CHEMfix
Construction Chemicals

Technical Datasheet

CHEMfix SBR

Old to New Bonding Agent and Waterproofing Admixture

DESCRIPTION

CHEMfix SBR is styrene-butadiene co-polymer latex specifically designed for use with cementitious mixes.
It is used in mortar and concrete as an admixture to increase water and abrasion resistance and durability. It is used with cement as a reliable water resistant bonding agent.

Fields of Application

- Bonding Agent
- Concrete repair
- Floor screeds and toppings
- External rendering
- Waterproofing and tanking
- Fixing brick slips and tiles
- Corrosion protection of steel
- Silage pit lining and protection

Features and Benefits

CHEMfix SBR modified cement based mixes have the following advantages:

- Greatly increased flexural strength
- Tensile strength increased
- Increased Bond Strength
- Greatly reduced shrinkage (with appropriate aggregate)
- Prevents bleeding
- Lower water-cement ratio
- Increased durability and toughness, improved abrasion resistance. Good frost, abrasion resistance and resistance to water-borne salt penetration.
- Resistant to many chemicals and to mineral oils
- Excellent adhesion to steel and concrete. Sticks well to brick, glass, asphalt, wood, expanded polystyrene and most building materials.
- Enhanced corrosion protection
- Proven performance
- Similar thermal expansion and modulus properties to concrete
- Can be used with potable water (WRC approved)

TECHNICAL INFORMATION

Typical properties of a **CHEMfix SBR** modified cement and sand mix are given below.
Unless otherwise stated, these are based on a '3 parts sand to 1 part cement by weight' mix in which 10 liters of **CHEMfix SBR** per 50kg of OPC have been incorporated.

Appearance : Milky white liquid
Composition : Styrene-butadiene copolymer latex
Compressive strength: 45 to 50N/mm²†
Tensile Strength: Up to 6.5N/mm²†
Flexural strength: Up to 13N/mm²†
Freeze thaw resistance: Excellent
Water vapor permeability: Less than 4g/m²/24 hour through an 11mm thick test piece*
Adhesion: Excellent to concrete, steel, brick, glass, etc.
Coefficient of Thermal Expansion
-20°C to +20°C
-20°C to +60°C
12.8 x 10.6
12.9 x 10.6

Chemical resistance Resists : mild acids, alkalis, sulphates, chlorides, urine, dung, lactic acid, sugar, etc.
Shrinkage during cure : 0.01% to 0.02%†
Resistance to water pressure : - 30m head Excellent - no water penetration through a 15mm thick test piece*

CHEMfix SBR added at 15 litres/50kg cement used.

Application Procedure

Preparation of Substrate
Surfaces to which **CHEMfix SBR** mixes are to be applied should be clean, sound and free of deleterious substances.
Remove all laitance, oil, grease, mould oil or curing compound from concrete surfaces using wire brush, bush hammer, scabbler or other plant as appropriate. Ensure that reinforcing steel is clean, free from grease or oil; remove scale and rust. When repairing spalled or damaged concrete, ensure that the concrete has been cut back to thoroughly sound material. Always lay to a minimum 6mm deep saw cut edge, depending upon application. Avoid 'feather edging'. For advice on preparation of concrete prior to repair – refer to the booklet ' **CHEMfix SBR** Guideline and Recommendations for use.'

Bonding Slurry

Wet down absorbent surfaces, such as concrete and brick, so that they are damp but surface dry when the bonding slurry is applied. Prepare a bonding slurry of approximately 1.5 parts of OPC to 1 part of **CHEMfix SBR** by volume.
These proportions can be adjusted to obtain a suitable mix consistency for any particular application, within the range 1:1 to 1:2 **CHEMfix SBR** cement. Mix the **CHEMfix SBR** and cement together by using a paddle fitted into a slow-speed electric drill, to form a smoother lump-free mix. The normal method of application is by stiff brush scrubbing
well into the surface, taking care to ensure complete coverage.
A typical single slurry coat has an average thickness of 0.3 to 0.5mm and thickness' significantly above this should be avoided. If a second coat is necessary it should be applied at right angles to the first. Never apply more than can be comfortably over-screeded/rendered within 15 minutes.
Materials for **CHEMfix SBR** Modified Mixes Sand Sand should be sharp, washed, well graded and free from excessive fines. For general use select a BS.882 C & M (previously Zone 2) sand. For rendering select a washed sand complying with BS.1199 Table 1, or equivalents to local published standards.

Cement

CHEMfix SBR is compatible with all types of OPC, sulphate resisting and high alumina cements. However with high alumina cements hardening will be delayed. (For use with other cements, contact **CHEMfix** Technical Services Department for advice).

Water

The strong plasticizing action of **CHEMfix SBR** greatly reduces the water requirements for any given workability.

Mixing

Mixing should preferably be carried out in a forced action mixer, a Creteangle is recommended. Hand batching is only permissible when the total weight of the mix is less than 25kg. Charge the mixer with the required quantity of sand and cement and pre-mix for approximately one minute. Pour the desired quantity of **CHEMfix SBR** and mix for about 30 seconds only, to minimize air entrainment. Slowly add water, whilst still mixing, until required consistency is obtained. (Stop mixer when testing consistency).
The total mixing time after adding the **CHEMfix SBR** should not exceed two minutes.
Owing to the strong plasticizing properties of **CHEMfix SBR**, rapid thinning can occur - avoid adding excessive water.

Application

Rendering to vertical surfaces
Apply the bonding slurry to the prepared surface and apply the render while the bonding slurry is still wet or tacky, generally within 15 minutes.
It is preferable to apply **CHEMfix SBR** modified mortars in coats to a maximum thickness of 6mm per coat, as greater thickness' can lead to slumping; however, several coats can be applied in fairly rapid succession, usually within 15 to 30 minutes. Thicker coatings can be applied providing suitable formwork is used. Close the surface using a wooden float or steel trowel.
Alternatively, scratch the first coat of render after application and allow to dry overnight before applying the second coat. This technique is preferred for rendering where the drying rate is low but not recommended when waterproofing. Another method is to allow the first coat of render to dry overnight, and then apply a further slurry coat before applying the second coat of render.
Screeds and toppings, applied to horizontal surfaces

Screeds, patches, etc., based on **CHEMfix SBR** modified cements, can be laid to any thickness from 40mm down to 6mm minimum. After mixing, the **CHEMfix SBR** modified mix should be placed over the still wet bonding slurry, well compacted and struck off to level. It may then be trowelled to the required finish using a wooden float or steel trowel.
Note: Whenever screeds are being laid over existing concrete surfaces, it is important that expansion joints in the sub-floor are carried through the **CHEMfix SBR** modified mix. This can be done by fitting a temporary timber batten wrapped in a layer of polythene.

Coverage
When using as a bonding coat 1 liter of **CHEMfix SBR** will typically produce enough slurry to coat 3 square meters of substrate dependent on surface texture and thickness applied. For all normal use the standard dose of 10 liters of **CHEMfix SBR** per 50 kg Portland Cement is adequate. For extreme conditions and/or where adhesion, waterproofing, water vapour resistance or chemical resistance are critical, the dosage should be increased to 15 liters of **CHEMfix SBR** per 50kg Portland Cement. For this higher dosage, the extra water addition required is low and, therefore, use of wet aggregate may result in excessive workability.

Curing/After Treatment
Correct curing of **CHEMfix SBR** modified mixes is important Moisture cure for at least one day and then allow to dry out slowly. Initial curing is necessary to ensure hydration of the Portland Cement. The latex mortar must then be allowed to dry out to permit the latex particles to join together to form continuous films and strands.

Specific recommendations for use in

- Old to New Bonding Agent
- Concrete Repair
- Waterproof Tanking
- Fixing Brick Slips, Tiles, etc.
- Flooring
- Substrate Preparation Refer to the booklet '**CHEMfix SBR** Guidelines and Recommendations using **CHEMfix SBR**'.

Cleaning
All tools should be cleaned with water immediately after use. If delayed, use of soap and coarse wire wool may help. Solvents such as white spirit or **CHEMfix** Cleaning Solvent can be useful in removing partially hardened mortar should this be necessary.

Packaging
CHEMfix SBR is supplied in 210 liters drums.

Storage
Stir before use. Protect from frost, **CHEMfix SBR** may be permanently damaged by freezing, particularly if thawed quickly.

Shelf Life
Up to one year when stored under normal conditions and temperatures (5°C - 40°C)

Watch points

Always use fresh, cool cement and sharp, clean, well graded aggregate, free of excessive fines.

Keep mixing time to a minimum - see above recommendations.

Until the user becomes familiar with its workability the appearance of **CHEMfix SBR** modified mix is deceptive; when of correct it may appear to be too dry.

However, it will be found that it can be compacted and trowelled satisfactorily. Avoid using excess water.

Never apply **CHEMfix SBR** modified mixes or concrete to a bonding slurry that has been allowed to dry out.

Trowelling should proceed with the work. Do not over trowel and avoid re-trowelling. Protect from too rapid drying out prior to trowelling.

Rapid hardening cement should be used in cold weather conditions and normal precautions must be taken. Applications can continue down to 2°C, provided the mortar temperature is not allowed to drop below 4°C until thoroughly hard.

Protect new work from frost until a compressive strength of at least 5N/mm² has been reached.

CHEMfix SBR mixes may be slightly darker in appearance than corresponding unmodified mixes.

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Health and Safety

For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted. The following general comments apply to all products. As with all chemical products, care should be taken during use and Storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapor until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

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