[TECHNICAL BULLETIN]

ASTEC DEHYDRACRETE CEMENT RENDERS

STRAIGHT OFF TROWEL WATERPROOF REPAIRS FOR A VARIETY OF SUBSTRATES

Dehydracrete ■

Waterproof Render

PRODUCT TYPE

Modified dry mix cement render.

DESCRIPTION / USE

1.1Application of Astec Waterproof Render

Dehydracrete Waterproofing Render is a stringently formulated, two component reinforced waterproof render. Carefully graded washed silica's, cement, product control additives, and polyester reinforcing are blended to provide a uniform powder ready to mix on site.

As a result of Astec's exhaustive research and development programs, Astec chemically modify the render during manufacture which provides the applicator with a mortar paste that delivers excellent workability, ease in application and a render that can be applied to a wide variety of surfaces, including concrete block, polystyrene foam and metal.

Dehydracrete Waterproofing Render is supplied in dry form along with a 2 ltr bottle of wet mix, packaged in a 20 ltr plastic drum, ready for on site mixing with fresh clean water to the desired viscosity. The subsequent mortar paste, once layed dry, produces a hard pack substrate with minimal drying shrinkage, that exhibits outstanding adhesion to most clean dry surfaces. The product is extremely hard wearing, chemical resistant and demonstrates a strong impact resistance even at films as low as 1mm thick.

PROPERTIES

Dehydracrete Waterproofing Render is a specialty formulation, designed specifically for the applicator to simplify straight off steel-trowel waterproof repairs to imperfections on the surface of concrete, clay, timber, fibro, steel, polystyrene and many other substrates.

Astec Paints are a 100% Australian owned company committed to the research and development of technologically advanced coatings that provide premium durability against our harsh Australian conditions. Our coatings are manufactured with high regard for worker safety and environmental care and will provide you with absolute confidence in long term performance.

PROPERTIES

The formulation consists of four washed and kiln dried sands ranging from 0.05 to 0.9mm that provide a complete full pack render, thus giving maximum compressive strength and water impermeability. In addition, the product allows a fine chamfering of the repair edge eliminating the need to cut back areas to be repaired. The formulation enables fast, level concrete repairs to be carried out straight off a steel trowel.

Dehydracrete Waterproofing Render is ideally suited to simplify repairs and provide a hard wearing waterproofing surface on such applications as:

- Waterproofing walls of planter boxes, pond and basements
- Chatter marks in concrete decks and floors
- Areas ponding water on decks and drainage systems
- Waterproofing of sub-basement walls
- Polystyrene waterproofing
- Re-topping of worn concrete surfaces
- Spalling repairs
- Anti-slip surface for flooring
- Hard wearing surface to concrete floors with heavy traffic
- Chemical resistance to floor topping

The product can be used as a waterproofing render or surface restoration material that will provide excellent abrasion and impact resistance to the surface. The product has moderate flexibility, adheres extremely well to the substrate, has good chemical resistance and is fast and economical to apply.

SURFACE PREPARATION

→ 1

The substrate must be clean, sound, free of surface contaminants, all powdery residues, form oils, release agents, paint and considered to be non-friable in nature. All surfaces deemed to be friable must be sealed with a hydrophobic sealer/binder, we recommend Astec Rivett. Please refer to the technical bulletin for Rivett for preparation and application method.

→ 2

In the event that an existing paint finish is found to be defective in adhesion, the coatings complete removal is recommended to ensure complete adhesion of the Astec System. Removal of the finish should preferably be carried out using Methylene Chloride based paint strippers, we recommend Astec Regel or alternatively Alkaline paint

SURFACE PREP.

removers. However, where caustic based strippers are used the surface must be completely neutralised with a 10% solution of Acetic Acid and water. Astec Paints Australia will take no responsibility for lack of adhesion or leaching salts through the coating system caused by un-neutralised caustic materials remaining in or on the substrate.

→ 3
Off form concrete and tilt up concrete panels require extremely careful evaluation prior to any system coating application as failure to do so could result in complete delamination of the coating system. The surface must be thoroughly checked for bond breakers and or release agents used during construction. One simple method of testing for these chemicals is to wet the surface with water, if there is no immediate suction of the water to the substrate and the water beads off the surface or the surface feel slippery it is evident that the release agents are present. Complete removal of these chemicals must be carried out with high pressure washing and hydrochloric acid solution, however, wet sand blasting is the only sure method of providing a clean adherable surface. Consult the builder or panel manufacturer for details of the bond breaker used. Be advised that poor assumption in relation to bond breakers will result in costly adhesion failures. Check and re-check for their complete removal.

→ 4
Steel floated high sheen concrete surfaces should be wet sand blasted to remove its gloss then pressure washed to remove any remaining contaminants.

→ 5
Mould and fungus infested walls should have Sodium Hypochlorite applied to them prior to pressure washing. This process will kill any growths and assist in thier removal.

→ 6
Any structural defects should be saw cut and struck smooth with Dehydracrete Waterproof Render and sponge finished to avoid a shinny off steel trowel finish and provide an adherable surface. Any continually moving structural defects should be saw cut, installed with a backer rod (dependant on the crack size and filled with Astec Ure-seal. Refer to the Architectural details of the Ure-plex Technical Bulletin for further details on crack treatment below and above 3mm in size.

SURFACE PREP.

→ 7
Where severe carbonation of the concrete substrate has occured, exposing any corroded metallic reinforcement, consult your Astec Paints Representative for technical details on the correct remedial action prior to any product application.

→ 8
Any rust bleeding from the masonry must be treated, consult your Astec Paints Representative for technical details on the correct remedial action.

→ 9
Surface misalignments and protrusions, mortar splashes, form or shutter marks from Off Form Concrete, should be trimmed back. Tie wires, nails or steel on the surface must be completely removed and all other metal elements must be corrosion stabilised.

→ 10
Substrates deemed to be friable in nature should be sealed and bound with Astec Rivett. Refer to the relevent technical bulletin for Rivett.

PRETREATMENT FOR MOULD

This treatment for mould is required when the surface is previously mould invested.

With the surface clean dry and structurally sound, apply two coats of Astec Barrier and allow to dry prior to the application of any top coats or sealers. Astec Barrier will retard any under film mould spoilage. Refer to the relevent technical bulletin for Barrier to determine coverage and application.

SEALING

This treatment is required when the surface is friable or has excessive moisture content.

→ 1
With the surface clean, dry, free of any loose existing coatings and pretreated for mould, the surface must be sealed with Astec Rivett. The application of Rivett will provide both a stable substrate and will create a hydrophobic zone within the substrate.

→ 2
Apply Astec Rivett straight from the drum by brush, roller or spray. Apply in multiple coats to a coverage area of no more than 8m² per litre and allow the product to dry between coats (usually 1 hour). Any areas of the substrate that have proven

SEALING

to extremely friable should have additional coats applied to that area at a rate sufficient only to seal and lock the surface ***without leaving a full gloss film***. Extreme care should be taken to focus your attention during sealer application on complete coverage and penetration of the substrate without allowing the material to flood on to the substrate. Thorough checks must be carried out to determine that all powdery or friable surfaces are completely bound.

→ 3
The application of Astec Rivett is to seal and bind the masonry surfaces to a sound condition ready for top-coat application. The purpose of the sealer is not to form a surface film and therefore care must be taken not to over gloss the surface. Rivett should not be applied over any existing paint work as over gloss will occur.

→ 4
For spray applications of Rivett use a 518 to 521 tip. Any air or low pressure spray will atomise this material. For roller applications, a fine foam roller is most suitable. Refer to the Rivett Technical Bulletin for additional product details.

NOTE: RIVETT IS NOT A STRUCTURAL MATERIAL, THEREFORE, ANY DEFECT CAUSING STRUCTURAL MOVEMENT SHOULD BE CORRECTED PRIOR TO ITS APPLICATION. EG. LACK OF MOVEMENT IN CONTROL JOINTS AND/OR POOR FOUNDATIONS.

EQUIPMENT

Dehyrdacrete Waterproof Render can be mixed with a variety of mortar mixing devices including paddle mixer, drum mixer or mixing drill with a suitable dispersing arm. Dehyrdacrete can be applied to the surface using the conventional hawke and trowel method or with a plaster spray device, levelling with a wooden screed or rule and finished with a steel, wood, plastic or sponge float.

MIXING

Dehydracrete Waterproofing Render is a two part mix comprising of 25 kgs of dry blended materials and a 2 ltr bottle of wet mix. Thoroughly shake the bottle of wet mix and empty the content into a clean 20 ltr plastic pail. Refill the empty 2 ltr bottle with fresh clean water and empty 50% of the water into the 20 ltr bucket containing the wet mix. Add the dry blend to the wet mix while stirring with a drill mixer and adding the remaining 50% of water intermittently to

MIXING

your desired viscosity. Only add sufficient water to form a firm workable paste. With drill mixers thoroughly mix but do not over mix the paste causing air entrainment. Air entrainment will create a weaker mortar. If lower viscosity is required add only 200ml amounts of water to the mix at one time until desired viscosity is achieved. Allow the mix to stand for 3 to 5 minutes before use.

NOTE: **DO NOT ADD EXCESSIVE WATER OR OVER AERATE THE PRODUCT**

APPLICATION - SURFACE ABSORBENCY

Normal - Test absorption of the substrate by splashing water on it. If it stays wet consider the surface as 'normal' - this means it will only require light dampening with clean water prior to Dehydracrete application. Typical 'normal' substrates include cement blockwork and medium fired bricks.

Absorbent - An absorbent substrate will absorb water immediately and may take too much moisture from the Dehydracrete mixture. Such a substrate will require soaking with a lot more water. Typical substrates include low fired bricks, sand stone and aerated concrete blocks. In hot weather the substrate is best tempered with water to reduce suction and aid in the application of Dehydracrete.

Low Absorbency - These surfaces are typically Off Form Concrete and will require special attention. Prime with a solution of Dehydracrete Primer then prepare a dash coat of 2 parts Dehydracrete Waterproof Render to 1 part fresh cement mixed with an equal of 1 part Dehydracrete Part B and 4 parts water to produce a pourable slurry. When applying the dash coat aim for 70% cover of the substrate. Allow for an overnight dry time before proceeding with the normal Dehydracrete Waterproof Render application.

NOTE: THE DASH COAT DESCRIBED ABOVE IS ALSO FAVOURED FOR LOW ABSORPTION CEMENT BLOCKWORK, PARTICULARLY DURING WINTER WHEN WET SUBSTRATES OFFER LITTLE SURFACE SUCTION. THE APPLICATION OF THE DASH COAT WILL ELIMINATE THE POSSIBILITY OF DRUMMY SECTIONS DEVELOPING IN THE WORK AND WILL IMPROVE THE APPLICATION BY ALLOWING IMMEDIATE DEHYDRACRETE APPLICATION.

APPLICATION

TECHINIQUES

Application by Hawk & Trowel should occur in two passes, a tight first pass followed by a second levelling pass. Allow the render to stand for a short period to ensure stable surface moisture then, with a wet steel trowel, apply a final light finishing pass over the surface to remove any ridges. Apply more Dehydracrete to low areas as required. Dehydracrete droppings or other set materials should not be re-tempered with water and should be discarded. Always terminate application above a damp coarse line. Never bridge a damp coarse.

Application by Hopper Gun - Select and install the desired fine, medium or coarse nozzle to the hopper gun and ensure that both the gun compressor and lines are in good working order. Fill the hopper gun and conduct a small test patch with the material to determine the air pressure, mix viscosity and spraying pattern for the project are correct and practiced. Use only sufficient air pressure to splatter the mix evenly on the wall. The finish of the applied material is best achieved with a stainless steel trowel and or sponge and in some cases the product can be rolled with a dry texture roller to achieve a textured finish in the products surface.

Application by squeegee or broom is best carried out by at least two people, one of whom would pour the material while the other uses the squeegee or broom. The use of two people will result in a uniform application being employed across the entire surface. The mix is poured onto the surface in zig-zag strips at a similar width to the selected squeegee or broom and is poured in areas of no more than approximately 1.5m at a time. The squeegee/broom is then pulled across the surface toward the applicator while applying firm downward pressure, working away and backward from your start point. As the squeegee/broom is dragged over the product any areas missing product should be immediately filled using a managable material scoop with only enough additional product to fill the uncoated area. The squeegee/broom is then pulled across the surface once more. Continue to carry out this method of application across the entire width of the area and then return to where initial application commenced and conduct a 'tip off' pass along the entire length of the strip of material. Continue to lay strips of material parallel to each other across the entire area using the same technique.The use of this technique will leave marks in the surface and the end result will be more aesthetically pleasing if the marks are parallel to each other. Inspect the entire surface for imperfections once the surface has cured and if necessary apply an additional

TECHNIQUE

coat of the product. In the event that a non-skid finish is desired the material can be 'tipped off' with a dry texture roller or similar to achieve a textured finish in the products surface.

NOTE: REGARDLESS OF THE APPLICATION TECHNIQUE, ENSURE YOUR TOOLS ARE WASHED THOROUGHLY AT REGULAR INTERVALS AS THE MATERIAL IS EXTREMELY ADHESIVE AND IT IS DIFFICULT TO REMOVE ONCE DRIED.

PERFORMANCE STANDARDS

NOTE: IN ALL CASES CARRY OUT ALL NECESSARY PREPARATION AS PREVIOUSLY DESCRIBED IN THE PREPARATION SECTION OF THIS DOCUMENT.

Planter Boxes

- Pre-treat any previously mould affected surfaces with Astec Barrier.
- Seal any powdery substrates with Astec Rivett as previously described.
- Fill all cracks and floor to wall joints with a fillet of Astec Ure-seal as described in section 6 of Surface Preparation section of this document.
- Apply cove of Dehydracrete Waterproof Render over the fillets of Ure-seal at least 100mm up the wall and 100mm onto the floor. This can be conducted using a circular contoured plastic, aluminium or stainless steel scoop.
- Apply Dehydracrete Waterproof Render as described in the Application section of this document.

Floors and Other Waterproofing

- Pre-treat any previously mould affected surfaces with Astec Barrier.
- Seal any powdery substrates with Astec Rivett as described in the Sealing section.
- Pre-fill all cracks and deep surface imperfections with Dehydracrete Waterproof Render.
- Apply Dehydracrete Waterproof Render as described in the Application section.

LIMITATIONS

TO BE CONSIDERED WHEN SPECIFYING DEHYDRACRETE WATERPROOF RENDER

In applications where Dehydracrete Waterproof Render is to be specified for waterproofing projects that have critical long term watertight performance requirements, it is paramount that any movement in the substrate will not exceed the performance capabilities of the Render. Waterproofing Render is specified for many waterproofing applications because of the products high impact and abrasion resistance.

LIMITATIONS

The product has a great ability to resist puncturing on waterproofing projects that require earth or aggregate back fill to be directly against the Render's film such as in planter boxes, retaining and sub-basement walls.

Dehydracrete Waterproofing Render is extremely suitable for back fill style waterproofing applications because of the products high impact and puncture resistance. It must be remembered, and taken into account during specification, that hard in-elastic membranes have low tolerance to substrate movement and forthcoming cracks. To manufacture high impact resistant membranes there is a compromise in the products flexibility. Equally so, to manufacture highly elastic membranes there is a compromise in the products impact resistance. There will always be a compromise one way or the other.

Waterproofing of a substrate that is to be backfilled will most importantly require high impact resistance and therefore would have Waterproofing Render specified rather than a softer more elastic membrane that could puncture. In conditions where little or no engineering practice has been considered during construction, for example a 12m long planter box with no expansion joints, the construction will most likely crack at some point along the wall because of the omission of the joints. Therefore, using Waterproofing Render under these circumstances as a stand alone product would be inadvisable as the substrate movement is likely to exceed the capabilities of the product. The product will waterproof the substrate and tolerate backfill but will not tolerate the forthcoming movement that will more than likely occur and could ultimately leak. Careful consideration must be given to projects such as these where minimal engineering practices have not been observed to ensure long-term watertight integrity. The cost of rectifying a leak in a back filled waterproofing project that has been incorrectly specified is far more costly than the initial project because of the requirement to remove the backfill prior to rectification.

A project as described in the previous paragraph will require further specification incorporating the elasticity of a liquid applied membrane to accomodate for the lack of consideration for movement in the substrates design. Although liquid applied membranes offer outstanding elastic performance they will not tolerate back fill with earth or aggregate because their low impact resistance means they could easily puncture.

To successfully waterproof a project that neccesitates both elasticity and impact resistance requires the use of two different products that, in combination, will ensure the correct properties necessary for the less than optimum substrate performance allowances.

LIMITATIONS

→ 1
To accomodate the substrate movement that is expected the project should initially have an elastomeric membrane applied. We recommend either Astec EC-100 or Astec Ure-plex.

→ 2
To accomodate the impact resistance that is required for back fill resistant waterproofing, apply Astec Dehydracrete Waterproof Render in accordance with the Application section of this document.

→ 3
Preferably the applicator should demand that expansion joints are part of the substrate specification to provide a substrate that will not move at any other point other than were it has been designed to move.

CURING PROPERTIES

Dehyracrete Waterproof Render will dry in 6-10 hours @ 25°C and 50% relative humidity, depending on the dampness of the substrate and thickness of the render. As a general rule the material should be kept damp for the first 12 hours to ensure proper hydration of the mixture. If drying is too rapid, hydration will not take place and the render will not develop its full strength. The render should be allowed a minimum of 7 days to cure or 21 days for any system application.

Dehydracrete Waterproof Render provides a fast cure and the product imparts high early strength and therefore allows for early practical use of the curing treated surface. However, it must be remembered that, as with all cement based compounds full strength is not reached for 28 days.

CLIMATIC CONDITIONS

Dehydracrete Waterproof Render must not be applied at elevated temperatures above 30°C or in hot windy conditions. Application on large areas in full sun should be avoided and/ or the surface should be cooled and tempered with plenty of water. Always try to work in shaded areas. Dehydracrete should be protected from rain and frost in the first 24 hours. During inclement weather application should be stopped to give the product sufficient time to set. Protect the finished work around down pipes spouts or where ever water may continue to splash and wet the surface. In the event the weather changes with short notice and the application is at risk, protect the project with plastic covers where possible.

PRODUCT DATA

Colour	Off White
Compressive Strength @ APPROX 28 DAYS	47.9 MPa

Resilience to chemical abrasion:

White Spirit	Slight
Dibutyl Phthalate	Slight
Oxalic Acid	Moderate
Process Oil	V. Slight
Lactic Acid	Slight / Moderate

Coverage Rates

AVERAGE THICKNESS	COAT(S)	APPROX. MATERIAL (KGS/M²)
2mm	1	3.60
4mm	1	7.20
6mm	1	10.80
8mm	1	14.40
10mm	1-2	18.00
12mm	1-2	21.60
16mm	2	28.80

SCALE - 1MM THICKNESS: 1.8KG OF DEHYDRACRETE PER 1M²

Recommended Curing Times
OF A 1.9MM THICK FILM PRIOR TO:

Waterproofing Flood Test	3-7 days
Light Vehicle and Pedestrian Traffic	24-48 hours
Chemical Resistance	28 days
Back Fill	24 hours
Pressure Washing	14-28 days
Heavy Vehicle and Pedestrian Traffic	8-10 days

OVERCOATING

Dehydracrete Waterproof Render is a preparatory product of the Astec protective and decorative range and can be overcoated with most Astec Systems after 7 days. Products based on highly alkaline resistant binders are also suitable for overcoating.

SAFETY / DISPOSAL

Avoid repeated or prolonged skin contact. Use adequate ventilation when mixing product.

Refer to the state land managment authority. Normally suitable for approved land waste site. Do not pour down the drain.

Any technical advice furnished by Astec Paints Australia or any representative of Astec concerning use or application of any product is believed to be reliable. However, Astec makes no warranty, express or implied, of any use or application for which such advice is furnished.

The representations and recommendations regarding the products are based on tests which we believe to be reliable. Based on our findings no guarantee of their accuracy can be made due to variations in field conditions encountered. Thus, the products are sold with a limited warranty only, and on the condition that purchasers will make their own tests to determine the suitability of the product for their particular purposes. Under no circumstances will Astec Paints Australia be liable to anyone except for replacement of the product or refund of the purchase price.

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