Dekguard E2000

constructive solutions

High performance elastomeric, protective anticarbonation coating for concrete and masonry

Uses

Dekguard E2000 is designed to protect atmospherically exposed, reinforced concrete structures (above any splash zones) from attack by chloride ions, oxygen, carbondioxide and moisture ingress, especially where there is a danger of subsequent cracks appearing within the substrate. Typical uses include, but are not necessarily limited to, the following :

- New and existing structures
- Concrete storage tanks - external surfaces
- Bridge structures
- Coastal environments

Advantages

- **Crack accommodation -** withstands substrate cracking up to 2 mm and cyclic movement up to 1 mm.
- **High performance -** comprehensive barrier against carbon dioxide, water, sulphates and chloride ions.
- **Extremely durable -** maintains elastomeric performance, with high recovery, even after long term UV weathering.
- **Breathable -** water vapour can escape from the structure.

Description

Dekguard E2000 is an elastomeric, anticarbonation water-based protective coating based on a special acrylic polymer. It provides excellent elongation and recovery, resistance to aggressive elements, UV light and rain. It is available in a wide range of colours.

The complete system also includes a film-forming, stabilising primer (Dekguard Primer) which is supplied as a clear liquid and is based on silane-siloxane dissolved in a penetrating organic carrier. The primer is reactive and capable of producing a chemically-bound hydrophobic barrier, thus inhibiting the passage of water and water-borne contaminants. A thin surface film is produced which consolidates and stabilises porous substrates.

The Dekguard E2000 system thus comprises a single component penetrating silane-siloxane primer and a single component elastomeric pigmented coating, both ready for immediate site use.

Design criteria

To achieve the desired protective properties, the Dekguard E2000 system must be applied to the substrate at the correct coverage rates. The coating should thus can be applied in two coats to achieve a total dry film thickness of 200 to 300 microns.

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Properties

The values obtained are for the Dekguard E2000 system applied at the minimum recommended application rate.

Solids by weight	: 64%
Volume solids	: 50%
Carbon dioxide diffusion resistance Equivalent thickness of air (DIN EN 1062 Part 6 & FTM276)	: >50 metres
Carbon dioxide diffusion resistance Equivalent thickness of air (Taywood method)	: 240 metres
Carbon dioxide diffusion resistance Equivalent thickness of 30N conc. (Taywood method)	: > 500 mm
Water vapour diffusion resistance (Kolpfer method - eff.resist.S_D<4m)	: S_D 1.0m @ 200 microns dft
Rapid Chloride penetration test (ASTM C 1202)	: very low
Static crack spanning capability @ 200 microns dft @23°C (modified ASTM C836-76)	: 2 mm
Tear resistance (ASTM D624)	: 12 N/mm
Tensile Strength ASTM D412	: 3.0 N/mm²
Elongation (ASTM D412)	: >200%
Reduction in Water absorption ASTM C642	: >82%
UV resistance ASTM D4587, cycle 1 from ASTM G154	: >500 hrs
Adhesion (ASTM D4541)	: 1.0 N/mm²
Solar Reflective Index	: 105
Direct Solar Reflectance	: >83%
Emissivity	: >93%

Tested as per ASTM E 1980-11

(The above stated properties is for White Color Shade)

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Specification

The protective coating system shall comprise the following elements :

(i) a penetrating silane-siloxane primer (Dekguard Primer)
(ii) a single component, elastomeric, anticarbonation aliphatic acrylic coating. (Dekguard E2000)

The total dry film thickness of the protective coating system shall not be less than 200 microns, and shall provide :

(a) CO_2 diffusion resistance of not less than 50 metres (equivalent of air layer thickness)

(b) static crack accommodation of not less than 2mm

(c) adhesion greater than 1.0 N/mm² as per ASTM D 4541

Instructions for use

Application over existing membranes and/or coatings

It is not necessary to remove Fosroc's Nitobond AR or Rendercure prior to the application of Dekguard E2000.

However, for all other types of membrane or coating; it is advisable to carry out trials to determine both compatibility with Dekguard E2000, and retention of bond between the underlying coating or membrane and the substrate. For further advice, contact the local Fosroc office.

Substrate preparation

All surfaces should be dry and free from contamination such as oil, grease, loose particles, decayed matter, moss, algal growth, laitance, and all traces of mould release oils. This is best achieved by lightly grit-blasting the surface to the point where the fine aggregates are exposed but not polished. Where moss, algae or similar growths have occurred, treatment with a proprietary biocide should be carried out after the grit-blasting process.

It is essential to provide an unbroken coating of Dekguard E2000. Thus all blow holes and similar surface irregularities should be filled using Renderoc FC and should be allowed to cure properly before the application of Dekguard E2000. Consult the local Fosroc office for further details.

Substrate priming

A primer coat is required to penetrate and 'stabilise' the substrate. The depth of penetration of the primer, and thus its coverage rate, are determined by substrate profile, porosity and general condition.

Hence for low permeability concretes, primer penetration will be low and area covered per litre will be high - permeability may be affected by cement replacements (e.g. microsilica). It is thus recommended that a general coverage rate of 4m²/litre be observed, noting that this may change according to substrate condition.

Any areas of glass should be masked. Plants, grass, joint sealants, asphalt and bitumen-painted areas should be protected during application.

Dekguard Primer or Dekguard WB primer is applied as a primer for Dekguard E2000. The primer is best applied by using portable spray equipment e.g. knapsack-type. A uniform surface appearance (sheen) should be apparent when the required rate of application rate has been achieved. If any matt, porous patches remain, then a further application of Dekguard primer or Dekguard WB primer should be made . If in any doubt regarding substrate priming, contact the local Fosroc office.

Application

The correct application rates and overcoating times should be observed, in order to obtain the complete benefits of the protective properties of the Dekguard E2000 system, except where substrate condition dictates different application rates for the primer.

Dekguard Primer		
Number of coats	:	1
Theoretical application rate per coat	:	4 m² /ltr
Theoretical wet film thickness per coat	:	n/a
Overcoating time:	**@ 20⁰ C**	2 hours
	@ 35⁰ C	1 hour
Dekguard WB Primer		
Number of coats	:	1
Theoretical application rate per coat	:	8-10m2
Theoretical wet film thickness per coat	:	n/a
Overcoating time:	**@ 20⁰ C**	2 hours
	@ 35⁰ C	1 hour

The primer should be allowed to dry for a minimum of 2 hours at 20ºC (or 1 hour at 35ºC) before application of Dekguard E2000. Under no circumstances should the primer be overcoated until the surface is properly dry.

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Dekguard E2000	
Number of coats	: 2
Theoretical application rate per coat	: 5 m^2/ltr
Theoretical wet film thickness per coat	: 200 microns
Overcoating time@ 35^0 C	: 12 hrs

Dekguard E2000 should preferably be applied by airless spray equipment, but can also be applied by roller. For further information about application techniques and equipment consult the local Fosroc office.

All primed substrates should be treated with two coats of Dekguard E2000. It is important that no gaps or 'raw edges' appear in the finished coating. Special care should be taken to provide an unbroken coating at external corners and similar exposed protrusions.

The first coat should be applied to achieve a uniform coating with a wet film thickness of 200 microns. This coat should be allowed to dry until firm to the touch. Typically, this will be after approximately 12 hours in dry weather at 35ºC.

The second coat of Dekguard E2000 should be applied at 90º to the first, to ensure a final full unbroken coating to the substrate. The second coat should once more be applied at a wet film thickness of not less than 200 microns.

In order to maintain a record of the coating activities a coating log should be kept.

Cleaning

Dekguard E2000 should be removed from tools and equipment with clean water immediately after use. Dekguard Primer should be removed using Fosroc Solvent 102*.

Limitations

- Where application over existing sound coatings or paints is required, trials should be conducted to ensure compatibility and retention of the bond between the underlying coating and the substrate. Compatibility and soundness should be assessed on a trial area.

- Dekguard E2000 should not be used in submerged or permanently wet conditions. Consult the local Fosroc office for recommendations.

- Application should not commence if the temperature of the substrate is below 20ºC or above 60ºC, or where the prevailing relative humidity exceeds 90%.

- In conditions of high relative humidity i.e. 85-90% good ventilation conditions are essential. Substrate temperature should be at least 3ºC above dew point.

- Dekguard E2000 should not be applied in windy conditions where early-age dust adhesion may occur, or where rain is likely within 2 hours.

Technical support

Fosroc offers a comprehensive technical support service to specifiers, end users and contractors. It is also able to offer on-site technical assistance, an AutoCAD facility and dedicated specification assistance in locations all over the world.

Estimating

Packaging & coverage

Dekguard WB Primer	: 4 & 20 litre drums
Dekguard Primer	: 20 litre drums
Dekguard E2000	: 20 liter drums
Fosroc Solvent 102	: 5 litre drums

Coverage

Dekguard WB Primer	: 8 to 10 m^2 per litre (total)
Dekguard E2000	: 2.5 m^2 per litre (total)

Note : The coverage figures given are theoretical - due to wastage factors and the variety and nature of possible substrates, practical coverage figures will be reduced. Application rates and coverage of Dekguard E2000 may be varied according to particular service conditions. However, to ensure that the desired performance properties of the material are attained, it is important to observe correct application procedure.

Storage

When stored in cool, dry conditions between 10 and 25^{0}C away from sources of heat and naked flames, in the original, unopened packs. All products have a shelf life of 12 months.

If stored at high temperatures and/or high humidity conditions the shelf life may be reduced. Dekguard E2000 should be protected from frost.

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Precautions

Health & Safety

Dekguard Primer, Dekguard E2000 and Fosroc Solvent 102 should not come in contact with the skin and eyes, or be swallowed. Ensure adequate ventilation and avoid inhalation of vapours. Some people are sensitive to alkalis, resins and solvents. Wear suitable protective clothing, gloves and eye protection. If working in confined areas, suitable respiratory protective equipment must be used. The use of barrier creams provide additional skin protection. In case of contact with skin, rinse with plenty of clean water, then cleanse with soap and water. Do not use solvent. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed, seek medical attention immediately - do not induce vomiting.

Fire

Dekguard E2000 is non-flammable.

Dekguard Primer and Fosroc Solvent 102 are flammable. Keep away from sources of ignition. No smoking. In the event of fire, extinguish with CO_2 or foam. Do not use a water jet.

Flash points

Dekguard Primer	38°C
Fosroc Solvent 102	33°C

For further information, refer to the Product Material Safety Data Sheet.

Additional information

Hot weather working practices

Whilst the performance properties of Dekguard E2000 at elevated temperatures are assured, application under such conditions can sometimes be difficult. It is therefore suggested that, for temperatures above 35ºC, the following guidelines are adopted as a prudent working regime:

(i) Store unmixed materials in a cool (preferably temperature controlled) environment, avoiding exposure to direct sun light.

(ii) Keep application equipment cool, arranging shade protection if necessary. It s especially important to keep cool those surfaces of the equipment which will come into direct contact with the material itself.

(iii) Try to eliminate application in the middle of the day, when ambient temperatures will be excessively high.

(iv) Ensure that there are sufficient operatives available to complete application within the pot life of the material.

(v) Have a ready supply of Fosroc Solvent 102 available for immediate cleaning of tools after use.

* Denotes the trademark of Fosroc International Limited

† See separate data sheet

Important note :
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