



NATCEM AC

Concrete Repair & Anti-Carbonation Coating

INSTRUCTION FOR USE

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Concrete Repair & Anti-Carbonation Coating

This document is written specifically for UK public or private drinking water suppliers

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This Instructions For Use document is written specifically for Water Companies for use with drinking water only

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1. Approval

NATCEM AC is approved under Regulation 31 of The Water Supply (Water Quality) Regulations 2016

The product is included in the List of Approved Products for use in Public Water Supply in the United Kingdom.

The List of Approved Products is available on the Drinking Water Inspectorate's website www.dwi.gov.uk/drinking-water-products/approved-products/index.htm

2. Product Description and Scope of Use

NATCEM AC is a potable water approved multi-purpose/multi-use natural cement with a blend of binders, specially selected dried and graded aggregates and food grade retarders.

3. Features

- Tested to BS 6920 -1 Effect on Water Quality
- For use in contact with potable water
- Easy to apply using brush, roller or trowel
- Wide range of application thickness from 3mm up to 20mm
- Low permeability provides protection against water-borne chlorides
- Excellent adhesion to concrete and masonry
- Low shrinkage
- Can be applied to wet and cold surfaces
- No curing compound necessary
- The material sets at temperatures down to 0°C
- Can be used underwater
- Adheres to wet & green concrete
- Fast setting
- Fast curing – only 30 mins after set
- No need to grit blast steel reinforcement

4. Examples of Typical Uses

NATCEM AC is a multi-purpose and multi-use natural cement and can be used in a wide variety of applications. A few typical uses are shown below:

- Anti-carbonation coating
- Concrete repair
- Infill of surface imperfections
- Void filling

5. Method of Use

a) 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 of application 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 3mm minimum thickness of material is obtained.

b) Priming

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

c) Application - General

Place the material as quickly as possible after mixing using traditional tools. A 3mm minimum thickness of the material is always necessary. DO NOT apply additional water to the surface during finishing as this may cause surface cracking. Once setting has started DO NOT attempt to remix or smooth the surface; this will cause the mechanical properties, in particular strength and adhesion, to be lost.

d) Mixing

APPLICATION BY TROWEL

If one bag or less is to be mixed, it should be mixed with a rose bud type paddle attached to an electric drill (900rpm, 1000W). Mix vigorously for at least 2 minutes after adding all the mixture to the water. NATCEM AC is designed to give a fluid mix but this only develops after sufficient mixing. For larger quantities, optimum mix results can be obtained using conventional mixing machines. When applying by plastering methods, add the NATCEM AC gradually to 5 litres of clean water per bag, whilst mixing continuously. **The mix will appear dry at first.** Continue mixing until fluidity develops. If greater fluidity is required, additional water may be added to a total of 5.5 litres per bag. Exceeding this ratio will lead to lower strength and a longer setting time. 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 BY BRUSH OR ROLLER

If one bag or less is to be mixed, it should be mixed with a rose bud type paddle attached to an electric drill (900rpm, 1000W). Mix vigorously for at least 2 minutes after adding all the mixture to the water. NATCEM AC is designed to give a fluid mix but this only develops after sufficient mixing. For larger quantities, optimum mix results can be obtained using conventional mixing machines. When applying by brush or roller methods, add the NATCEM AC gradually to 6 litres of clean water per bag, whilst mixing continuously. The mix will appear dry at first. Continue mixing until fluidity develops. If greater fluidity is required, additional water may be added to a total of 6.5 litres per bag. Exceeding this ratio will lead to lower strength and a longer setting time. 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. When applying by brush or roller, two coats may be necessary to ensure no pinholes and adequate 3mm minimum thickness. Ensure that the first coat has set prior to application of the second coat and that the surface of the first coat is well wetted prior to application of the second coat.

e) Setting Times

NATCEM AC is designed to commence setting at 35 minutes after mixing and finish setting at 40 minutes at 20°C. Curing is also complete when setting has finished although a 30 minute extension of the curing cycle can be optionally allowed. (See Fig 2)

In winter NATCEM AC can be used down to 0°C. The set will be slower but can be accelerated by using warm water. In very hot temperatures the set will be faster and can be slowed down using cold water.

f) Strength Gain

After setting is complete the material will continue to gain strength over time. A Compressive Strength Gain curve is shown below (Fig. 1). The range shown extends up to 28 days, but the strength continues to develop thereafter.

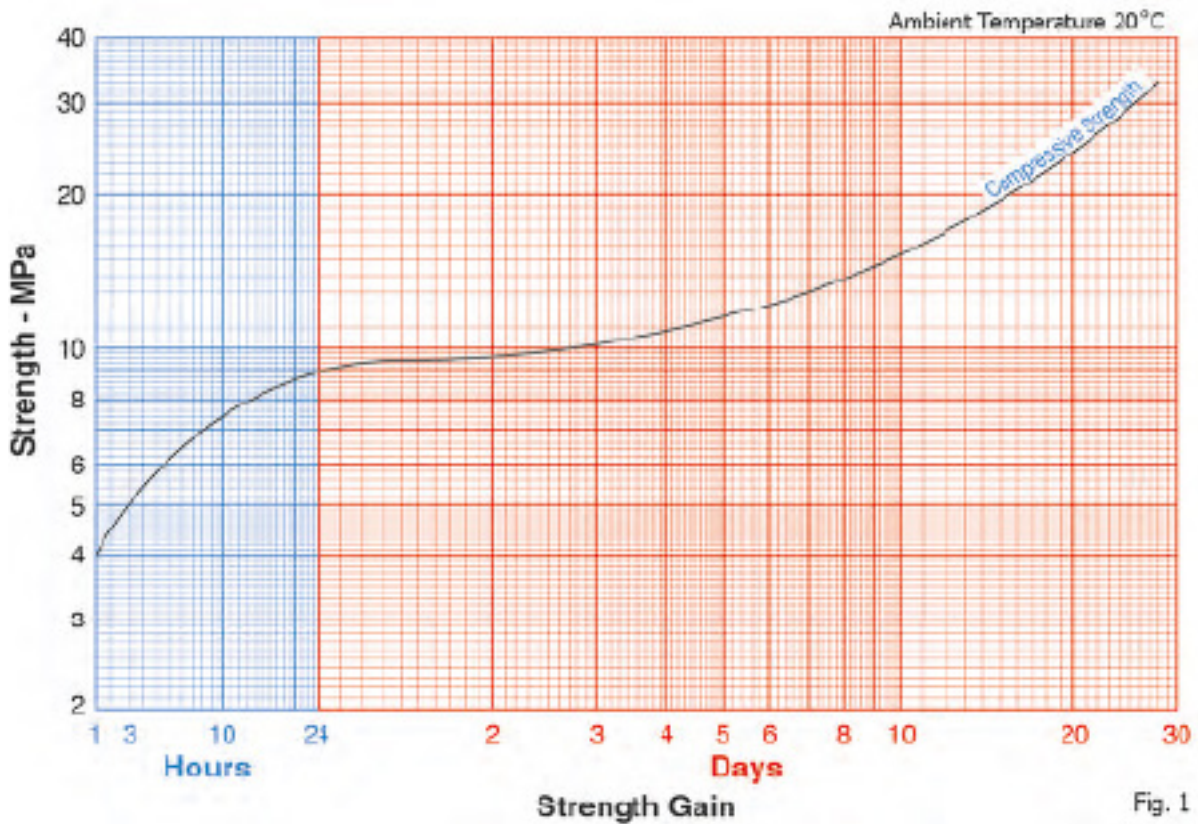


Fig. 1

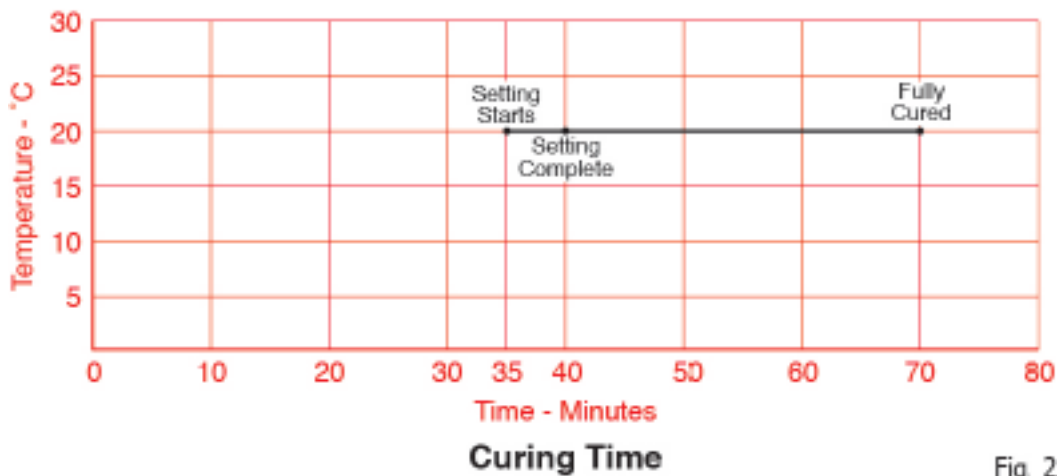


Fig. 2

6. Packaging and Storage

a) Packaging

NATCEM AC is packaged in a polythene inner bag complete with a re-sealable tie, within a stitch sealed woven polypropylene outer bag. Bag Weight: 25kg

b) Storage

Unopened bags of NATCEM AC should be stored in dry conditions and will remain usable for at least 12 months.

7. Yield

Generally, 1 x 25 kg bag of NATCEM AC mixed with 5 litres of water will produce approximately 10 litres of finish mortar.

8. Cleaning

NATCEM AC should be removed from tools and equipment and cleaned with water immediately after use.

9. Disinfection

material may be returned to service without further attention. The water utility may, however wish to introduce a disinfection procedure at its own discretion.

10. Disposal of Waste

for recycling. Alternatively, they can be disposed of into a skip destined for recycling. Waste material can be disposed via an authorised waste disposal contractor to an approved waste disposal site, observing all local and national regulations and/or EC regulations

- i. Material after the addition of water – hardened
Dispose of the hardened product as concrete waste. It is a non-hazardous material and may be disposed of in an appropriate recycling site

Avoid introduction of this material into sewer systems, waste-water disposal networks and water courses

- ii. Material – unused residue or dry spillage
Pick up dry. Mix with water and allow to harden. Dispose of as in **10. i** above

11. Safety

- a) Wear suitable protective clothing when handling bags and mixing the material.
- b) Wear safety glasses, work gloves and dust mask.
- c) Avoid spillage from damaged bags.
- d) Avoid breathing the powder.
- e) Avoid raising dust especially when sweeping. Always add the powder to the water to avoid raising dust.
- f) Avoid skin contact with the wet mortar during the setting reaction.
- g) Discard immediately any clothing which becomes saturated with wet cement

It is important to read the NATCEM AC Material Safety Data Sheet (MSDS) for full details prior to using the material.

The MSDS is available on request from Natural Cement Distribution Ltd. Contact details are shown on Page 2 of these Instructions



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