

Expanmortar* EL



CONSTRUCTION CHEMISTRY

Abrasion-resistant epoxy resin lining mortar

Uses

A trowellable epoxy mortar with maximum chemical and abrasion resistance for the protection of concrete and similar substrates. Ideal for rehabilitation of manholes, lining of outfalls, sewage works and all similar structures which are in contact with chemical contamination.

Advantages

- Unaffected by a wide range of acids, alkalis, industrial chemicals and sewage
- Excellent resistance to abrasion and impact
- Superior bond strength to virtually all substrates, dry or damp
- No need for primer on most concrete surfaces
- Early development of strength minimizes disruption
- Cured material provides a long lasting waterproof barrier
- Pre-weighed components ensure consistency

Description

Expanmortar* EL is based on high quality solvent-free epoxy resin systems. The special silica aggregates provide high strength and excellent abrasion resistance. It is specially designed to give excellent 'hanging' properties for vertical and overhead work. Expanmortar* EL is a three component material supplied in pre-weighed quantities ready for on-site mixing and use.

Technical support

Expanchem Fospak offers a comprehensive range of high performance, high quality construction products. In addition, Expanchem Fospak offers a technical support package to specifiers, end-users and contractors, as well as on-site technical assistance in locations all over the world.

Design criteria

Expanmortar* EL can be applied in sections up to 12 mm thickness in vertical and overhead locations in a single application without the use of formwork. Greater thicknesses than those specified can be achieved by application of subsequent layers. Consult the local Expanchem Fospak office for further information. For higher build characteristics to vertical or overhead locations, Expanmortar*HB is recommended.

Properties

The following properties were obtained at a temperature of 20°C unless otherwise specified.

Test method	Typical results
Compressive strength (BS 6319, Pt 2)	: 70 N/mm ² @ 7 days
Tensile strength (BS 6319, Pt 7)	: 12 N/mm ² @ 7 days
Flexural strength (BS 6319, Pt 3)	: 28 N/mm ² @ 7 days
Pot life	: 2 hours @ 20°C 1 hour @ 35°C
Initial hardness	: 24 hours @ 20°C
Full cure	: 7 days @ 20°C
Fresh wet density	: Approximately 1750 kg/m ³ (fully compacted)

Chemical resistance

Performance of Expanmortar* EL blocks continually immersed at 25°C.

Acids (m/v)

Hydrochloric Acid 30% : Resistant

Sulphuric Acid 17% : Resistant

Phosphoric Acid 25% : Resistant

Alkalis (m/v)

Sodium Hydroxide 40% : Resistant

Solvents & organics

Petrol : Resistant

Aqueous solutions

Bleach : Resistant

Sea water : Resistant

Detergent : Resistant

Additional tests have shown no significant physical or chemical change after 100 days.



CONSTRUCTION CHEMISTRY

Specification clause

Abrasion-resistant epoxy lining mortar

The abrasion-resistant epoxy lining mortar shall be Expanmortar* EL, a three component solvent-free epoxy resin mortar with a density of 1750 kg/m³. The cured mortar shall achieve a compressive strength of 70 N/mm², a flexural strength of 28 N/mm² and a tensile strength of 12 N/mm² when tested at 7 days.

Instructions for use

Preparation

Clean the surface and remove any dust, unsound or contaminated material, plaster, oil, paint, grease, corrosion deposits or algae.

Surface should preferably be prepared using high pressure water jetting or light abrasive blasting, followed by thorough washing to remove dust and remaining particles.

Oil and grease deposits should be removed by steam cleaning, detergent scrubbing or the use of a proprietary degreaser. The effectiveness of decontamination should then be assessed by a pull-off test.

Prior to the application of Expanmortar* EL, all active hydrostatic leaks must be stopped by using Expanmortar* Plug, a hydraulic cement specifically formulated to stop water ingress or Expangrout* WS60 and Expangrout* UR63 expanding polyurethane crack injection and water stop system.

Substrate priming

Under normal circumstances concrete surfaces do not require a primer. However, concrete or other substrates which are highly porous or where build/sag requirements are critical should be sealed with a single coat of Expancote* Primer Sealer.

The mixed primer should be scrubbed well into the prepared substrate, taking care that all imperfections in the surface are properly coated and avoiding 'puddling' in depressions. If the Expancote* Primer Sealer is absorbed within 30 minutes, a second coat should be applied before continuing.

Expanmortar* EL can be applied as soon as the primer has started to gel but still has surface tack. This is normally between 20 minutes and 4 hours dependent on ambient and substrate temperature.

Mixing

Care should be taken to ensure that Expanmortar* EL is thoroughly mixed to produce a fully homogeneous trowellable mortar. Expanmortar* EL must be mixed by mechanical means. The 'hardener' and 'base' components must be stirred thoroughly to disperse any settlement before mixing them together. The entire contents of the 'hardener' and 'base' components should then be emptied into a suitable, clean mixing drum and thoroughly mixed using a slow speed electric drill (350 - 500 rpm) fitted with an approved spiral stirrer for approximately 5 minutes until a uniform colour and consistency has been produced.

While mixing continuously, the entire bag of aggregate should then be added slowly and the three components blended together for a further 2 - 3 minutes, ensuring that the aggregate is thoroughly wetted out with the mixed resin. Under no circumstances should part packs be used.

Large quantities can be mixed in suitable forced action mixer (e.g. Cretangle or Pennine) but no more than can be reasonably used within the pot life of the product should be prepared at any one time.

Application

Apply the mixed Expanmortar* EL to the prepared substrate at a minimum thickness of 3 mm by spatula or steel float, pressing firmly into place to ensure positive adhesion and full compaction. To avoid sagging on vertical surfaces, do not apply in thicknesses over 12 mm. Application thickness will vary with profile and alignment of substrate. Where necessary mortar should be built up in layers.

Build-up

Additional build-up can be achieved by application of multiple layers. Where thicker sections are required, the surface of the intermediate applications should not be closed, to provide a suitable surface for subsequent layers. The application of additional layers should follow between 24 and 36 hours (@ 20°C) after the first application. This time should be reduced at higher temperatures. Application of Expanmortar* EL may then proceed. If sagging occurs during application, the Expanmortar* EL should be completely removed and reapplied at a reduced thickness on to the substrate.



CONSTRUCTION CHEMISTRY

Finishing

To close the surface and to create a smooth, impermeable finish lubricate the trowel with clean water. This may give a slight whitening of the surface but does not affect performance.

Expanmortar* EL is finished by the use of a wood float and closed with a steel trowel. The completed surface should not be overworked.

Important note: Do not use solvent to thin components or to lubricate trowel as this will prevent proper cure.

High temperature working

At ambient temperatures above 35°C Expanmortar* EL and Expancote* Primer Sealer will have shorter pot life and working life. The materials should be stored in the shade or in air-conditioned environments and should not be applied in direct sunlight.

Curing

Curing protection is not necessary for Expanmortar* EL.

Overcoating with protective/decorative finish

Expanmortar* EL is extremely durable and resistant to a wide range of industrial chemicals and will provide excellent protection to the substrate.

The surrounding parts of the structure will generally benefit from the application of a protective coating too, thus bringing them up to the same protective standard as the repair itself. Expanchem Fospak recommend the use of the Expancote* range of epoxy resin, chemical-resistant coatings.

For surrounding areas not subjected to chemical or physical wear Expanchem Fospak recommend the use of the Expancote* range of anti-carbonation, anti-chloride coatings, thus bringing them up to the same protective standard as the repair itself. These products provide a decorative and uniform appearance as well as protecting areas of the structure which might otherwise be at risk from the environment.

Expancote* epoxy resin coatings should be applied within 24 hours. For further advice, consult the local Expanchem Fospak office.

Cleaning

Expanmortar* EL and Expancote* Primer Sealer should be removed from tools, equipment and mixers with Expanchem Solvent 102 immediately after use.

Limitations

- Do not mix part packs under any circumstances.
- Expanmortar* EL should not be exposed to moving water during application. Exposure to heavy rainfall prior to final set may result in surface scour. If any doubt arises concerning temperature or substrate condition, consult the local Expanchem Fospak office.

Estimating

Supply

Expanmortar* EL : 10.0 Kg pack

Expancote* Primer Sealer : 1.0 and 4.0 Kg pack

Expanchem Solvent 102 : 5.0 litre packs

Coverage and yield

Expanmortar* EL : 1.90 m²/pack
(applied at 3mm thick)

Expancote* Primer Sealer : 4.0 - 5.0 m² /kg

Notes : The coverage figures for Expancote* Primer Sealer Are theoretical due to wastage factors and the variety and nature of possible substrates, practical coverage figures will be reduced.

Storage

Shelf life

All products have a shelf life of 12 months at 30°C if kept in a dry shaded store in the original, unopened bags or packs.

Storage conditions

Store in dry conditions in the original, unopened bags or packs. If stored at high temperatures and/or high humidity conditions the shelf life may be reduced to 4 to 6 months.

Precautions

Health and safety

Expanmortar* EL, Expancote* Primer Sealer and Expanchem Solvent 102 should not come in contact with skin or eyes, or be swallowed. Ensure adequate ventilation and avoid inhalation of vapours. Some people are sensitive to resins, hardeners and solvents. Wear suitable protective clothing, gloves and eye/face protection.



CONSTRUCTION CHEMISTRY

Additional Information

If working in confined areas, suitable respiratory protective equipment must be used. The use of barrier creams provide additional skin protection. Should accidental skin contact occur, remove immediately with a resin removing cream followed by soap and water. Do not use solvent. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed seek medical attention immediately - do not induce vomiting.

Fire

Expanmortar* EL and Expancote* Primer Sealer are non-flammable.

Expanchem Fospak 102 is flammable. Keep away from sources of ignition. No smoking. In the event of fire extinguish with CO₂ or foam. Do not use a water jet.

Flash points

Expanchem Solvent 102 : 33°C

For further information, refer to the product materials safety data sheet.

Expanchem Fospak manufactures a wide range of complementary products which include :

- waterproofing membranes & waterstops
- joint sealants & filler boards
- cementitious & epoxy grouts
- specialised flooring materials

Expanchem Fospak additionally offers a comprehensive package of products specifically designed for the repair and refurbishment of damaged concrete. Expanchem Fospak's 'Systematic Approach' to concrete repair features the following :

- hand-placed repair mortars
- spray grade repair mortars
- fluid micro-concretes
- chemically resistant epoxy mortars
- anti-carbonation/anti-chloride protective coatings
- chemical and abrasion resistant coatings

For further information on any of the above, please consult your local Expanchem Fospak office - as below.

* Denotes the trademark registered.

REGIONAL SALES OFFICES IN PAKISTAN:

Fospak (Pvt) Ltd.

Head Office

702, Business Avenue,
Block-6, PECHS., Shakra-e-Faisal,
Karachi, Pakistan.
Tel # +92-21-34528477, 34529859
Fax # +92-21-34522436
Email : info.khi@fospak.com.pk

Lahore Sales Office

2nd Floor Sarwar Shaheed Plaza,
Cavalry Ground,
Main Boulevard, Lahore Cantt,
Lahore, Pakistan.
Tel # +92-42-36675773
Fax # +92-42-36675838
Email : info.lhr@fospak.com.pk

Rawalpindi Sales Office

1st Floor,
Al-Harmain Plaza,
Main Murree Road,
Rawalpindi, Pakistan.
Tel # +92-51-39290592
Fax # +92-51-39290590
Email : info.isb@fospak.com.pk

Important note

Expanchem Fospak products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Expanchem Fospak endeavours to ensure that the technical information on this data sheet is correct at the time of printing, it is the customer's responsibility to satisfy himself, by checking with the company that this information is still current at the time of use, that the product is suitable for the intended application, and that the actual conditions of use are in accordance with those recommended. Because Expanchem Fospak has no control over the conditions of use of its products, all recommendations or suggestions regarding the use of these products are made without guarantee.

www.fospak.com