

HyFix™ EM101

Polymer crack and concrete repair mortar

Description

HyFix™ EM101 is a two-component, polyurethane hybrid specially designed with an ultra-low viscosity providing a quick repair of static cracks and for the repair and rehabilitation of concrete and asphaltic concrete substrates when supplemented with its proprietary blended aggregate. With its fast-curing properties, it is perfect for use when minimal downtime is required and rapid return-to-service is needed, and can be used in temperatures from -18 °C to 43 °C.

Technical Summary

- Suitable for static crack repairs when used neat
- Suitable for larger patch repairs in concrete and asphalt when mixed with aggregate.
- High early strengths of 28 MPa in 1 hour and ultimate compressive strength > 50 MPa
- Thickness range: Hairline cracks when used neat and up to 75 mm when mixed with aggregate

Application Summary

- Mixed mortar can be applied horizontally by pouring
- Can be applied neat by gravity feeding, or crack injection and by pouring when mixed with aggregate.
- Designed for good workability and ease of placement
- Simple mix ratio and fast curing

Typical Applications

- Expansion joint and bridge deck nosing repairs
- Control joint filler
- Repair of cracks, potholes, spalling & mechanical damage in concrete & asphalt.
- Repair of roads, runways, concrete hardstands and industrial floors with high volume traffic.
- Cold room & freezer repairs

Design Criteria

HyFix™ EM101 exhibits a series of performance characteristics and fast cure properties designed to ensure a durable polymer concrete repair when minimum downtime is required and rapid return-to-service is needed.

Advantages

- Use neat, or with proprietary aggregate
- No priming required
- Can be used for concrete and asphalt repairs
- Mixed mortar achieves 28 MPa compressive strength in one hour and ultimate 28-day compressive strength of minimum 55 MPa
- Easy 1:1 mix ratio for neat resins
- Can be applied from -18 to 43 °C
- Repairs can be opened to traffic in less than an hour @ 24 °C
- Very low odour and will not taint food
- Can be overcoated with moisture sensitive coatings in as little as 1 hour

Compatible Materials

Substrates: Concrete and asphalt

System components: Can be used as a neat resin (mix Part A & Part B) or as a mortar when mixing all Parts (A, B & C).

Overcoating with materials which are typically compatible with concrete: The repair mortar may be suitable for overcoating and with other overlays suitable for concrete. It is good practice to confirm adhesion and compatibility with the supplier of the overlay prior to application to the prepared cured repair mortar.

Product Data

Characteristic	Result
Appearance	Resin – Part A: Amber; Hardener – Part B: Black; Mixed & Cured: Light Grey
	Mixed – all components: Grey (cured), Black (uncured)



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Technical Data

Samples were prepared and tested in a laboratory at a temperature of approximately 24 °C

Performance Characteristic	Test Method	Test Result
Viscosity	N/A	Part A: 55 cps Part B: 85 cps Mixed: 60 cps
Shore Hardness, Durometer D	ASTM D2240	70
Elongation	ASTM D638	Liquids: 21% Mixed: 10 – 15%
Compressive Strength (Mortar):	ASTM C579B	1 to 1.5 hours - 28 MPa 24 hours - 41 MPa 7 days - 48 MPa 28 days - 55 MPa
Compressive Strength (Neat Resin & Hardener):	ASTM D695	1.5 hours - 31 MPa 24 hours - 35 MPa
Tensile Strength:	ASTM D638	7 Days - 22 MPa
Bond Strength	ASTM C882	13 MPa

Application Data

Property	Property Value
Suitable application methods	Pouring
Application temperature	-18 °C minimum; +43 °C maximum (ambient air & substrate)
Mixing ratio (Mortar):	Part A – Resin: 2.14 lt + Part B – Hardener: 2.14 lt + Part C – Aggregate: 20 kg bag
Mix ratio (Neat Resin & Hardener)	Part A – Resin: 2.14 lt + Part B – Hardener: 2.14 lt
Working Time	2 to 3 minutes at +24 °C
Setting Time	Initial Set: 3 to 5 minutes. Final Set: 30 minutes at 24 °C
Thickness Range:	
Neat Resin & Hardener	Hairline cracks - 12mm
Mortar	12mm - 75mm

For repair thicknesses greater than 75mm contact Hychem™ Infrastructure Technical Service.

SUBSTRATE & SURFACE PREPARATION

Crack Repairs

Concrete must be a minimum of 21 days old. Clean the crack by wire brushing or other mechanical means. Where required for uniformity use a diamond blade to widen cracks to facilitate the insertion of a backer rod or kiln dried sand to control loss of product deep into crack. Remove all loose, unsound concrete, debris, oil, and other contaminants from the prepared crack by blowing out with oil-free compressed air. Repeat if necessary. Surfaces must be completely dry and free of moisture prior to installation.

Concrete Repairs

All areas to be repaired must be clearly marked out. Keep repairs to simple square or rectangular shapes, sharp angles should be avoided. Abrupt changes in depth should also be avoided. Saw-cut concrete around the outlines of the marked area to a minimum depth of 12mm to avoid feather edging.

Completely remove all loose unsound concrete, debris, oil and other contaminants from areas to be repaired. Mechanically prepare concrete surfaces to a minimum CSP-4 (Concrete Surface Profile per ICRI Technical Guideline 310.2R). Ensure surfaces are clean, sound and rough prior to repair. Ensure that preparation includes vertical faces of patches to ensure adequate bond. Surfaces must be completely dry and free of moisture prior to installation.

PRIMING

No priming is required for the HyFix™ EM101

MIXING

Mix ratio is 1:1 by volume for the neat Resin & Hardener. Mix only the amount of material that can be used within the working time of the product. Pour Resin - Part A into a bucket. Add Hardener - Part B and mix thoroughly with a slow speed drill and paddle mixer for 20 seconds.

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Application Guidelines

MIXING CONT

If using the Mortar, then add the Aggregate - Part C and continue mixing for 30 seconds until the aggregate is completely wetted out.

APPLICATION METHOD

Crack Repairs

In horizontal concrete slabs, either inject or gravity feed the HyFix™ EM101 directly into cracks immediately after mixing. Allow adhesive to penetrate into the crack and top-off as needed. Kiln-dried medium grade silica sand can be broadcast on top of the repair to add texture or to more closely match that of the existing concrete. For larger, deeper cracks, insert backer rod or a layer of kiln-dried sand to eliminate excessive loss of HyFix™ EM101. The layer of product must still be at least 13 mm deep. The repair will be tack-free in less than 10 minutes at 24 °C.

Concrete Repairs

Place material immediately after mixing. Material must be placed within 3 to 5 minutes of mixing (faster in warmer temperatures). Pour rapidly into prepared patch and ensure that the patch is completely filled. The mixed mortar will self-level but can be moved into place and consolidated with a trowel. Do not over trowel due to fast setting of product.

FINISHING & CURING

Placed HyFix™ EM101 mortar may expand after placement. Placed mortar will be tack free after approx. 10 minutes at 24 °C. Once tack free use a diamond cupping stone, or grinding disc to finish the placed mortar flush with the substrate. New joints can be re-cut through the repair mortar as soon as it is hard to the touch & won't ravel when cut.

HyFix™ EM101 is self-curing. Allow material to fully cure (approx. 1 hour at 24 °C) before subjecting repaired area to any type of traffic.

Repaired areas can be overcoated once they have reached final set (between 30 minutes to 1 hour).

Quality Control

The execution of the work shall be carried out in accordance with the project quality plan.

Clean Up

HyFix™ EM101 should be removed from tools, equipment and mixers after use with xylene or MEK.

Limitations

NOT intended for aesthetic finishes as product may develop a greenish tint from UV exposure or may cure with an uneven color with swirls or marbling - when cured it can be coated or painted to meet desired appearance installation instructions.

Keep material out of sun or hot areas prior to applying, as this may cause working time to be diminished and could cause poor appearance and/ or adhesion.

Reaction with trace amounts of moisture may cause HyFix™ EM101 to expand, create a foam and could raise the product as it cures above the substrate's surface that may require grinding flush post placement.

Always complete a compatibility test on a small area prior to full application of any coating

Do not thin with solvents, as this will prevent cure

NOT intended for repairing cracks subject to movement.

Estimating

HyFix™ EM101 will yield approximately 10.24 lts when mixed with 1 x 20 kg of Aggregate

Packaging

Resin – Part A: 2.14 lt jug

Hardener – Part B: 2.141 lt jug

Aggregate – Part C: 1 x 20 kg bag

Storage & Shelf Life

Shelf life is 2 years when stored indoors in unopened original packaging at temperatures between 4 °C and 32 °C





Safety

In an emergency, contact 000, any Poisons Information Centre (phone 13 11 26 within Australia) or a doctor for advice. Please observe the current SDS (Safety Data Sheet) and follow the described safety measures for handling of 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 is dependent upon the proper use and application of the product by the applicator. Hychem™ has no role in the application of the finished polymer other than to manufacture and supply its components. It is vital that the person applying this product understands the product and is fully trained and certified in the use of spray equipment and application of sol-gel materials. There are no warranties that extend beyond the description on the face of this instrument, except when provided in writing, directly by Hychem™ and executed under seal by a company office.

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