

# Tiefill

## Class R4 Waterproof Tie Hole Filler

### Product Overview

**Rapid setting polymer modified cementitious mortar for tie holes and small voids in new construction.**

### Description

**TIEFILL** is a single component, polymer modified, fibre reinforced, Portland cement-based repair compound which exhibits unique hydraulic properties to produce a rapid setting mortar.

### Uses

Class R4 mortar, suitable for repair methods 3.1, 7.1, 7.2 as defined by EN 1504-3.

### Advantages

- Incorporates the latest cement chemistry, microsilica, fibre and styrene acrylic copolymer technology.
- Pre-packaged materials in a convenient pack size.
- Simply mixed with clean water, no substrate priming required.
- Sets in 30 minutes at 20°C, yielding a durable, high strength mortar.
- Resists 10 bar water pressure after 72 hours' curing.
- Bond strength exceeds tensile strength of concrete, ensuring monolithic performance.
- Polymer modification gives enhanced adhesion and low permeability, providing excellent protection from acid gases, moisture ingress and chlorides.

### Compliance

- UKCA & CE marked in accordance with EN 1504-3.
- Listed under Regulation 31 - England and Wales: Regulation 33 - Scotland: Regulation 30 - NI: for use with potable water.
- Highways Standard Series 5700 (Concrete Repairs) and CS 462 (Repair & Management of Deteriorated Concrete Structures).
- Compliant with LU Standard 1-085 'Fire Safety Performance of Materials'.

### Application Instructions

#### Preparation

The areas to be repaired must be free from all unsound material including laitance dust, oil, grease, corrosion by-products and organic growth. Smooth surfaces should be roughened by appropriate mechanical means. The compressive strength of the parent concrete should be minimum 20 MPa.

For the treatment of tie-holes formed by through-ties, cut back and remove any remaining plastic tube to circa 40-50mm from the concrete face. To eliminate the possibility of water tracking around the plastic tube, it should be plugged with a proprietary stopper.

The prepared substrate should be thoroughly soaked with clean water until uniformly saturated without standing water.

#### Mixing

Mix sufficient **TIEFILL** to use within the working life of the material. Adding the water first, use the mixing scoop to proportion 1 part of water with 6 parts of powder. This equates to a mix ratio of 9.4:1 by weight.

A complete 8kg pack requires 850ml of clean water. Quantities less than 2kg can be mixed by hand. Larger quantities should be mechanically mixed in a clean drum using a slow speed drill and paddle. A normal mixer is **NOT** suitable.

Mix for 2-3 minutes to produce a cohesive thixotropic mortar. If necessary, adjust the consistency by adding a minimal amount of extra powder or water. Use without delay.

- Note - These instructions must be adhered to as Flexcrete will not be responsible for failure due to incorrect mixing.

#### Placing

For normal applications, **TIEFILL** should be compacted, using a placing technique to remove entrapped air, in layers not exceeding 75mm deep.

For multi-layer applications, it is important to ensure that the previous layers are well keyed and stable but not fully set (typically 30-45 minutes) prior to the application of subsequent layers.

Final profiling of a high quality can be easily achieved with a clean, dampened steel float.

When the colour and surface texture of the surrounding concrete has to be matched, the final 15-25mm layer should be filled with **UNIMATCH**.

## Curing

Normal concreting procedures must be adhered to. Protect from strong sunlight and drying winds with **CURE-SEAL WB**, polythene sheeting, damp hessian or similar.

## Limitations

Do not use **TIEFILL** when the temperature is below 5°C and falling. Not suitable for use on trafficked areas.

## Cleaning and Storage

- All tools should be cleaned with water immediately after use.
- Materials can be stored for 12 months in dry, frost free conditions with unopened bags at 20°C.

## Packaging

- **TIEFILL** is supplied in 8kg buckets.

## Yield and Coverage

- 4 litres per 8kg.
- 8kg covers 0.4m<sup>2</sup> at 10mm thickness.

Rapid Tie Bolt System			
Tie Rod Cover (mm)	Tie Rod Size (mm)	Typical Number of Holes	
		8kg Pack (4 Litres)	6 : 1 Scoop Mix (235CC)
38	15	90	5
50	15	74	4
75	15	57	3
Through Tie Type			
30	25	229	13

## Health and Safety

- Safety Data Sheets are available on request.

## Application Top Tips

1. Take care if using very cold mixing water as this will accelerate setting of **TIEFILL**.
2. **DO NOT WET OUT OR PRIME** between layers.
3. **DO NOT OVER TROWEL**. If the mortar begins to slump, allow to stabilise and refinish.
4. When finishing, trowel from centre out towards the perimeter working into the edges of the tie hole.
5. **TIEFILL** is particularly suited to cold weather use but should not be applied to frozen substrates.
6. Hot Weather Working (See separate Guide)
  - Store material in cool conditions to maximise working life.
  - Shade applied material from strong sunlight.
  - Spray apply a second mist coat of **CURE-SEAL WB**.
  - If possible, avoid extreme temperatures by working at night.

The information herein is correct to the best of our knowledge, but it does not necessarily refer to the particular requirements of the customer. If the customer has any particular requirements it should make them known in writing to Flexcrete Technologies Limited, and obtain further advice accordingly.

## Technical Data

Property	Standard	EN 1504 R4 Requirement	Typical Result
Compressive Strength Development @20°C	EN 12190	≥ 45 MPa (28 days)	1 hour 8 MPa    1 day 34 MPa 2 hours 15 MPa    7 days 51 MPa 4 hours 25 MPa    28 days 55 MPa
Adhesive Bond	EN 1542	≥ 2 MPa	2.35 MPa
Carbonation Resistance	EN 13295	≤ ref concrete	Passes
Elastic Modulus	EN 13412	≥ 20 GPa	30 GPa
Capillary Absorption	EN 13057	≤ 0.5 kg/(m <sup>2</sup> .h <sup>0.5</sup> )	0.1 kg/(m <sup>2</sup> .h <sup>0.5</sup> )
Freeze/Thaw Cycling	EN 13687-1	≥ 2.0MPa	2.25 MPa
Water Permeability Coefficient Equivalent concrete thickness	Vinci Technology	-	1.62 x 10 <sup>-12</sup> m/sec 34mm of Tiefill = 1000mm of concrete
Flexural Strength	EN 196-1	-	10.5 MPa
Thermal Capability Part 1	EN 13687	≥ 2 MPa	2.25 MPa
Mixed Density		-	2150kg/m <sup>3</sup>
Mixed Colour		-	Concrete grey
Min Application Thickness Max Application Thickness		-	5mm 75mm
Min Application Temperature Max Application Temperature		-	5°C. 40°C.
Working Life (approx.)		-	20 minutes at 20°C.
Reaction to Fire	EN 13501-1	-	A2 – s1, d0

The properties given above are obtained from laboratory tests: results obtained from on-site testing may vary according to site conditions.

