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Agrément Certificate
89/2151
Product Sheet 1

RONACRETE CONCRETE REPAIR ADMIXTURES

RONAFIX CONCRETE REPAIR ADMIXTURE

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Ronafix Concrete Repair Admixture, a liquid admixture for sand-cement mortar for use in concrete repair.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Resistance to moisture — Sand-cement mortar containing the product has a greater resistance to the passage of moisture than the equivalent unmodified sand-cement mortar (see section 5).

Strength and stability — Sand-cement mortar containing the product has a compressive strength comparable with the equivalent unmodified sand-cement based mortar and provides a good adhesive bond when applied to prepared concrete (see section 6).

Durability — A repair incorporating the product will have at least the life of the surrounding concrete (see section 11).

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. The product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to read 'Simon Wroe'.

Simon Wroe
Head of Approvals — Materials

A handwritten signature in black ink, appearing to read 'Greg Cooper'.

Greg Cooper
Chief Executive

Date of First issue: 21 December 2010

Originally certificated on 2 February 1989

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, there are no requirements in these Regulations relating to the use of Ronafix Concrete Repair Admixture.



The Building Regulations 2010 (England and Wales)



The Building (Scotland) Regulations 2004 (as amended)



The Building Regulations (Northern Ireland) 2000 (as amended)

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section

2 *Delivery and site handling* (2.1) of this Certificate

Non-regulatory Information

NHBC Standards 2010

In the opinion of the BBA, the use of Ronafix Concrete Repair Admixture, in relation to this Certificate, is not subject to the requirements of these Standards.

Technical Specification

1 Description

1.1 Ronafix Concrete Repair Admixture is a one-part styrene butadiene rubber (SBR) aqueous dispersion, containing 47% solids, which is mixed on site with cement, specified aggregate and water.

1.2 A bonding coat of slurry primer, consists of one part Ronafix Concrete Repair Admixture and one part cement.

1.3 Ronafix may be used with Portland cement CEM I 52,5R complying with the requirements of BS EN 197-1 : 2000. It should not be used with masonry cement.

1.4 Quality Control is exercised over the incoming raw materials, during the production process and on the final product.

2 Delivery and site handling

2.1 The product is delivered to site in 5, 25 and 220 litre containers bearing the manufacturer's name and the BBA identification mark incorporating the number of this Certificate.

2.2 The product should be stored under cover and protected from freezing and when stored under these conditions it has a shelf life of 9 months.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Ronafix Concrete Repair Admixture.

Design Considerations

3 General

Ronafix Concrete Repair Admixture is suitable for use in sand-cement mortars used to repair concrete damaged by impact, spalling due to corrosion of reinforcement, or erosion due to wear or frost. It may be used to repair structural concrete, but should not be used where failure has occurred due to inadequate design.

4 Practicability of installation

The product should only be installed by operatives who have been trained and are experienced with this type of product.

5 Resistance to moisture

Sand-cement mortar containing the product has a greater resistance to the passage of moisture than the equivalent unmodified sand-cement mortar. When applied on to a concrete substrate, slurry primer is impervious to water under the conditions of pressure likely to be met with in service.

6 Strength and stability

Sand-cement mortar containing the product has a compressive strength comparable with the equivalent unmodified sand-cement. It provides a good adhesive bond when applied to prepared concrete and its movement characteristics are similar to those of traditional concrete. Its abrasion resistance is similar to that of the equivalent unmodified sand-cement mortar.

7 Resistance to chemicals

Sand-cement mortar containing the product has a better resistance to the effects of some mild acids and alkalis than the equivalent unmodified sand-cement mortar, but should not be considered highly resistant to chemical attack.

8 Protection of reinforcing steel against corrosion

Sand-cement mortar containing the product will provide an alkaline environment for reinforcing steel. It has a rate of carbonation similar to that of traditional concrete and lower than that of the equivalent unmodified sand-cement mortar. It will therefore provide protection of reinforcing steel against corrosion.

9 Properties in relation to fire

The product is emulsion based and therefore poses no fire hazard during mixing and preparation.

10 Maintenance

Since the protective function of the product is dependent on its integrity, provision should be made for periodic examination for local damage or defects. Early rectification of such flaws should be carried out using the relevant materials and techniques indicated in this Certificate.

11 Durability

Sand-cement mortar containing the product is resistant to moisture and is not significantly affected by frost action. A repair incorporating the product will have at least the life of the surrounding concrete.

Installation

12 General

12.1 Ronafix Concrete Repair Admixture can be used in all conditions normal to sand-cement mortar work, using similar techniques.

12.2 The Certificate holder maintains a comprehensive design service and manufactures a range of factory batched pre-bagged Ronafix mortars based on the mixes detailed in section 14.3. Each bag of Ronafix mortar is supplied to site with a pre-diluted bottle of the Ronafix product. It is recommended that their advice is sought when any doubt exists as to the correct mix.

12.3 It is recommended that the Certificate holder is consulted over the installation and use of the product on site and where required they should carry out periodic checks to ensure that the correct procedures are being followed.

13 Preparation

It is important that areas intended to receive the product are adequately prepared and any additional remedial work undertaken. Concrete surfaces must be well cleaned and prepared by scabbling or other methods to give a strong mechanical key, free of laitance. Exposed reinforcing steel should be cleaned of rust, oil and other contamination and any additional steel properly fixed. Where the steel is likely to be less than 15 mm from the finished surface, the concrete must be cut back to enable the steel to be stapled back so that the minimum cover can be achieved.

14 Mixing

14.1 The mortar constituents are mixed in a pan type force action mixer; an ordinary drum type mixer should not be used.

14.2 Aggregate should be clean and dry with a sharp texture and depending on the required thickness comply with the requirements of a fine aggregate 0/2 or 0/4 in accordance with BS EN 12620 : 2002. Allowance must be made for moisture in damp aggregates and the amount of water added to the mix adjusted accordingly.

14.3 Typical mixes for the mortars are given. The mixes are based on dry aggregate;

Sample mix 1 — for repairing to concrete with no exposed reinforcement

Portland cement (kg)	— 50
Fine aggregate 0/2 or 0/4 (kg)	— 125
Ronafix (litres)	— 9
Water (litres)	— 9 ⁽¹⁾

Sample mix 2 — for protecting exposed reinforcing steel

Portland cement (kg)	— 50
Fine aggregate 0/2 or 0/4 (kg)	— 125
Ronafix (litres)	— 14
Water (litres)	— 4 ⁽¹⁾

(1) Due to the differing moisture content and grading of sands available on site, the quantity of water shown in the mix designs can only be taken as approximate. The quantity of water must be kept to the minimum compatible with workability and compaction.

14.4 The mortar will remain workable for 40 to 50 minutes depending on ambient conditions. A mix must not be re-gauged once it has begun to stiffen.

15 Application

15.1 Application must be strictly in accordance with the Certificate holder's instructions.

15.2 Mixed mortar can be applied in temperatures between 5°C and 25°C.

15.3 The slurry primer is mixed one part cement to one part Ronafix Concrete Repair Admixture. Concrete should be dampened before the slurry primer is applied.

15.4 Steel must be treated with two coats of slurry primer. The first coat is applied immediately over the exposed clean steel and the second coat applied just before the repair is carried out. The first coat should be allowed to become just dry before the second coat applied.

15.5 The prepared mortar must be applied to the slurry primer while it is still wet/tacky. If drying occurs, the surface should be cleaned and a new coat of slurry primer applied.

15.6 The mortar can be applied more easily and in relatively thicker layers than traditional sand-cement mortar.

15.7 The applied mortar is compacted and trowelled smooth. It should be protected from freezing and rapid drying until it has set.

15.8 Where the mortar is to be applied over reinforcing steel, a minimum cover of 15 mm thickness should be achieved in most conditions. In adverse conditions, such as a coastal environment, cover may need to be increased and specialist advice should be sought from the Certificate holder.

15.9 Where deep holes are to be filled, the mortar should be applied in layers of no more than 60 mm. Subsequent layers are applied after the initial layer has hardened, care being taken to produce a good mechanical key between each layer.

16 Finishing

Once cured and dried, sand-cement mortar containing the product can be coated with an anti-carbonation or decorative surface coating. The advice of the Certificate holder should be sought as regards the compatibility of specific finishes.

Technical Investigations

17 Tests

17.1 As part of the assessment resulting in the issue of the original Certificate, independent test reports relating to the following were examined:

- bond to concrete
- bond to steel
- strength and movement characteristics
- behaviour in fire
- moisture resistance.

17.2 As part of the assessment resulting in the issue of a previous Certificate, tests were carried out to assess the maintenance of product quality and to re-examine the bond strength to concrete and independent test reports relating to the following were examined:

- BS 476-6 : 1968
- BS 476-7 : 1971.

18 Investigations

18.1 As part of the assessment resulting in the issue of a previous Certificate, an independent site investigation report relating to the carbonation of Ronafix mortar on a 14-year old installation was examined.

18.2 A re-examination was made of the data and investigations on which the previous Certificates were based. The conclusions drawn from the original data remain valid.

18.3 Regular factory inspections have been carried out to ensure that quality is being maintained.

18.4 A user survey was conducted to evaluate performance in use.

Bibliography

BS 476-6 : 1968 *Fire tests on building materials and structures — Method of test for fire propagation for products*

BS 476-7 : 1971 *Fire tests on building materials and structures — Surface spread of flame tests for materials*

BS 882 : 1983 *Specification for aggregates from natural sources for concrete*

BS EN 197-1 : 2000 *Cement — Composition, specifications and conformity criteria for common cements*

BS EN 12620 : 2002 *Aggregates for concrete*

19 Conditions

19.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English law.

19.2 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

19.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

19.4 In granting this Certificate, the BBA is not responsible for:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

19.5 Any information relating to the manufacture, supply, installation, use and maintenance of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.