

NUCEM H.B. MORTAR

Lightweight Cementitious Mortar

Description

A prepacked polymer modified, fibre reinforced lightweight cementitious mortar designed for the restoration of spalled and damaged concrete where formwork cannot be utilised. A durable system which affords maximum protection to embedded reinforcement. Can be applied to a thickness of up to 50mm in a single application on a vertical surface. Independently tested by Taywood Engineering Limited and complies with the DTp specification BD27/86 clause 6.

Advantages

- Pack contains everything required including gauging liquid.
- Guaranteed low water/cement ratio.
- Excellent adhesion to dense concrete and steel etc.
- Contains no chlorides.
- Aggregate is non-Alkali Silica reactive in accordance with ASTM C289.
- All contents pre-weighed dispensing with need for any measurement.
- Excellent workability and finishing properties.
- Good resistance to water, frost and salt permeation.
- Can be laid in sections from 10mm upwards.
- Based on shrinkage compensated Portland Cements.

Applications

- Repair of concrete damaged by reinforcement corrosion or fire damage.
- Repairs to spalled columns, beams and soffits.
- Waterproof pointing mortar.
- Waterproof render to concrete, brickwork and blockwork.

Technical Information

Typical 24 hour Compressive Strength:	16N/mm ²
Typical Ultimate Compressive Strength:	42N/mm ²
Maximum Water/Cement Ratio:	0.4
Density:	1350-1450kg/m ³
Yield:	725 cc/kg
Cement Content Greater Than:	400 kg/m ³

** Summary of Taywood Engineering test results is on attached sheet **

Surface Preparation

Substrate must be clean and sound, hence all grease, oil, paint, plaster and laitance must be removed. Grit blasting, steam cleaning or water jetting are the preferred methods. If surface has been contaminated with moss or lichen then the surface should be treated with Nufins Fungicidal Wash.

Mechanically remove damaged concrete and expose reinforcement around its full circumference and beyond its corrosion length. Break out to achieve a sound surface, minimum depth 10mm, the edge of the repair must be recessed to avoid feather edging.

All rust and scale should be removed from any exposed steel preferably by blast cleaning. If the reinforcement bar has corroded reducing the bar diameter, then consideration should be given to replacing it.

Priming

Nucem Primer is prepared by adding the contents of the base to the hardener container and mixing thoroughly. Usable life 2 - 3 hours.

The prepared surface and cleaned reinforcement steel should be coated with the Nucem Primer using a stiff brush ensuring it is thoroughly worked into the surface. When using Nucem Primer it is not necessary to saturate the substrate with water as it may be applied to either dry or damp surfaces.

Whilst the primer is still tacky, normally within 3 hours, apply Nucem H.B. Mortar.

Coverage of Nucem Primer is 3 - 5 m² per pack.

Mixing

The use of a force action pan mixer such as a Cretangle or Daines will ensure thorough mixing. Add 2/3 of the gauging liquid to the mixer then add the powder component. Add sufficient of the remaining gauging liquid until the desired consistency is achieved. Do not overmix.

Application Instructions

Whilst the primer is still tacky apply the mixed Nucem H.B. Mortar. If the primer dries before application of the Nucem H.B. Mortar the area should be re-primed. Depending on the area to be treated, material should be placed either with a gloved hand or trowel ensuring material is thoroughly compacted onto the primed substrate and around the reinforcement.

Nucem H.B. Mortar may require building up in layers and the final layer should be finished with either a wood or steel float. When building up in layers it is preferable to "score" the surface to produce a physical key and to re-prime to ensure maximum adhesion.

Curing

Nucem H.B. Mortar should be protected from too rapid drying out by using normal methods of curing and precautions taken to avoid frost damage. UV degradable resin based curing agents should not be used if the surface is to receive subsequent treatments.

Overcoating

Nucem H.B. Mortar repair system is extremely durable and provides excellent protection to the embedded steel reinforcement. However, areas which have not been repaired will benefit from the application of a protective decorative coating. Nufins can advise on suitable systems.

Storage

Nucem H.B. Mortar has a shelf life of 6 months, when stored unopened at moderate temperatures. Protect from frost.

Packaging

Nucem H.B. Mortar is available in 20 kg bags (yield 14 litres approximately).

Nucem Primer is available in 0.5 kg and 1.0 kg units (coverage 3 - 5 m²).

Health & Safety

Nucem H.B. Mortar does not present any undue hazard and is non-toxic, however, as it is alkaline, gloves should be worn and any material should be washed from the skin and eyes before it dries with clean water.

Nucem Primer, like similar products, is capable of irritating unprotected skin, we therefore recommend the use of gloves and a barrier cream. Accidental skin contact should be removed using soap and water.

Limitations

Application should not be carried out when the temperature is below 5°C.

Technical Support

Through our technical department and laboratories we can offer a comprehensive service to specifiers and contractors.

Technical representatives are available throughout the UK to provide further information and arrange demonstrations.

NUCEM H.B. MORTAR

Lightweight Cementitious Mortar

RESULTS OBTAINED FROM TAYWOOD ENGINEERING LIMITED RESEARCH LABORATORIES

TEST	UNITS	RESULTS	AGE	COMPARISON WITH TYPICAL CONCRETE 30N/mm ² AT 28 DAYS
Compressive Strength	N/mm ²	35.5	7 days	21-32
(BS1881:Pt116)	N/mm ²	37.5	28 days	30-40
Density	Kg/M ³	1370	28 days	2250-2400
CO ₂ Diffusion Coefficient	cm ² /sec	2.1 x 10 ⁻⁵	28 days	3.7 x 10 ⁻⁴
u value	–	7100	28 days	400
R value	m	140	28 days	8
Scat 20mm	mm	350(1)	28 days	–
Sorptivity	mm min ^{-1/2}	0.01	28 days	0.15
Cl-Diffusion Coefficient	cm ² /sec	1 x 10 ⁻¹⁰	6 months	8 x 10 ⁻⁹
Coefficient of Thermal Expansion	–	7.8 x 10 ⁻⁶	28 days	6-12 x 10 ⁻⁶
Flexural Strength				
(BS6319:Pt3)	N/mm ²	6.4	28 days	3-6
Secant Module of Elasticity in Flexure (BS6319:Pt3)	GN/m ²	11.5		
Indirect Tensile Strength				
(BS1881:Pt117)	N/mm ²	3.95	28 days	2.5-3.5
Direct Tensile Strength				
(BS6319:Pt7)	N/mm ²	4.22	28 days	–
Water Permeability Coefficient				
(BS1881:Pt5)	m/sec	1.7 x 10 ⁻¹³ (2)	28 days	1 x 10 ⁻¹⁰
Bond to Concrete				
(BS6319:Pt7)	N/mm ²	2.15(3)	28 days	–

NOTES:

1. Estimated thickness of concrete equivalent to 20mm of Nucem H.B. Mortar.
2. Valenta method, estimated from depth of penetration after 24 hours under test.
3. 20% failure in the concrete, 80% failure in Nucem H.B. Mortar (bond at interface did not fail in any of the tests).
- 4 The acrylic grade complies with the requirements of BD27/86 Clause 6 DTp Model Specification for Repair of Concrete Highway Structures.



Kingston House, 3 Walton Road, Pattinson North, District 15, Washington, Tyne & Wear, NE38 8QA, United Kingdom.
 T. +44 (0)191 416 8360 F. +44 (0)191 415 5966 W. www.nufins.com E. info@ulsuk.com

The information and/or specifications contained herein or in our literature or given by Nufins, its employees, distributors, agents or representatives with regard to its product or their use or application are given in good faith, but no liability is accepted for any loss or damage (including direct or consequential loss or loss of profits) from the use of products because Nufins has no control over how its products are used and applied.



FM11022