Natural Cement

PRODUCT SHEET

SHOTCRETE 437F

Description

SHOTCRETE 437F is a fast setting and curing rapid strength gain dry spray concrete that is resistant to chloride penetration consisting of a unique blend of natural cement based binder, specially selected and dried loose graded aggregates all passing a 2.5mm sieve and steel fibres.

Uses

- Horizontal and vertical repairs
- Repairs to sewers
- Work around the sea including piers
- Quay walls & off shore platforms
- Repairs to bridges
- Repairs to dams & viaducts
- Tunnel repairs
- Retaining wall repairs
- Where high early strength is required
- Where pollution & chemical attack is likely.

Properties

- Fast setting
- Excellent adhesion
- Low modules of elasticity excellent for loose or friable substrates
- Low shrinkage
- Excellent resistance to pure water, sulphated water, seawater and de-icing salts
- Excellent resistance to aggressive chemicals
- Very good cohesion and mixing
- No curing necessary. It can be coated, covered or painted as soon as setting is complete
- Can be used in wet conditions.

SHOTCRETE 437F

Method of use

Preparing the surface
Do not use on frozen or over heated substrates (outside the range of 0°c-30°c). Prepare the surface in advance to provide an adequate key. It should be clean, free from dust and thoroughly dampened. Where necessary steel or aluminium mesh can be used. Ensure that a 10mm minimum thickness of material is obtained.

Priming
There is no need to prime any reinforcement, but if priming is preferred, any conventional system may be used.

Mixing
For optimum results mix using conventional dry spray mixing machines. The optimum water to cement ratio of 38% should be aimed for. Exceeding this ratio will lead to lower strength, longer setting time and the risk of surface cracking appearing. SHOTCRETE 437F should be added to the dry spray shotcrete machine and transported by dry air to the nozzle where the water is added. To obtain low dust levels and better and more consistent mixing qualities it is advisable that the water is added to the SHOTCRETE 437F approximately 1.5 metres from the end of the nozzle. In cold weather the set can be accelerated using warm water, likewise in hot weather cold water can be used to slow down the set.

Application

General
A 10mm minimum thickness of the material is always necessary. Once setting has started DO NOT attempt to remix or to smooth the surface. This will cause the mechanical properties in particular strength and adhesion to be lost. Do not premix SHOTCRETE 437F with water before placing in the dry spray machine. Protect the surface of the SHOTCRETE 437F from direct sunlight or wind until setting has completed. Once the SHOTCRETE 437F has set, allow at least 1 hour before applying any finishes. Carry out the removal of all loose material from the concrete and reinforcement. It is only necessary to remove rust from the reinforcement. Prepare the surface as described previously, ensuring the surface is well dampened but also ensuring there is no standing water. Fix any necessary reinforcement, movement joints and formwork. Add the dry SHOTCRETE 437F powder continuously to the dry spray applicator machine with the water being added and controlled at the nozzle ensuring that the SHOTCRETE 437F is worked around any reinforcement.

Setting times

SHOTCRETE 437F is designed to commence setting at 2.5 minutes and finish setting at 4 minutes at 20°c. In Winter SHOTCRETE 437F can be used down to 0°c. The set will be slower but can be accelerated with warm water. In very hot temperature the set will be faster and can be slowed by using cold water.

Cleaning

SHOTCRETE 437F should be removed from tools and equipment with water immediately after use.

Storage

SHOTCRETE 437F is packaged in a 25kg polythene inner bag with a re-sealable tie within a stitch sealed woven polypropylene outer bag, which should be stored in dry conditions and will last for at least twelve months.

Yield

Generally 1 x 25kg bag of SHOTCRETE 437F mixed with a water/cement ratio of 38% will produce approximately 10 litres of finish mortar.

How to specify

SHOTCRETE 437F shall be mixed and applied to prepared surfaces all strictly in accordance with the manufacturer's instructions.

Precautions

We strongly recommend the use of GLOVES, GOGGLES and MASK. Please see MSDS sheet for full details.

Setting time & strength gain

Start Set End Set	2.5 Min 4 Min	at 20°c at 20°c
	Flexible Strength (Mpa)	Compressive Strength (Mpa)
15 mins	1.7	6
1 Hour	2.2	9
3 Hours	2.5	12
24 Hours	3	20
7 Days	4.8	26
28 Days	7	45
Strength continues to develop thereafter.		

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