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CEMENT FORTIFIER SBR

CEMENT FORTIFIER SBR is a styrene-butadiene copolymer latex specifically designed as a latex admixture for use in cementaceous compositions. ***CEMENT FORTIFIER SBR*** confers numerous advantages over untreated mortars and concretes by:-

(a) Greatly improved adhesion to substrates, including dense impervious concrete.
(b) Excellent resistance to water and water vapour.
(c) Mixes may be applied in thin section.
(d) Improved toughness and flexibility.
(e) Improved chemical resistance (acids and alkalis).
(f) Reduced dusting.
(g) Better frost resistance.

Cement based mixes containing ***CEMENT FORTIFIER SBR*** are particularly useful in various applications. Some examples are:-

* Water-resistant renderings for interior or exterior walls or basements.
* Damp-resistant layers.
* Levelling floors prior to laying tiles, parquetry etc.
* Industrial flooring, screeding and topping.
* Nosing of stairs (interior or exterior).
* Flooring for dairies, factories, fertiliser stores where increased chemical resistance is required.
* Lining of effluent ducts.
* Corrosion protection of steel reinforcing rods in concrete and of steel structures.
* Water resistant adhesives for tiles, aggregates, glass, steel etc.

PROCEDURE.
Mixing procedures for mortars or concrete containing ***CEMENT FORTIFIER SBR*** is similar to that used in conventional compositions, gauging water being partially or completely replaced by ***CEMENT FORTIFIER SBR***. The actual quantity of ***SBR*** required will depend on the application, but normally the requirement is 0.2-0.3 parts on the weight of cement ie 20-30% of the weight of cement used in the mix (7L-14L per 40kg bag). Levels of higher or lower rates may be applicable in special circumstances. ***CEMENT FORTIFIER SBR*** can be added via gauging water in a prediluted form (usually 1:10) providing the level of ***SBR*** required is achieved.

Choice of aggregates is always important in this type of mixing and the sand should be washed, sharp sand free of excessive fines. When preparing the mix always pre-bend the dry ingredients, add the ***CEMENT FORTIFIER SBR***, mix , then add further water to the desired consistency. **Do not over add water** as **too much will cause shrinkage cracking**, too little will delay cement hydration causing the coating to remain soft. The addition of ***CEMENT FORTIFIER SBR*** will alter the mix in these
ways; colour (darker), the workability time, (increased) and plasticising (increased) . Hence the addition of specific
plasticisers (fly ash, lime or mortar plasticisers) is not usually required or recommended.

RENDERING:
When preparing for rendering walls etc preparation is of utmost importance. As usual ensure that the surface is free from crumbly and other unsound areas. Dusty patches and old paint should be removed. Usually preparation with a wire brush is all that is necessary. All surfaces should be damped an hour or so before priming.

PRIMING:
The application of a priming coat is normally recommended to obtain maximum adhesion of the subsequently applied rendering. The priming coat, consisting of 2 parts of ordinary Portland cement slurried with 1 part of ***CEMENT FORTIFIER SBR***, should be thoroughly brushed on the prepared wall surface. The rendering is applied whilst the priming coat is still wet.

MIXING:
A general purpose rendering composition is as follows:

Washed sharp sand	150 kg (3 parts)
ordinary Portland cement	50 kg (1 part)
CEMENT FORTIFIER SBR	9 Lt (18% on cement)
Water	as required to desired consistency (refer to note on water/cement ratio)**.

WATER CEMENT RATIO
As a guide normal cement ratios are 0.30 to 0.35 when using ***CEMENT FORTIFIER SBR,*** allowing for the water content of the latex itself being 50% approx. The theoretical water ratio for full hydration of cement is 0.27 (or 27%) and this is a minimum below which the full potential strength of the mix will not be achieved.

NOTE: Although fine sand may be used, especially where a very smooth finish is desired, it is essential there should be no fine
clay-like material present.

MIXING:
Mixing should be carried out in a concrete mixer, although hand mixing is possible with smaller batches. The usual procedure is to premix the sand and cement, then add the ***CEMENT FORTIFIER SBR***, mix for 2-3 minutes then slowly add the water until desired consistency is reached. **Over addition of water causes rapid thinning** of latex modified mortars owing to the plasticising effect of the latex.

APPLICATION:
The thickness of latex-modified renderings should be restricted to not more than 5-6mm per coat. Greater thickness tends to causing sagging. However, several coats may be applied in fairly rapid succession; it is sufficient to allow each coat to set-off adequately to receive the subsequent coating. The dry time between each coat will vary according to conditions, but is typically 15-30 minutes. A single trowelling operation is usually sufficient to achieve a moderately smooth finish. If a smoother surface is required, the rendering should be floated using a clean steel or, preferably, wooden float after a suitable time.

WATER RESISTANT RENDER.
Where the main requirement is improved water resistance, a modified application method is recommended. After suitable preparation of the substrate, two sealing coats consisting of approximately 2 parts Portland cement and 1 part ***CEMENT FORTIFIER SBR*** should be brushed on to the surface. The second coat being applied as soon as the first coat is touch dry ie. 20-30 minutes. Ideally, the sealing coats should be applied at right angles across each other. thus ensuring complete coverage of the substrate. Each sealing coat should not exceed 1.5mm, otherwise crazing may occur. Before proceeding further, the double seal coat system **must dry out** completely **for** a period of at least **48 hours**.

After the sealing coats have dried thoroughly, a tack coat of 2 parts Portland cement slurried with 1 part ***CEMENT FORTIFIER SBR*** should be applied. Apply the the render as soon as the tack coat is touch dry. The quantity of ***CEMENT FORTIFIER SBR*** required will depend on the degree of water resistance desired. A normally satisfactory mix is listed below:-

Washed sharp sand	150 kg (3 parts)
ordinary Portland cement	50 kg (1 part)
CEMENT FORTIFIER SBR	13.5-18 lt (27%-36% on cement)
Water	as required to desired consistency .

The higher level is usually used where a high hydrostatic head pressures are expected.

CLEAN UP:
Wash up equipment immediately while still wet, however if this is omitted use **Brush Cleaner BC40** or other hydrocarbon solvents.

SAFETY:
Although ***CEMENT FORTIFIER SBR*** is not considered a hazardous material, Material Safety Data Sheet is available on request.

SOME TYPICAL MIX DESIGNS FOR VARIOUS APPLICATIONS

1. TOPPING CONCRETE FLOORS (over 5mm thick).

i) To a thoroughly clean and dry surface apply a coat of diluted ***CEMENT FORTIFIER SBR*** (diluted 1:4 water) and allow to dry.

ii) Apply a bonding coat of diluted ***CEMENT FORTIFIER SBR*** (4: 1 water), progressively as the toppings are being laid and avoid walking on this ***CEMENT FORTIFIER SBR*** coating.

iii) Apply toppings while ***CEMENT FORTIFIER*** is still "tacky". Suggested mix is 2-3 parts clean sand or fine aggregate, 1 part cement (Portland A) gauged with a ***CEMENT FORTIFIER SBR*** admixture (***CEMENT FORTIFIER SBR*** 1: water 10).

Note: Surfaces must be clean and free of contamination. Any surface which has been previously used for storage of grains, animal products must be thoroughly steamed cleaned with a suitable degreasing detergent to ensure bacterial does not grow between the original surface and the new one. Any surface contaminated with sugar or sugar products must be thoroughly rinsed to prevent the weakening of cement hydration. Where expansion joints are used in the original floor, they must be followed in the new topping.

2. PATCHING OR TOPPING CONCRETE FLOORS (under 5mm thick).

i) To a thoroughly clean and dry surface apply a coat of diluted ***CEMENT FORTIFIER SBR*** (diluted 1:4 water) and allow to dry.

ii) Apply a bonding coat of diluted ***CEMENT FORTIFIER SBR*** (1: 1 water), progressively as the toppings are being laid and avoid walking on this ***CEMENT FORTIFIER SBR*** coating.

iii) While the bonding coat is still wet or tacky, carry out patching or place the topping. Suggested topping mix: 2 or 3 parts clean sand, 1 part cement mixed to a workable consistency with ***CEMENT FORTIFIER SBR*** and water (1:10). Avoid over trowelling, **do not over wet the mix**.

3. RENDERING SMOOTH SURFACES eg. steel beams & lintels etc

i) Clean and degrease the surface so it is free of oil and grease etc, wire brush the surface to remove any flaky rust . Apply 1 coat of diluted ***CEMENT FORTIFIER SBR*** (diluted 1:4 water) and allow to dry.

ii) While the previous coat is still "tacky" apply one coat of (cement 1, sand 1/4, 5mm metal screenings 2 parts) mixed to a "Splash Coat" consistency with ***CEMENT FORTIFIER SBR*** and water (1;4).

iii) Allow 24 hours before rendering using the specified render mixed with ***CEMENT FORTIFIER SBR*** admixture (1:10)

4. SETTING A CEMENT COAT TO A RENDERED/CONCRETE ROUGH SURFACE.

i) To a thoroughly clean and dry surface apply a coat of diluted ***CEMENT FORTIFIER SBR*** (diluted 1:4 water) and allow to dry.

ii) Apply bonding coat of diluted ***CEMENT FORTIFIER SBR*** (diluted 1:1 water) to all large holes and depressions and while this is still tacky proceed as in (iii).

iii) Mix 5 parts sand and 2 parts cement and enough diluted ***CEMENT FORTIFIER SBR*** and water (1;4), to make a concrete consistency, fill any big holes and allow to dry.

iv) Treat the surface with dilute ***CEMENT FORTIFIER SBR*** and water (1;4) and while this coat is still wet mix 2 parts cement and 1 part sand with enough dilute ***CEMENT FORTIFIER SBR*** and water (1;4). To make a mix that can be trowelled on 4mm thick.

5. PLASTER SETTING ONTO CONCRETE CEILINGS, WALLS, BEAMS etc.

i) Clean and brush down the surface removing all loose materials, including any oil, grease and form release agents remaining on the surface. Apply 1 coat of diluted ***CEMENT FORTIFIER SBR*** and water (1;4). and allow to dry.

ii) Apply 1 coat of diluted ***CEMENT FORTIFIER*** (diluted 1:1 water) to the surface and while this coat is still wet, plaster with Hard Wall Plaster mixed to the required consistency with diluted ***CEMENT FORTIFIER SBR*** and water (1;4).

6. RENDERING ONTO A PAINTED SURFACE.

a) To a sound painted surface which has been brushed with a Wire Brush apply 1 coat of diluted ***CEMENT FORTIFIER SBR*** (diluted 1:1 water) and allow to dry for 24hrs.
b) Apply a coat of diluted ***CEMENT FORTIFIER SBR*** and water (1;4). While this coat is still "tacky" apply one coat (4parts Cement, 1part sand, 2parts 5mm Aggregate) mixed to a "Splash Coat" consistency with diluted ***CEMENT FORTIFIER SBR*** and water (1;4). Allow to dry for 24 hours before rendering using specified cement Render mixed with ***CEMENT FORTIFIER SBR*** and water admixture (1;10).

7. RENDERING ONTO OFF STEEL FORM STRUCTURAL CONCRETE.

i) Remove all Form Release Agents which have transferred from the Forms to the Concrete.
ii) Remove all loose materials.
iii) Apply a coat of diluted ***CEMENT FORTIFIER SBR*** (***SBR*** 4: Water 1)
iv) While previous coat is still wet or tacky apply the Render in the normal manner. For Improved adhesion use a Render mixed with an admixture of ***CEMENT FORTIFIER SBR*** and water (1;10).

8. RENDERING ONTO MASONRY BLOCKS.

i) Clean and brush down the surface removing all loose materials.
ii) Apply a coat of diluted ***CEMENT FORTIFIER SBR*** and water (1;4) and allow to dry.
iii) Apply a coat of dilute ***CEMENT FORTIFIER SBR*** (1:1 with water) and while this coat is still wet apply the render using an admixture of ***CEMENT FORTIFIER SBR*** and water (1;10).

9. DUSTPROOFING AND/OR RETARDING OIL PENETRATION OF CONCRETE FLOORS.

i) To a thoroughly clean floor apply with a broom or brush, two coats of dilute ***CEMENT FORTIFIER SBR*** and water (1;6). Leave to dry approximately 12 hours between coats.
ii) A third coat may be applied for better retardation of oil. ***CEMENT FORTIFIER SBR*** will dry clear, binding surface particles together and produce a very pleasing smooth hard surface.

10. RESURFACING OR FILLING HOLES OR CRACKS IN MANY MATERIALS.

CEMENT FORTIFIER will mix with any material that will absorb water cement, plaster, sand, sawdust, lime, crushed stone, silica sands, flour, talc, papier-mache, or fabrics.

i) Ensure that the surface or hole is clean and free from dust and loose particles.
ii) Apply a coat of diluted ***CEMENT FORTIFIER SBR*** and water (1;4) and allow to dry.
iii) Apply a coat of dilute ***CEMENT FORTIFIER SBR*** (1:1 with water) and while this coat is still wet apply the filler which has been mixed to a suitable consistency using an admixture of ***CEMENT FORTIFIER SBR*** and water (1;4).

11. FILLING A LARGE HOLE IN A THIN SHEET.

i) Clean and brush down the surface removing all loose materials.
ii) Using neat ***CEMENT FORTIFIER SBR*** stick a piece of heavy gauze over the hole, depressing the centre into the hole, allow to dry.
iii) Apply a coat of diluted ***CEMENT FORTIFIER SBR*** and water (1;4) and allow to dry.
iv) Apply a coat of diluted ***CEMENT FORTIFIER SBR*** (***SBR*** 1: water 1) and while this coat is still wet apply the filler which has been mixed to a suitable consistency with diluted ***CEMENT FORTIFIER SBR*** (***SBR*** 1: water 4). Carry the patch 50 mm out from the hole and feather the edges.
v) When dry, sand to shape and smooth.
vi) Apply 1 coat of diluted ***CEMENT FORTIFIER SBR*** (***SBR*** 1: water 4)before re-painting.

12. TREATING CONCRETE SPALLING (CONCRETE CANCER)

i) Scratch or dig out all decaying Concrete back to a solid surface. care must be taken to remove all loose material. If this is not done the carbonation process will continue. Test the remaining surface with an indicator solution of phenolphthalein. If the solution remains colourless keep removing the affected concrete. If the indicator goes red enough has been removed and the remaining surface is sound.
ii) Treat all exposed reinforcement with a Rust Converter and Rust Inhibiting primer.
iii) Apply 1 coat of diluted ***CEMENT FORTIFIER SBR*** and water (1;4) to the area to be patched and allow to dry.
iv) Apply 1 coat of diluted ***CEMENT FORTIFIER*** (***SBR 4***: water 1) and while wet apply patching mortar.
v) Mix Patching Mortar using cement and sand , sand and aggregate with an admixture of ***CEMENT FORTIFIER SBR*** and water (1;10).

NOTE: This is a cosmetic treatment only; the deterioration of the concrete may re-occur in this area or other adjacent areas. It is the user's responsibility to ensure that the remaining concrete and reinforcing steel can still provide adequate structural strength to meet the original building specifications.

13. PATCHING CONCRETE FLOORS AND DRIVEWAYS.

i) Clean and degrease the surface so it is free of oil and grease etc, wire brush the surface to remove any flaky rust . Apply 1 coat of diluted ***CEMENT FORTIFIER SBR*** (diluted 1:4 water) and allow to dry.

ii) Apply a coat of dilute ***CEMENT FORTIFIER SBR*** (***SBR** 4*: water 1) and while wet apply patching mortar.

iii) Use a patching mortar made up of 1 part cement , 3 parts sand mixe to a workable consistency with an admixture of ***CEMENT FORTIFIER SBR*** and water (1;10).

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