a.b.e.® Construction Chemicals

METHODOLOGY
Waterproofing treated water tanks with dura.®flex

SPALLING REPAIRS

All spalling repair work to be identified and repaired as per as per the engineers detailing requirements employing the products as outlined in "**Repair and Protection of Reinforced Concrete Structures**".

RENDERING OF THE SURFACE

The surface to receive **abe® dura.®flex** as the final protective and waterproofing coating must be sound and have a fine wood float type finish.

SURFACE PREPARATION

Any surface to be screeded, plastered or patched must be thoroughly CLEAN and SOUND. It must be free from grease, oil and any other foreign matter. Laitance, dust, loose particles and any spalling or flaking surface must be removed.

Poor surfaces such as concrete brickwork etc. must be thoroughly dampened to kill suction. Soaking should continue for some 12 hours prior to an application being made. At the time of the application no free water or ponding must be present on the surface.

APPLICATION

Application of **abe® dura.®latex** modified systems takes place in two stages:

1. Priming with adhesive slurry.
2. Placing of the mortar.

1. ADHESIVE SLURRY FOR PRIMING

The gauging liquid consists of equal volumes of **abe® dura.®latex** and clean potable water. Adhesive Slurry is made from equal parts of clean dry sand (up to 3 mm particle size) and ordinary Portland Cement. These are dry mixed and then gauged with sufficient gauging liquid to give a viscous but easily brushed consistency. The slurry is brushed well into the pre-dampened substrate using a stiff broom or brush. If the priming slurry dries before the application of the mortar the it must be totally removed and primed again. The mortar must always be applied into a wet primed surface, failing this loss of adhesion of the mortar will occur.

2. PRODUCTION AND PLACING OF MORTAR

The gauging liquid composition will vary depending upon the thickness of the mortar layer to be placed:

Mortars up to 12 mm thickness are gauged with 1 volume **abe® dura.®latex**: 1 volume water.

Mortars between 12 – 20 mm thickness are gauged with 1 volume **abe® dura.®latex** : 2 volumes water.

Mortars exceeding 20 mm thickness are gauged with 1 volume **abe® dura.®latex** : 3 volumes water. Mortars are ideally mixed in a pan mixer and mixing time should not exceed 2 minutes to keep air entrapment to a minimum.

A mortar is made from 2 to 4 volumes of dry aggregate – not exceeding maximum 3 mm particle for plasters nor 8mm particle for screeds – dry mixed with 1 volume Ordinary Portland Cement.

This mix is then gauged with the appropriate gauging liquid to produce a stiff but workable material – a so called earth damp consistency.

The mortar is applied to the still wet slurry, consolidated, levelled and smoothed following good plastering or screeding practice. Finishing is made easier if tools are wetted from time to time with **abe® dura.®latex**.

CURING

The newly applied mortar must be protected from rain, direct strong sunlight and wind since too rapid drying will produce shrinkage, cracking and reduce cohesion. The newly laid surface must be kept damp for at least 5 days to promote good curing of the Portland Cement.

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CHRYSO
CHEMICAL SOLUTIONS FOR THE CONSTRUCTION MATERIALS INDUSTRY

APPLICATION OF THE FINAL WATERPROOFING SYSTEM APPLICATION INSTRUCTIONS

Surface preparation

All surfaces which are to receive the coating must be free from oil, grease, wax dirt or any other form of foreign matter that might affect adhesion. Typically, concrete may require grit-blasting.

Spalled surfaces or those containing large blow-holes and other such defects should be repaired using **abe® dura.®flex** or a **a.b.e.®** approved repair mortar. Care must be taken when choosing the repair mortar to ensure that it has all necessary approvals for contact with potable water.

If the surface contains small blow-holes, typically less than 1mm wide, the coating can be applied directly on to the substrate without the need for a treatment.

Cracks which are less than 0.3 mm in width can be overcoated as long as the crack is not likely to open up to greater than 0.3 mm (this is greater than the maximum permissible crack widths recommended in BS 8007 : 1987, the British Standard Code of Practice for the design of concrete structures for retaining aqueous liquids).

Cracks which are greater than 0.3 mm in width should be chased-out to 4mm in width and approximately 15 mm in depth. This should be filled with **abe® dura.®flex** (applied using less liquid providing a thicker consistency). When the material in the crack has hardened the coating should be applied over the crack.

Mixing

The liquid component should be poured into a plastic or metal drum having a volume of a least 20 litres. This should be placed onto a plastic sheet to avoid contamination. The powder component is gradually added to the liquid whilst mixing with a Paddle Mixer or other approved spiral paddle attachment on a variable speed drill. Mixing is continued, constantly moving the paddle around the drum, until a lump-free slurry is obtained. This should take a minimum of 3 minutes and a maximum of 5 minutes.

Note: The preferred drill speed is between 280 and 640 rpm.

Mixing warning

abe® dura.®flex may exhibit satisfactory handling characteristics even though inadequately mixed. This will result in a significantly lower level of performance or possible failure. It is therefore essential that mixing instructions are strictly adhered to with particular emphasis on the time of the mixing operation.

Pre-wetting of substrate

Thoroughly dampen the substrate surface with water using a brush, roller or spray bottle.

High porosity substrates will require more dampening than dense substrates. Do not apply the coating when the substrate is wet, but allow the water to soak in until the substrate is just visibly damp before proceeding.

Any excess water should be removed using a sponge. Any running water should be stopped with a suitably approved plugging mortar such as **abe® dura.®rep 60** or **180**. Contact the local **a.b.e.®** office for further advice on suitable materials.

General

The first coat should be applied at a wet film thickness of 1mm (coverage per coat is 1.8 kg/m² or 1 litre/m²). To ensure the correct thickness is achieved, measure out an area (for example 200m²), then calculate how much material will be needed to cover this area. Monitor the coating thickness during application at regular intervals using a wet film gauge. Care must be taken to attempt to fill all imperfections such as blow-holes during application. If not they can be filled while the coating is still fluid by using a dry sponge. If the coating has dried before these imperfections are found they can be filled using fresh material.

Allow first coat to cure for a minimum of 4 hours at 20°C/50% RH and longer at lower temperatures or higher humidity's. The exact drying time will depend on surface temperature, relative humidity and air movement. High temperatures and/or low humidity will reduce the drying time. This can vary from 1 to 16 hours. The maximum ambient temperature for application is 40°C.

The first coat should be left to dry until firm and un-markable to the touch. There is no maximum time between coats, however the surface may need cleaning with water prior to application of the second coat to remove potential contamination.

The second coat should also be applied at a wet film thickness of 1 mm. Pre-dampening of the surface is not necessary when applying the second coat.

No curing membrane is necessary, however the freshly applied coating should be protected from rain.

No curing membrane is necessary

Brush application

The most suitable type of brush is a soft bristled wallpaper paste brush (120 to 220 mm wide). Where larger areas are to be applied it is advisable to use a brush with a handle.

Load the brush up well and spread the material to the required thickness. If the brush begins to drag during application, do not add water to the material but dampen the surface again. Finish in one direction for a neat appearance.

For floor application, a soft bristled broom is recommended. Pour the material on to the substrate and then spread to the required thickness.

Roller application

Application by roller has the benefit of speed over brush application, particularly on smooth substrates. A good quality medium hair roller is recommended. The roller should be well loaded for ease of application. A heavy roller pattern will be left, therefore it is important to use a finishing tool to produce a smooth coating, with a uniform 1 mm wet film thickness.

Trowel application

Application with a steel plastering trowel also has the benefit of speed over brush application, as well as producing a superior finish. It is recommended that a scratch coat of a.b.e. duraflex be applied prior to the first coating to fill blow-holes, which should be allowed to cure for the equivalent of 2 hours at 20°C. Less liquid is added to the powder to obtain the desired consistency.

Finishing tools

A finishing tool may be required to produce a smooth finish or to repair film defects. Examples of suitable tools include a steel plastering trowel, a caulking tool and a hand sponge. All of these must be used immediately after coating application, otherwise the coating may drag or tear. When using a hard sponge it should be dry or very slightly damp. A wet sponge should not be used as this will cause polymer to come to the surface of the coating which causes an unsightly white streaky effect.

Batch to batch colour variation may occur. Ensure that materials for that application are always drawn from the same batch.

Note

Should a reinforcing membrane be used in conjunction with the **abe® dura.®flex** ensure that it is **abe ecofelt®** as it is alkali resistant.

Curing

Allow a minimum cure time of equivalent to 7 days at 7°C (3 days at 20°C and above). This is to ensure the full physical properties are developed.

LIMITATIONS

abe® dura.®flex should not be used when the temperature is below 5°C. The product should not be exposed to rainfall or moving water during application or within 4 hours at 20°C. The maximum ambient temperature for application is 40°C.

abe® dura.®flex should not be used on external surfaces where an aesthetic appearance is critical because differences in environmental conditions during cure may cause colour differences in the final surface. If any doubts arise concerning temperature or substrate conditions, consult the local **a.b.e.®** office.

Coverage

Nominal coverage rate: 8m²/15 kg for 1mm wet film thickness.

The coverage figure given is theoretical due to wastage factors and the variety and nature of possible substrates, practical coverage figures will be reduced. A minimum coverage of 2 kg/m²/mm/per coat applied in not less than two coats is recommended.

PRECAUTIONS

Health and safety

abe® dura.®flex powder is irritating to eyes, respiratory system and skin. Avoid inhalation of dust and wear suitable respiratory protective equipment.

abe® dura.®flex liquid is not classified as dangerous. **abe® dura.®flex** when mixed becomes highly alkaline. Wear suitable protective clothing, gloves and eye protection.

For both components and mixed material avoid contact with skin and eyes. In case of contact with eyes or skin rinse immediately with plenty of water and seek medical advice.

Cleaning and disposal

Immediately after application is completed, clean all tools and equipment with clean water. Hardened material can be removed by mechanical means .

Waste material should be allowed to harden overnight then disposed of as non-hazardous waste.

IMPORTANT NOTE

This data sheet is issued as a guide to the use of the product(s) concerned. Whilst **a.b.e.® Construction Chemicals Limited** endeavours to ensure that any advice, recommendation, specification or information is accurate and correct, the company cannot - because **a.b.e.®** has no direct or continuous control over where and how **a.b.e.®** products are applied - accept any liability either directly or indirectly arising from the use of **a.b.e.®** products, whether or not in accordance with any advice, specification, recommendation, or information given by the company.

FURTHER INFORMATION

Where other products are to be used in conjunction with this material, the relevant technical data sheets should be consulted to determine total requirements. **a.b.e.® Construction Chemicals Limited** has a wealth of technical and practical experience built up over years in the company's pursuit of excellence in building and construction technology.