

# Expancote\* S\*



CONSTRUCTION CHEMISTRY

## High performance coating for concrete and masonry

### Uses

Expancote\* S is designed to provide protection for atmospherically exposed structures against attack due to high moisture levels, acidic gases, sulphates and chloride ions. Typical uses include :

- Bridge abutments
- Concrete cladding and precast units
- Boundary walls
- Plinths and pipe support racks
- Concrete storage tanks
- High rise buildings and villas

### Advantages

- **High performance** - comprehensive barrier against carbon dioxide, water, sulphates and chloride ions.
- **Breathable** - also allows moisture vapour to escape from the structure.
- **Extremely durable** - highly resistant to the effects of long term UV weathering.
- **Protection in depth** - dual action system protects both the surface and the substrate.
- **Highly decorative** - wide range of colours available, with low dirt pick-up to minimize maintenance costs.

### Standards compliance

Freeze/thaw salt scaling ASTM C672  
Carbon dioxide diffusion resistance - Taywood method

Fire tested to BS 476, Pt 7. Spread of flame - Class 1.

Fire tested to BS 476, Pt 6. Propagation index I - 1.5.  
Sub index i1 - 1.3. Building Regulations rating - Class

### Description

Expancote\* S is a pure aliphatic acrylate, solvent based protective coating. It is available in a wide range of colours. The complete system also includes a primer (Expancote\* Primer or Expancote\* Primer DG) which is supplied as a clear liquid, based on a 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.

The Expancote\* S system thus comprises a single component, penetrating silane-siloxane primer and a single component pigmented coating, both ready for

### Design criteria

The coating should be applied in two coats to achieve a total dry film thickness of not less than 150 microns. To achieve the desired protective properties, the Expancote\* S system must be applied to the substrate at the correct

### Properties

The values obtained are for the Expancote\* S system applied at the minimum recommended application rate.

**Volume solids** : 43%

**Carbon dioxide diffusion resistance equivalent thickness of air (Klopper criterion for effective protection > 50 m)** : > 250 metres

**Carbon dioxide diffusion resistance : equivalent thickness of 30N concrete (Taywood method)** : > 500 mm

**Water vapour diffusion resistance (Taywood method)** : SD 1.90 m @ 150 microns dft

**Chloride ion diffusion coefficient : 2,000 hours QUV weathered (Taywood method)** : No chloride ion diffusion after 1500 days testing

**Freeze/thaw salt scaling (50 cycles) :** Unaffected  
**Good quality concrete (control) (ASTM C672)** : Severe scaling

**Fire testing - Spread of flame (BS 476, Pt 7)** : Class 1

**Fire testing - Propagation index I** : 1.5  
**Sub index i1** : 1.3  
**Building Regulations rating (BS 476, Pt 6)** : Class 0

### Specification clause

Where shown on the contract documents, the protective coating system shall comprise the following elements :

- (i) a penetrating silane-siloxane primer (either Expancote\* Primer or Expancote\* Primer DG), and
- (ii) a single component aliphatic acrylic coating (Expancote\* S).



The total dry film thickness of the protective coating system shall be not less than 150 microns, and shall provide :

- (a) CO<sub>2</sub> diffusion resistance equivalent to not less than 500mm of 30 N/mm<sup>2</sup> concrete cover or 250 m of air cover (Taywood method),
- (b) no chloride ion diffusion after 1500 days (Taywood),
- (c) a water vapour transmission resistance (SD) of not more than 1.90 meters (by the Taywood method),
- (d) a Class 1 spread of flame (BS476, Pt 7), and
- (e) a Class 0 Building Regulations rating (BS 476, Pt6)

**Instructions for use**

**Application over existing membranes and/or coatings**

It is not necessary to remove Expanchem's Expanbond\* AR or Expancure\* prior to the application of Expancote\*S.

However, for all other types of membrane or coating; it is advisable to carry out trials to determine both compatibility with Expancote\* S, and retention of bond between the underlying coating or membrane and the substrate. For further advice, contact the local Expanchem Fospak 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 sweep blasting the surface. Where moss, algae or similar growths have occurred, treatment with a proprietary biocide should be carried out after the sweep blasting process.

It is essential to provide an unbroken coating of Expancote\* S. Thus all blow holes and similar surface irregularities should be filled using Expanmortar BF\*† and should be allowed to cure properly before the application of Expancote\* S. Consult the local Expanchem Fospak office for further details.

**Substrate priming**

A primer coat is required to penetrate and 'stabilize' 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 liter will be high - permeability may be affected by cement replacements (e.g. microsilica). It is thus recommended that a general coverage rate of 4m<sup>2</sup>/liter 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.

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 the primer should be made. Whilst Expancote\* Primer is normally used, porous substrates may require the use of Expancote\* Primer DG. If in any doubt regarding substrate priming, contact the local Expanchem Fospak 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 Expancote\* S system, except where substrate condition dictates different application rates for the primer.

	Primer	Expancote* S
<b>Number of coats</b>	: 1	2
<b>Application rate per coat</b>	: 0.25 lit/m <sup>2</sup>	0.175 lit/m <sup>2</sup>
<b>Wet film thickness per coat</b>	: n/a	175 microns
<b>Overcoating time</b>	:	
@ 20°C	2 hours	6 hours
@ 35°C	1 hour	4 hours

The primer should be allowed to dry for a minimum of 2 hours at 20°C (or 1 hour at 35oC) before application of Expancote\* S. Under no circumstances should the primer be over coated until the surface is properly dry.

Expancote\* S may be applied by the use of suitable brushes or rollers, but is probably best applied by means of airless spray equipment. Further information about application techniques and equipment can be obtained from the local Expanchem Fospak office.



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All primed substrates should be treated with two coats of Expancote\* S. The material should be stirred thoroughly before use. The first coat should be applied to all areas to achieve a uniform coating, with a wet film thickness not less than 175 microns and not greater than 225 microns. This coat should be allowed to dry before continuing.

Prior to application of the second coat, a close visual inspection of the surface should be made to check for any pin holes or surface irregularities. Any such irregularities should be filled with Expancote\* Filler\*, and allowed to dry before proceeding.

The second coat of Expancote\* S should be applied at 900 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 not less than 175 microns and not greater than 225 microns.

#### Cleaning

Expancote\* Filler should be removed from tools and equipment with clean water immediately after use. Expancote\* Primer, Expancote\* Primer DG and Expancote\* S should be removed from tools and equipment using Expanchem Solvent 102\*.

#### Estimating

##### Supply

<b>Expancote* Primer</b>	: 20 liter drums
<b>Expancote* Primer DG</b>	: 20 liter drums
<b>Expancote* S</b>	: 20 liter drums
<b>Expancote* Filler</b>	: 18 liter drums
<b>Expanmortar* BF</b>	: 10 kg bags
<b>Expanchem Solvent 102</b>	: 5 liter cans

##### Coverage

<b>Expancote* Primer</b>	: 4.0 m <sup>2</sup> per liter (total)
<b>Expancote* Primer DG</b>	: 4.0 m <sup>2</sup> per liter (total)
<b>Expanmortar* BF</b>	: 5.8 liters per 10 kg bag
<b>Expancote* S</b>	: 2.8 m <sup>2</sup> per liter (total)

The coverage figures given are theoretical - due to wastage factors and the variety and nature of possible substrates, practical coverage figures will be reduced.

#### Storage

##### Shelf life

All products have a shelf life of 12 months if kept in a dry store in the original, unopened packs.

##### Storage conditions

Store in cool, dry conditions, 10oC - 25oC, away from sources of heat and naked flames, in the original, unopened packs. If stored at high temperatures and/or high humidity conditions the shelf life may be reduced.

##### 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.
- When applied over existing coatings or paints, the performance characteristics of Expancote\* S may be impaired and its fire rating will be invalidated.
- Expancote\* S should not be used in submerged or wet conditions. Expancote\* PU\* should be used under such conditions - consult the local Expanchem Fospak office for more details.
- Application should not commence if the temperature of the substrate is below 2°C or above 60°C.

#### Precautions

##### Health and safety

Expancote\* Filler, Expancote\* Primer, Expancote\* Primer DG, Expancote\* S and Expanchem Solvent 102 should not come in contact with the skin and eyes, or be swallowed. Ensure adequate ventilation and avoid inhalation of vapors. Some people are sensitive to resins, hardeners 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.



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## Fire

Expancote\* Filler and Expanmortar\* BF are non-flammable.

Expancote\* Primer, Expancote\* Primer DG, Expancote\* S and Expanchem Solvent 102 are flammable. Keep away from sources of ignition. No smoking. In the event of fire, extinguish with CO<sub>2</sub> or foam. Do not use a water jet.

## Flash points

<b>Expancote* Primer</b>	:	38°C
<b>Expancote* Primer DG</b>	:	38°C
<b>Expancote* S</b>	:	42°C
<b>Expanchem Solvent 102</b>	:	33°C

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

## Hot weather working practices

Whilst the performance properties of Expancote\* S at elevated temperatures are assured, application under such conditions can sometimes be difficult. It is therefore suggested that, for temperatures above 35°C, 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 sunlight.

- (ii) Keep application equipment cool, arranging shade protection if necessary. It is 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 Expanchem Solvent 102 available for immediate cleaning of tools after use.

## Technical support

Expanchem Fospak offers a comprehensive range of high performance, high quality repair, maintenance and construction products. In addition, Expanchem Fospak offers a technical support package to specifiers, end-users and contractors, as well as on-site technical assistance in locations throughout the world.

\* Denotes the trademark registered.

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