MasterStrength ADH 4000

Epoxy Adhesive for CFRP Laminate, Bar and Anchor systems

Material Description

MasterStrength ADH 4000 is a two component solvent free epoxy adhesive for the MasterStrength Laminate, Bar and Anchor systems and a filling compound for irregular surfaces.

Areas of Application

The homogeneously mixed epoxy adhesive MasterStrength ADH 4000 is applied to the tacky primed concrete (MasterStrength PRI 3500) surface by means of a steel trowel or similar. MasterStrength ADH 4000 is used as a structural adhesive for the MasterStrength laminates, bars and anchors to the substrates (concrete, steel and wood).

Characteristics and Benefits

- Long pot-life – allows installation of long laminates
- Thixotropic with high adhesive strength – self-supporting requiring no external propping and with minimal drips and runs
- High cured bond strength – creating true composite with substrate

Properties

Application Properties	Results
Mixing Ratio PartA: PartB	100:35 per weight or 3:1 per volume.
Colour	Grey
Specific Gravity @ 23°C	1.14–1.34 g/cm³
Full Cure @ 23°C	7 days
Pot life 23-28°C	30-40 minutes
Gel time 23-28°C	60 minutes
Tack free 23-28°C	2-3 hours

The performance data is typical and based upon controlled laboratory conditions. Actual performance on the job site may vary from these values based on actual site conditions.

Performance Properties	AS5100.8 Table A2.3.3 Requirement	MBS tested value @7days
Bond Strength ASTM D7522	>1.5MPa or concrete failure	>3.5MPa (substrate failure)
Shear Strength DIN EN ISO 4624	>12MPa	≥20MPa
Compressive strength ASTM D695 (50mm cubes)	>55MPa	≥67MPa
Tensile strength ISO 527-2:	>15MPa	≥40MPa
Static E-Modulus in Tension ISO 527-2	>9000 MPa	≥9800MPa
coefficient of thermal expansion ASTM E831	≤9.5 per °C	≤3x 10^{-5} per °C
Glass Transition Point (Tg) ASTM D3418	≥ 60°C	≥70°C

Application

For detailed application methodology, please refere to "CFRP Structural Strengthening, MasterStrength systems" application guide.

Surface Preparation

Remove oils, grease, dust or any other loose material from the surface that may impair adhesion Application of externally bonded reinforcement should only take place if the substrate has an inherent tensile strength of at least 1.5 MPa.

The surfaces of elements that are still in good condition or restored with MasterCrete repair mortar should be roughened sufficiently with grit blasting or similar.

Angle grind, grit blast, or needle gun repaired surfaces, to remove smooth, cement paste rich surface layers (laitance) and ensure aggregate is exposed and substrate surface has a sufficient profile.

MasterStrength ADH 4000

Epoxy Adhesive for CFRP Laminate, Bar and Anchor systems

A surface profile of ICRI CSP 3-4 is desireable. With degraded substrates, the whole damaged layer should be removed by scarifying, hydro-demolition or similar and then structural restoration carried out with a suitable mortar eg. MasterCrete CI 5488, MasterStrength 1446 or MasterStrength ADH 4000 to ensure surfaces are within allowable levelness and flatness tolerances.

Mixing

Mechanically pre-mix Part A before adding all of Part B and mixing for two minutes or until a homogeneous mix is produced using a slow speed drill and suitable mixing paddle, spiralling from the bottom up. Mix only full kits at a time.

Method of Use

Ensure a maximum substrate humidity of 4% and substrate temperature is at least 30°C above dew point .

Apply a layer of MasterStrength PRI 3500 first and apply the MasterStrength ADH 4000 while the primer is still tacky.

DO not allow to become tack free before application of the MasterStrength ADH 4000. Otherwise, sand seed the MasterStrength PRI 3500 whilst wet and apply MasterStrength ADH 4000 within 48 hours.

If necessary, apply a levelling coat of MasterStrength ADH 4000 using a putty knife, to fill any bug holes or imperfections. Recheck surface tolerances. Maximum layer thickness of MasterStrength ADH 4000 for re-profiling is 20 mm.

In the application area of the laminate, the concrete surface shall be completely covered with adhesive to a nominal thickness of between 1-3 mm.

For Near Surface Mounted applications such as bars or laminates, apply MasterStrength ADH 4000 to half fill the slot, via a caulking gun or similar, ensuring no air voids. Tool over the surface flush with the surrounding substrate. Broadcast clean kiln-dried sand onto the wet adhesive surface (if required) to assist bonding of subsequent coatings or layers.

Estimating Data

A 5kg kit of **MasterStrength ADH 4000** yields approximately 4.0 litres.

Under normal conditions, preparation of surfaces for NSM Bars requires cutting groove/slot into the surface according to the depth and widths indicated on the table below:

FRP type (size)	Groove width x Depth	MasterStrength ADH 4000 yield (1x5kg kit/Lm of FRP)
Bar (8mm)	14x14mm	20m
Bar (10mm)	16x16mm	16m
Bar (12mm)	18x18mm	13m
Bar (16mm)	22x22mm	10 m
Anchor (8,9.5mm)	16x16mm	16 m
LAM 15/2.5	8.5x21mm	24 m

Packaging

MasterStrength ADH 4000 is a two component system available in a 5kg kit size (Part A: 3.7 kg Part B: 1.3kg).

Storage & Shelf Life

MasterStrength ADH 4000 has a shelf life of 24 months. Store out of direct sunlight, clear of the ground on pallets protected from rainfall.

Precautions

For the full health and safety hazard information and how to safely handle and use this product, make sure that you obtain a copy of the Safety Data Sheet (SDS) from our office or website.

MasterStrength ADH 4000

Epoxy Adhesive for CFRP Laminate, Bar and Anchor systems

Disclaimer

MasterStrength-ADH4000-ANZ-V1-0826

STATEMENT OF RESPONSIBILITY	The technical information and application advice given in this MB Solutions Australia Pty Ltd publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use and for ensuring that the application and use of the product is in accordance with the manufacturer's guidelines and recommendations.
NOTE	Field service where provided does not constitute supervisory responsibility. Suggestions made by MB Solutions Australia Pty Ltd either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not MB Solutions Australia Pty Ltd, are responsible for carrying out procedures appropriate to a specific application.

MB Solutions Australia Pty Ltd	MB Solutions New Zealand Ltd	Emergency Advice:
ABN 69 634 934 419 Suite 102, 2 Burbank Place Norwest NSW 2153 **Freecall: 1300 227 300** www.master-builders-solutions.com/en-au	45C William Pickering Drive Albany, Auckland New Zealand **Phone: +64 9 414 7233**	1300 954 583 within Australia (24hr) 0800 001 607 within New Zealand