

# Contite<sup>®</sup> CFM

A 2 IN ONE FLEXIBLE WATERPROOFING MEMBRANE ESPECIALLY FOR UNDERGROUND STRUCTURES

## DESCRIPTION

**Contite CFM** is a single component high performance flexible waterproofing membrane based on EVA incorporating reactive crystalline waterproofing technology for the protection of various concrete structures including tunnels, underground stations, shafts, caverns, basements etc.

Complies to EN1504 Part 9 and EN1504 Part 2

- Principle 1 : Protection Against Ingress (PI).
  - Method 1.2 - Impregnation.
  - Method 1.3 - Surface Coating.
  - Method 1.8 - Application of Membranes.
- Principle 2 : Moisture Control. (MC)
  - Method 2.2 - Impregnation.
  - Method 2.3 - Surface Coating.
- Principle 8 : Increasing Resistivity (IR).
  - Method 8.3 - Overlays or Coatings.

## USES & ADVANTAGES

**Contite CFM** incorporates the benefits of a flexible polymer fully bonded waterproof membrane with reactive crystalline subsurface waterproofing.

**Contite CFM** may be applied to number of substrates and where sandwiched between two layers of structural concrete including:

- Basements.
- Subway stations.
- Shotcrete tunnel and cavern linings.
- Diaphragm wall and piles.
- Mining.
- Water retaining structures.
- All concrete structures requiring waterproofing.

**Advantages include:-**

- Can apply to damp concrete.
- Protecting concrete against aggressive ground waters.
- Very easy to install in big areas by spray especially to difficult surfaces.
- No fixing or anchoring required as spray applied
- No seams or joints.
- Very fast curing time from 2-3 hours depending on temperatures and humidity.
- Can be applied over concrete within 24 hours unlike other conventional waterproofers that require 28 days & dry surface.
- Excellent crack bridging properties and elongation.
- Connect to other waterproofing systems easily.
- No undercutting, easy to repair and difficult to damage. No protection required.
- Fully bonded.
- Can overcoat within 24 hours. Excellent adhesion to concrete and steel.
- Hard wearing suitable for application over shotcrete containing steel fibres.
- Non flammable.
- No VOCs.
- Life of material permanent when sandwiched between concrete linings.
- Crack bridging & sealing.
- Waterproofing internally by permanent crystallization.

**Advantages over sheet membrane:-**

- Easy to handle and apply over various complex shapes/areas without any problem.
- Rate of application is higher and quick as mentioned below :
  - Approx. 80 - 95 m<sup>2</sup>/hr with the use of approx. 3 workers.
  - Approx. 160-170 m<sup>2</sup>/hr with the use of robotic equipment and spray application.
- Spray application can be done continuously and consistently without the need to use any waterstops in between the section nor division of sections is required.
- Rock bolts/anchor bolts used in tunnels can be easily coated & protected from corrosion by spray application.

**Advantages over Polyurethane Spray applied systems :-**

- Can apply in one coat up to 2 mm.
- Can apply to damp concrete, no bubbling.
- Crack bridging & sealing.
- Permanent lifelong waterproofing.
- Sub surface and surface waterproofing.
- Can apply within a few days of concreting.
- Non-toxic, no fire hazard, no VOCs.
- Economical.
- No protection required.

## PROPERTIES

<b>Appearance:</b>	Light grey and orange powder (other colours available)
<b>SG:</b>	Approx.550-650 gm/litre
<b>Application Thickness:</b>	2-6 mm
<b>Elongation:</b>	≥150%
<b>ASTM D412</b>	
<b>Waterproof Penetration:</b>	Zero
<b>BS EN 12390-8:2000</b>	
<b>Bond strength to Concrete:</b>	>1.5N/mm <sup>2</sup>
<b>BS EN ISO 4624:2003/ASTM D4541</b>	
<b>Bond Strength to Steel:</b>	>2Nmm <sup>2</sup>
<b>BS EN ISO 4624:2003/ASTM D4541</b>	
<b>Crack Bridging Ability:</b>	>2.5 mm when applied at correct thickness BS EN 1062-7; 2004 Class A
<b>Non Flammable:</b>	Class E.
<b>BS EN ISO 13501-1</b>	
<b>BS EN ISO 11925-2</b>	
<b>Chemical Resistance:</b>	Complies with BSEN 14414 Method A
<b>Resistance to Leaching:</b>	Complies with BSEN 14415 Method A & B
<b>Fire Resistance:</b>	Non ignitable
<b>BS EN ISO 11925-2</b>	

## PRIMER PROPERTIES

<b>Appearance:</b>	Blue liquid
<b>SG:</b>	Approx.1.20-1.22 kg/litre
<b>Toxicity:</b>	Non toxic
<b>Drying Time:</b>	1-3 hours
<b>pH:</b>	10-13
<b>Explosion Hazard:</b>	None
<b>Flash Point:</b>	None

*Test results above are based on Laboratory conditions.*

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## SUBSTRATE PREPARATION

Ensure the surfaces to be coated are clean and sound, free from dust, laitance, curing compounds, grease, dirt, oil, running water or other surface contaminants. Wall to floor joints shall have a fillet to avoid sharp corners. Penetrations shall also be detailed to avoid the same.

Repair damaged surfaces or honey combed concrete with **Conpatch 600MCI** or other appropriate repair material from Cormix.

In the case of cracks consult Cormix for treatment method. Static cracks can be routed out and repaired with **Contite Seal Mortar** Moving cracks should be treated via injection with **Contite G600** polyurethane gel.

If water is running either drain away or plug using a suitable product from Cormix.

## PRIMING

Apply the primer by knapsack spray, brush or squeegee at 5 m<sup>2</sup>/litre. Allow to dry for 6 hours. The primer should be dry before applying the membrane.

Coverage rate are from 100-150 m<sup>2</sup> per hour.

## APPLICATION

**Contite CFM** can be applied using a Robotic Spray Equipment such as Rotor Shotcreting Machine along with compressed air set up to feed the **Contite CFM** through a Hose with 32 mm diameter, whereas water is mixed with **Contite CFM** at the Nozzle.

The equipment details required are as mentioned below:

### SHOTCRETE MACHINE

- Rotor shotcreting machine with rotor having 12 round holes. Each round hole is 90 mm high.
- The base of rotor with 90 mm coupling.
- The dust collector of rotor with 90 mm high coupling.
- The diameter of spraying nozzle = 32 mm, with approximately 16 to 18 water ring holes.
- The diameter of spraying hose = 32 mm.
- Small areas can be applied by brush.

### **Water Additions**

**Contite CFM** can be sprayed by adding water at the nozzle. The water additions should be between 35% to 55% by weight

### HAND HELD, MORTAR SPRAYER

- Drill power = 800 w.
- Air compressor power = 1600 w.
- Power Requirement = 220-240 V/50Hz.
- Deliver = 1-10 L/min.
- Max pressure = 2 MPa.
- Largest particles = 1 mm.
- Length of high pressure hose = 5 M.
- Funnel volume 40 L.
- Type of hydraulic oil = Anti-wear hydraulic oil ISO VG46

### **Water Additions:**

When using **Contite CFM** pre-mixed for smaller application areas the Water additions should be between 6.75 and 8.25 Lts per 15 kg of **Contite CFM** powder.

## UNDER FLOOR SLAB APPLICATION

**Contite CFM** is suitable for use as a spray applied waterproof membrane beneath basement slabs in underground construction such a Metro Stations, Multi use Developments and basement car parks. The sequence of installation is shown below. Please refer to our Method Statements and detail drawings available from or Technical Services Department.

1. Install a 100mm x 100mm fillet of **Conpatch 600MCI** at the wall / floor slab joint.
2. First Apply a 'stripe' coat of **Contite CFM** up to 150mm x 150 mm to the wall and floor over the installed fillet @1mm thickness.
3. Place a polythene 'debonding sheet' on top of the lean concrete floor slab and taking it 150mm up the wall.
4. Spray apply **Contite CFM** onto the diaphragm wall and on top of the polythene sheet at a minimum thickness of 2mm. Allow to cure for a minimum 24 hours.
5. Install as directed **Contite Waterstop** (on uneven surfaces use **Contite Waterbar CTG**) to the diaphragm wall. Allow **Contite Waterbar CTG** to cure for 6hrs before proceeding
6. Following installation of the base slab reinforcement place the concrete within 30 days of application of the **Contite CFM**.

### *Note :*

- *The applied **Contite CFM** must be clear and free from dirt and standing water prior to the installation of the floor slab.*
- *For **Contite CFM** applied beneath the basement slab priming is not required.*

## COVERAGE RATE OF CONTITE CFM

Approx. 1.2 kg - 3.6 kg /m<sup>2</sup> for 2 - 6 mm thickness.

Apply in multiple layers up to a max of 2 mm per layer may build up to 6 mm. Minimum time between coats is 2 to 3 hrs depending on temperature and humidity.

Primer : 5 m<sup>2</sup>/litre.

## QUALITY CONTROL

Quality Control for checking thickness of applied membrane can be done as below :

- 1) Using wet film depth gauge, regular checking of wet film thickness for applied membrane at various spots.
- 2) After application: cut out small patches of membrane in the form of square (5 x 5 cm) & check for thickness.

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## CURING AND OVER COATING

The material is tack free in 2-3 hours.  
It may be covered coated after 24 hours with concrete, shotcrete or other back fill materials.

## CLEANING

The Spray Equipment & the product carrying lines should be cleaned using Compressed air.  
The Nozzle should be cleaned with water.  
Handheld, mortar sprayer should be cleaned with water.

## PACKAGING

**Contite CFM** : 15 KG bag or according to customer requirements.

**Contite CFM Primer** : 25 ltr pail.

## STORAGE & SHELF LIFE

The shelf life is 12 months if unopened, stored free from frost, moisture and direct sunlight.

## HEALTH & SAFETY

**Contite CFM and Primer** are non-toxic but is alkaline in nature. When applying gloves & goggles should be worn. Wash off splashes to skin with water. If in eyes wash out with plenty of clean water and seek medical attention.

**Eye Contact** : Wash out eye with plenty of water. Obtain medical attention urgently. Eyelids should be held away from the eyeball to ensure thorough rinsing.

**Skin Contact** : Wash skin with soap and water.

**Ingestion** : Wash out mouth with water. Do not induce vomiting. Have victim drink 240-300 ml of water to dilute stomach contents. Obtain medical attention urgently.

**Inhalation** : Remove from exposure. Unlikely to occur. However provide symptomatic medical treatment if required.

**Contite CFM** is non-flammable and non-toxic.

## TECHNICAL SERVICE

The Cormix International Technical Service Department is available to assist you in the correct use of our products and its resources are at your disposal entirely without obligation.

## QUALITY ASSURANCE

ISO 9001: 2015 verified by TUV Nord.  
ISO 14001 : 2015 verified by Lloyd's Register International.

## DISCLAIMER

Performance data is achieved testing in accordance with International Standards. Testing by others may result in different results from those published as a result of external factors such as poor sampling, incorrect mixing, varying temperatures, curing, crushing procedures etc.

Cormix does not take responsibility nor need to defend others testing that does not achieve the published data. The user must test the products suitability for the intended application and purpose. Cormix reserves the right to change the properties of the product. Site conditions and differences in materials are such that no warranty or fitness for a particular purpose, nor liability can be inferred from the published data sheet, written recommendations or from other advise offered.

## CONTACT DETAILS

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