

## **PENAPATCH HB50**

**High Build, Medium Weight, High Strength Polymer Modified Patch Repair Mortar**

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### **DESCRIPTION**

Penapatch HB50 is a high strength, high build, medium weight shrinkage compensated structural repair mortar.

Penapatch HB50 is designed to be used for vertical or horizontal applications. Penapatch HB50 has high, ultimate compressive strength and high abrasion resistance.

The specially selected cements and polymers contained in Penapatch HB50 provide a mortar with strong adhesion to concrete and masonry on vertical and horizontal substrates with extremely low shrinkage and relatively low density. Penapatch HB50 requires only the addition of water

### **RECOMMENDED USES**

- High build repairs for vertical, overhead and horizontal repairs
- Repairs requiring high compressive strength
- Repairing damaged concrete panels where structural strength is required
- High build repair applications 5mm to 80mm for vertical surfaces
- May be applied in verticals up to 120mm in small pockets or with the aid of formwork
- Repairs to spalled or deteriorated concrete caused by corrosion of steel reinforcement
- Repairs requiring low permeability and high resistance to chlorides and carbon dioxide
- Can be applied up to 120mm in vertical surfaces

### **FEATURES AND BENEFITS**

- High ultimate compressive strength
- High build repairs achievable in a single application
- Low permeability providing protection from chloride attack and carbonation
- High strength and high abrasion resistance
- Dimensionally stable
- Excellent workability
- Shrinkage compensated allowing for long term dimensional stability
- Eliminates the need for formwork
- Contains no chlorides
- Can be applied by dry or wet process, achieving high build with exceptional compaction and enhanced performance
- May be coated with Aftek range of protective coatings
- Exceptional bond strength to concrete substrates
- Internal or external applications
- Pre-bagged eliminates any on-site mixing variation
- Easy to use- simply add water and mix
- Australian made

### APPLICATION INSTRUCTIONS

#### Surface and Substrate Preparation-

All surfaces must be free of oil, grease, dust, plaster, paint and any other contamination that will inhibit the bond.

Any cracked or weakened surface should be removed and repaired to provide a solid foundation.

It is recommended that for large areas a minimum depth of 5mm be prepared as to avoid excessive feather edging or skim coating.

Break out the repair area to a minimum of 5mm up to the saw cut edge.

Scabbing or high pressure water blasting should be used to remove laitance and provide a mechanical key.

If any corroded steel is present remove all loose scale and corrosion/rust deposits. Grit blasting is effective in removing corrosion, and all steel including re-bars should be cleaned to a bright condition.

Immediately after cleaning steel, the steel should be treated with Aftek Zinc Rich Primer. This will stop further oxidation and corrosion.

#### Priming-

Concrete/Masonry: Priming is necessary.

The substrate should be pre-soaked with water and excess water removed prior to application of Rendergrip B.

For damp or repairs exposed to occasional or permanent dampness, the substrate must be primed with Epicrete.

For very porous substrates all masonry surfaces should be primed with Aftek Rendergrip B.

Allow the primer to reach a tacky consistency before applying Penapatch HB50

Steel/Rebar: Exposed steel and rebar should be primed with Aftek Zinc Rich Primer.

Remove all loose corrosion deposits on steel. Steel should be cleaned to a bright condition. On completion of cleaning, prime steel with Aftek Zinc Rich immediately.

Note: If the Rendergrip B primer dries prior to application of Penapatch HB50, it is imperative that the Rendergrip B is re-applied and allowed to reach a tacky consistency prior to the application of Penapatch HB50.

If the Rendergrip B is too wet, the ultimate build-up of the Penapatch HB50 will be difficult as slump will occur to the interface of the concrete substrate and repair mortar.

In the case where Epicrete is used as a primer, the Epicrete must be tacky NOT DRY prior to the application of the Penapatch HB50.

#### Mixing-

Penapatch HB50 is ready to use- simply add the powder to 2.7 – 3.0 litres of water and mix using a mechanical forced action mixer with a high shear spiral mixing paddle.

DO NOT USE FREE FALL MIXERS.

Always add the powder to the pre-measured water and mix until a homogenous mix is obtained which is lump free.

Mixing normally takes 3-5 minutes.

Any shorter mixing time will result in an inconsistent mix.

DO NOT MIX PART BAGS

DO NOT MIX BY HAND

DO NOT ADD EXCESS WATER.

DO NOT ADD MORE THAN 3.0 LITRES OF WATER

Excess water will reduce the ultimate (final) strength and extend the drying time of the product. Additional or excess water will increase the sag and reduce the build-up of the mortar.

Only mix the quantity of material that can be used within the set time of the material. Discard partially set or hardened material.

### Application-

Apply the mixed material to the prepared surface using a trowel or a gloved hand. Thoroughly compact the mortar into the prepared and primed substrate and around the exposed steel reinforcement and re-bars. A smooth surface can be obtained using a steel trowel.

### DO NOT OVERWORK THE SURFACE

### Spray Application-

Penapatch HB50 can be applied using wet application technique. The mortar is pre-mixed with the required dosage of water and then pumped through a delivery hose through a spray gun with a suitable nozzle. Consult Aftek for further information.

### Low Temperature Application:

Do not apply at temperatures below 5° C and falling. All temperatures of 5° C and below, the use of warm water is recommended.

### High Temperature Application:

Do not apply at temperatures above 35° C as initial set will commence early and the product will be difficult to apply. It is recommended that chilled/cold water be used to mix the product.

### Curing-

Curing should be conducted in accordance to good concrete practise and Aftek recommend the use of suitable curing compound, Curecon A, applied in accordance to Technical Data Sheet.

### Over coating with protective coatings-

Penapatch HB50 can be over coated with the Aftek range of decorative and protective coatings. All coatings may be applied over the Curecon A; hence removal of the curing compound is not necessary.

TYPICAL & PERFORMANCE PROPERTIES (obtained using 2-6 litres of water per 20kg bag)	
Appearance	Grey powder
Fresh wet density	Approx. 1800 kg/m <sup>3</sup> dependent on consistency used
Application Temp	Minimum 5° C Maximum 35° C

SETTING TIMES 20° C	
Initial	3 hours
Final	5 hours

COMPRESSIVE STRENGTH MPa AS 1478.2 – 2005 @ 20° C and 50% RH Flexural Strength AS 1012-11 - 2000		
Age (Days)	Compressive Strength MPa	Flexural Strength MPa
1	22	4.5
7	33	6.5
28	55	7.5

APPLICATION INSTRUCTION		
	Vertical	Vertical( Deep areas)
Maximum	80mm	120mm
Minimum	5mm	5mm
Youngs Modulus approximately 26GPa		
Co-efficient of thermal expansion 9-11 x 10-6/°C		

YIELDS	
Consistency	Mortar
Water per 20kg Bag (litres)	2.9
Yield per bag ( litres)	12.8
Fresh wet density kg/m <sup>3</sup>	1800
Bags required per cubic metre (m <sup>3</sup> )	78

1 bag will yield 12.9 litres at 2.9 litres water per 20kg bag.

DYING SHRINKAGE Tested to AS 1012.13	
7 days	< 100 microstrain
28 days	< 350 microstrain
56 days	< 450 microstrain

ABRASION RESISTANCE Tested to ASTM CS01 – 1984 (Tested Abrasion)	
Age	Wear Index
28 days	100
Standard 40-50 MPa concrete has wear index 71	



## TECHNICAL DATA SHEET

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### PRECAUTIONS

- Addition of excess water, other than specified will lead to extended cure times and low strength development
- If the substrate into which the Penapatch HB50 is applied moves or cracks, reflective cracking will occur in the Penapatch HB50
- Ensure existing concrete surfaces/ substrates are at least 21 days old prior to application of Penapatch HB50
- Do not apply Penapatch HB50 in areas less than 5mm thick, occasional thickness less than 5mm is acceptable only in very localized areas
- In application where high winds and exposed areas are present, ensure curing compound is applied after final trowel
- Protect from direct sunlight/ heat
- Ensure Penapatch Structural HB80 does not come into contact with water or rain for a minimum of 24 hours
- Penapatch HB50 should not be used when temperatures are below 5°C and greater than 35°C
- If Penapatch HB50 is to be used in immersed conditions- Epicrete Primer must be used.

For more detailed information, please read the MSDS for this product.

### PACKAGING

Penapatch HB50 is supplied in 20kg poly lined bags.

### STORAGE-SHELF LIFE

Penatech HB50 has shelf life of 9 months if stored in the original sealed packaging in dry, low humid environments.

### CLEAN UP

Wash all tools and equipment with fresh, clean water immediately after use. Penapatch HB50 can only be removed mechanically.

### HEALTH AND SAFETY

Avoid contact with skin. Protective gloves and clothing are recommended when mixing or using this product. Please refer to full MSDS (material safety data sheet) for this product, which is available from Aftek upon request or through [www.aftek.com.au](http://www.aftek.com.au)

### TECHNICAL SUPPORT

Aftek manufactures a comprehensive range of high quality and performance construction products. In addition, ITLS offers technical support and on-site advice to specifiers, end users and contractors.

Please contact your ITLS-Aftek sales representative or Head Office for this service.

The information and any recommendations relating to the application and end-use of all ITLS products are provided in good faith based on ITLS's knowledge and experience of the products. In applications, the differences in materials, and variances of substrates and actual site conditions can vary such that no warranty in respect of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be taken as inferred either from this information, or from any written recommendations, or from any other advice offered by ITLS. The proprietary rights of third parties must be observed. All orders are accepted subject to our sale terms and conditions. All users should always refer to the most recent and up to date issue of the Technical Data Sheet for the product concerned, which is available on request. It is recommended that products should always be properly stored, handled and applied under tested and recommended conditions. PLEASE CONSULT OUR TECHNICAL DEPARTMENT FOR FURTHER INFORMATION.