and supplied in a sealed drum. Care should be taken to keep aggregate dry after opening.

Recommended General Purpose Epoxy Mortar Binder (133) / Patching & Flooring Mortar Aggregate (QA2) mixes

Characteristics	**Binder / Aggregate Ratio by Volume**	**Litres Binder for m^3**	**Litres Aggregate per m^3**	**Compressive Strength (MPa)**
Very fluid grout	1:2	450	900	80
Flowable Mortar	1:3	333	1000	70
Easily Worked Mortar	1:4	250	1000	55
Dry Pack or Ram	1:5	200	1000	50

Application Instructions:

Structural Bonding New to Old Concrete and Masonry

General Purpose Epoxy Mortar Binder (133) has been used on many major projects to structurally bond new to old concrete. These applications result in strengths significantly greater than the concrete mixes involved, and in tensile, shear or flexural tests separation at the bond line will not occur.

Apply mixed **General Purpose Epoxy Mortar Binder (133)** using a broom or squeegee at a rate of 3-6m²/litre over the cleaned surface. Porous, absorbent surfaces may need more. Immediately pour concrete whilst film is still wet. Allow concrete to cure normally. If delay occurs beyond 60 minutes at 25ºC, recoat with **General Purpose Epoxy Mortar Binder (133)**.

New to Old Bond Strength: 105% (University of Arizona Test)

Structural Repair of Spalled Concrete and Masonry

General Purpose Epoxy Mortar Binder (133) can be used to repair damaged concrete and masonry structures. Correctly applied, the completed repair will demonstrate higher strengths than the original structure.

Prime cleaned surfaces with mixed **EPIREZ® Epoxy Primer/Sealer (123)** by brush, roller or airless spray.

Prepare a trowellable mortar by mixing 1 volume mixed **General Purpose Epoxy Mortar Binder (133)** and 3 volumes **EPIREZ® Patching & Flooring Mortar Aggregate (QA2).** Place this mortar over the freshly primed areas and trowel to a smooth finish. Minimise air content. This mortar exhibits excellent adhesion. Remove splash and spatter from adjacent surfaces before hardening occurs.

Tensile Strength	>10 MPa
Concrete Bond Strength	2.7 MPa (Concrete Failure)
Compressive Strength	70 MPa
Flexural Strength	>20 MPa
Water Permeability	1.2×10^{-16} ms^{-1}
Resistance to Chloride Ion Penetration	Excellent

Grouting of Load Bearing Bolts and Supports in Concrete

General Purpose Epoxy Mortar Binder (133) grouts offer significant advantages over cement-based products. Rapid hardening, chemical resistance, good performance under dynamic loading and ability of grouted elements to be set close together and close to edges are just some advantages.

Bolts and bars are best grouted with a grout mix 1 volume of mixed **General Purpose Epoxy Mortar Binder (133)** and 1½ - 2 volumes of **EPIREZ® Patching & Flooring Mortar Aggregate (QA2).** Use hole diameters of 1½ times insert diameter. Smaller inserts (10mm diameter and less) can be grouted with mixed **General Purpose Epoxy Mortar Binder (133)** unextended.

Inserts should be free of oil, grease and dust and preferably grit blasted to "bright metal" condition. Holes should be clean of dust and debris. Wet holes should be free of standing water.

Pour mixed **General Purpose Epoxy Mortar Binder (133)** or mixed **General Purpose Epoxy Mortar Binder (133) and Epirez ® Patching & Flooring Mortar Aggregate (QA2)** into the holes and insert bolts or bars.

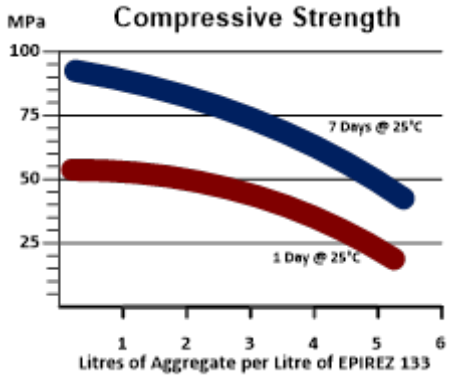
Typical Pull-Out Strengths (40 MPa Concrete)

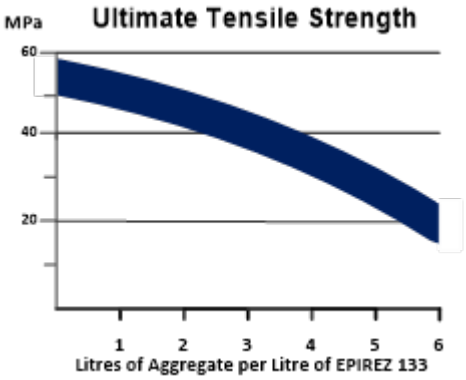
14mm deformed bar (embedded 150mm)	> 50 kN (Bar Fails)
14mm threaded bolt (embedded 110mm)	> 50 kN (Bar Fails)
25mm deformed bar (embedded 225mm)	>150 kN (Concrete Fails)
25mm threaded bolt (embedded 175mm)	>150 kN (Concrete Fails)

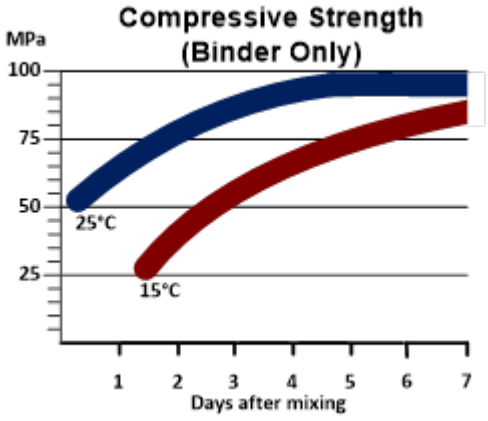
Safe Working Load Factors are available from ITW Polymers & Fluids Technical Department on request.

Bearing plates should be surrounded with formwork protected with a suitable Release Agent and a flowable mortar consisting of **General Purpose Epoxy Mortar Binder (133)** and EPIREZ® **Patching & Flooring Mortar Aggregate (QA2)** poured into the void.

Engineering Performance







Underwater and Splash Zone Repairs to Concrete, Timber and Steel Structures

General Purpose Epoxy Mortar Binder (133) has excellent underwater adhesion to most structural members and it easily displaces water in formed up voids.

Surfaces should be grit blasted to expose firmly held aggregate and then primed with **General Purpose Epoxy Mortar Binder (133)**. An underwater grout mix should be prepared (1 volume mixed **General Purpose Epoxy Mortar Binder (133)** and 1½

volumes **EPIREZ® Patching & Flooring Mortar Aggregate (QA2)**) and poured to displace water.

Underwater repairs may show higher strengths due to better compaction if the grout mix is poured through a 50 - 75mm diameter PVC conduit or hose.

Compressive Strength Underwater

(Placed and cured under sea water at 20ºC)
Compressive Strength: 50 MPa

Tensile Bond Strength Underwater

(Placed and cured under sea water at 20ºC)

Steel to Concrete:	2.5 MPa (Concrete Fails)
Concrete to Concrete	2.5 MPa (Concrete Fails)
Steel to Timber	3.5 MPa Timber Fails

Pile Restoration Tests

(Placed and cured under sea water at 20ºC and based on Compressive Strengths of the pile)

Concrete Piles

Eroded Pile	71% of new pile
General Purpose Epoxy Mortar Binder (133) repaired pile	111% of new pile

Timber Piles

Eroded Pile	26% of new pile
General Purpose Epoxy Mortar Binder (133) repaired pile	104% of new pile

Skid Proofing of Concrete and Timber

General Purpose Epoxy Mortar Binder (133) may be used to skid proof concrete and timber surfaces by using the "Spread and Sprinkle" technique. Apply mixed **General Purpose Epoxy Mortar Binder (133)** to the prepared surfaces at a rate of 6m²/litre using a long nap roller. Broadcast an excess **EPIREZ® Patching & Flooring Mortar Aggregate (QA2)** and allow to harden overnight. Sweep off excess and apply a second coat of **General Purpose Epoxy Mortar Binder (133)** to seal the surface.
For areas demanding high traction levels use **EPIREZ® Epoxy Anti-Slip Flooring Aggregate (Sil-Carb)**.

Clean Up:

Tools and equipment may be cleaned before hardening commences by washing in **EPIREZ® Clean Up Solvent**. Do not use for cleaning hands or mixing with product.

Storage:

Store in dry conditions between 10°C and 30°C, away from sources of heat and naked flames. Protect from frost. When stored in original sealed containers, the minimum shelf life is two years.

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Warranty:

Epirez will replace any material found to be defective. Because the storage, handling and application of this material is beyond our control, we can accept no liability for the results obtained.

Disclaimer:

All information on this data sheet is based on laboratory testing and is not intended for design purposes. ITW Polymers & Fluids and EPIREZ® makes no representations or warranties of any kind concerning this data.

Order Information:

1Ltr	E901333
4Ltr	E901332
20Ltr	E901334

Health & Safety Information:

For Health & Safety information, refer to Safety Data Sheet available from ITW Polymers & Fluids upon request or available on our website www.epirez.com.au or www.epirez.co.nz

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