

## McGraths Limestone (Cong) Ltd

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**Agrément Certificate**

**19/5713**

Product Sheet 1

### CEMFLOOR SCREED

### CEMFLOOR THERM C20-F4

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to CEMFLOOR THERM C20-F4, a pumpable, cementitious, liquid levelling floor screed used for indoor use on domestic and commercial buildings, to produce a smooth, level surface for the subsequent application of textile or resilient floor covering.

(1) Hereinafter referred to as 'Certificate'.

#### 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

**Strength and stability** — when fully bonded, the product has a strong and durable bond to the base concrete and has similar movement characteristics to a good quality concrete (see section 6).

**Durability** — the product, when correctly installed, covered by a suitable floor covering and suitably maintained, will have a life equal to that of the building in which it is installed (see section 9).



The BBA has awarded this Certificate to the company named above for the product described herein. This 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

Date of First issue: 13 January 2020

Hardy Giesler  
Chief Executive Officer

*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](http://www.bbacerts.co.uk)*

*Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

*Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.*

#### British Board of Agrément

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## Regulations

In the opinion of the BBA, the use of CEMFLOOR THERM C20-F4 is not subject to the national Building Regulations.

### Construction (Design and Management) Regulations 2015 Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.1, 3.5 and 3.6) of this Certificate.

## Additional Information

### NHBC Standards 2020

In the opinion of the BBA, CEMFLOOR THERM C20-F4, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 9.3 *Floor finishes*, Clause 9.3.4 *Screed*.

### CE marking

The Certificate holder has taken the responsibility of CE marking the product, in accordance with harmonised European Standard BS EN 13813 : 2002.

## Technical Specification

### 1 Description

1.1 CEMFLOOR THERM C20-F4 consists of blends of cement, sand, superplasticiser, CEMFLOOR THERM Binder and water.

1.2 The product has the following characteristics:

Wet density ( $\text{kg}\cdot\text{m}^{-3}$ )	2100 - 2200
Dry density ( $\text{kg}\cdot\text{m}^{-3}$ )	1900 - 2050
Flow ring diameter (mm)	230 - 260
Minimum compressive strength 28 days ( $\text{N}\cdot\text{mm}^{-2}$ )	>20
Flexural strength ( $\text{N}\cdot\text{mm}^{-2}$ )	4
Reaction to fire	A1
pH	13
Shrinkage and swelling (mm/m)	$\leq 0.5$ .

### 2 Manufacture

2.1 The product is manufactured in a batch-blending process.

2.2 The incoming cement, sand and additives are supplied to agreed specifications, and quality-control checked upon receipt. All approved concrete plants are compliant with BS EN ISO 9001 : 2015. The product may also be supplied by mobile plants.

2.3 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process

- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.4 The management system of McGraths Limestone (Cong) Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by NSAI (Certificate IE-19.5389HQ).

### 3 Delivery and site handling

3.1 The product is delivered to site by ISO 9001 : 2015-approved, ready-mix truck suppliers.

3.2 The materials are batch weighed into ready-mix trucks with loads up to 7.5 m<sup>3</sup>, and the rheological properties of each load are checked.

3.3 Sand and graded aggregates must be stored in accordance with normal good practice, away from any possible contamination by soil or organic matter.

3.4 The mix is delivered to site, where the flow ring value is checked to ensure its compliance with the values given in section 1.2, prior to pumping.

3.5 The Certificate holder has taken the responsibility of classifying and labelling the product under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

3.6 Suitable personal protective clothing and equipment should be used when applying and abrading the product.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on CEMFLOOR THERM C20-F4.

### Design Considerations

## 4 Use

4.1 CEMFLOOR THERM C20-F4 is satisfactory for use as a levelling screed for fully bonded, unbonded and floating floor construction on concrete substrates, in domestic and commercial buildings.

4.2 The product is applied to a suitably prepared, adequately strong concrete base, and covered with a textile or resilient floor covering.

4.3 The product is for use on rigid concrete bases, depending on the usage and amount of imposed traffic, of:

- in-situ suspended floors
- precast floor slabs
- ground-floor slabs
- beam and block floors
- other suitably rigid load bearing substrates.

4.4 The designer should ensure that the construction programme allows sufficient time for a base slab to dry adequately before the product is applied. Where these conditions cannot be met, a damp-proof membrane (dpm) should be installed between the base and the screed, in unbonded or floating screed construction.

4.5 The product can be applied at temperatures between 5 and 30°C using normal floor screeding techniques, at the thicknesses shown in Table 1, depending on installation details, the use of the building and the imposed loads.

**Table 1 Minimum and maximum application thicknesses**

Floor construction	Application thickness (mm)
	Minimum
Bonded	20
Unbonded	30
Floating domestic	35
Floating commercial	40
Above conduits and heating pipes	25 <sup>(1)</sup>

(1) minimum overall screed thickness of 40 mm must be used.

4.6 The product is suitable for use as floating screed, applied to insulating boards with a minimum compressive strength of 100 kPa laid on a prepared concrete base. Precautions are necessary to prevent the screed from penetrating below the boards, by means of lapped and taped membranes.

## 5 Practicability of installation

The product is only applied by contractors approved by the Certificate holder, using conventional screed-laying techniques.

## 6 Strength and stability

6.1 The product has adequate strength for use on concrete bases or other suitable bases and has adequate resistance to normal loading, point loading and loads associated with light-wheeled traffic (eg trolleys used in hospitals and offices).

6.2 The product has satisfactory resistance to impact and may be laid without serious cracking, and will have a sound surface. The product may be installed effectively to comply with categories A, B or C of BS 8204-1 : 2003, as shown in Table 2 of this Certificate.

**Table 2 Floor use categories**

Category	Areas of use	Example areas of use
A	Areas expected to take very heavy traffic and/or where later disruption would be unacceptable	Hospital operating theatres, X-ray rooms Research rooms where radioactive material is handled Store rooms with heavy use Telecommunications rooms Areas of heavy trucking Workshop areas
B	Areas expected to take heavy traffic	Areas where heavy trolleys are used Public areas, corridors, main lift and lobby areas Canteens and restaurants Public rooms in residential accommodation Classrooms, hospital wards
C	Other areas subjected to mainly foot traffic and light use	Light office use, consulting rooms, domestic housing

6.3 The product has similar movement characteristics to a good quality concrete.

## 7 Resistance to wear and surface hardness

The product, under normal circumstances, will resist the wear from light foot traffic better than sand/cement levelling screeds. However, where following trades are to work on an uncovered screed, it is recommended that the screed be protected until the permanent floor covering is applied.

## 8 Maintenance

Under normal circumstances, maintenance or repair of the product will not be necessary. Cracking may be repaired using a suitable remedial compound.

## 9 Durability

CEMFLOOR THERM C20-F4 is durable and, when correctly installed, covered by a resilient floor covering and suitably maintained, will have a life equal to that of the building in which it is installed.

## Installation

### 10 General

10.1 Installation of CEMFLOOR THERM C20-F4 should only be conducted by approved contractors in accordance with BS 8204-1 : 2003, BS 8204-7 : 2003, the Certificate holder's installation instructions and this Certificate.

10.2 The product must be installed within 4 hours of manufacture.

10.3 The product is applied on concrete or insulated boards at the thicknesses given in Table 1. Care should be taken to ensure that the minimum thicknesses are achieved at the maximum point of departure from the datum of the base.

10.4 The standard of installation should generally comply with BS 8000-0 : 2014.

10.5 Low temperatures or excessive moisture in the underlying concrete will delay the hardening and drying times of the screed.

10.6 In common with other self-levelling screeds, the product is not suitable for use on floors with a significant fall.

10.7 The product is not suitable for use as a final wearing course and should be finished using a resilient floor covering or floor topping.

10.8 The advice of the Certificate holder should be sought if the product is to be used with underfloor heating systems.

### 11 Preparation

11.1 The concrete sub-floor must be prepared in accordance with BS 8204-1 : 2003 and BS 8204-7 : 2003, and be structurally sound, clean, and free from laitance, organic or other extraneous matter which might impair adhesion of the screed. Any weak or yielding substrate must be removed.

11.2 The concrete base must be cleaned, and any projections are removed and cavities filled to achieve a reasonably regular surface.

11.3 The product is applied by pump direct from the ready-mix truck. Owing to the very fluid nature of the product, the substrate must be capable of holding liquid to the required depth.

#### Bonded screeds

11.4 The concrete base must be either shot-blasted or scabbled, and vacuum cleaned to completely remove any laitance and expose the main aggregate.

11.5 Any holes or gaps in the substrate must be filled, sealed and left to set prior to screeding in accordance with the Certificate holder's instructions.

#### Unbonded and floating screeds

11.6 When used for unbonded or floating floor constructions, all joints in the plastic membrane or insulation are sealed or taped in accordance with the membrane/insulation suppliers' recommendations.

11.7 A suitable dpm should be included into the build-up below the screed and the surface kept clean prior to screeding.

11.8 For floating construction, the insulation must be overlaid with lapped and taped polythene sheeting of appropriate thickness. Compressible foam strips must be placed around perimeters and vertical upstands, and thresholds, stairs and drain gullies should be isolated prior to the screed laying.

## 12 Application

12.1 Application of CEMFLOOR THERM C20-F4 must be conducted in accordance with this Certificate and the Certificate holder's instructions. The Certificate holder can advise on suitable materials for this purpose.

12.2 Upon delivery to site and rheological check, CEMFLOOR THERM C20-F4 mix is pumped onto the prepared surface via a discharge hose. The hose is moved across the surface at a constant rate and dappled twice, in order to achieve a uniform screed thickness. The second pass is carried out at right angles to the first.

12.3 Prior to completion of screeding, checks must be made on the thickness using levelling tripods and/or laser levelling.

## 13 Curing

To avoid the screed from drying out too quickly in the first 48 hours, the finished installation should be protected from draughts, strong sunlight, hot weather and excessive temperatures.

## 14 Finishing

14.1 Once laid, the product can be subjected to light foot traffic after 24 to 48 hours, depending on ambient conditions, provided it is protected with a suitable temporary covering. This time will be extended at lower temperatures. The room should be ventilated after 24 to 48 hours by opening windows and doors during the day to aid the drying process.

14.2 The flooring contractor must check the moisture content of the screed before laying the floor covering in accordance with the recommendations of BS 8203 : 2017. Typically, floor coverings can be installed after three to five weeks, depending on the screed thickness and drying conditions.

14.3 CEMFLOOR THERM C20-F4 will not require any sanding to remove laitance, but it is recommended to lightly abrade the surface to clean and remove any building residue and to improve the adhesion of the flooring adhesive to the hardened screed.

## Technical Investigations

## 15 Tests

15.1 Tests were carried out on the product and the results assessed to determine:

- compressive strength
- flexural strength
- resistance to indentation.

15.2 An assessment was made of existing data from independent laboratories to determine:

- density
- bond strength
- setting time
- shrinkage and expansion
- pH.

## 16 Investigations

16.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

16.2 An assessment was made of the practicability of installation of the product.

### Bibliography

BRE Current Paper 94/74 *The rippling of thin floor finishes over discontinuous screeds*

BS 8000-0 : 2014 Workmanship on construction sites — Introduction and general principles

BS 8203 : 2017 *Code of practice for installation of resilient floor coverings*

BS 8204-1 : 2003 + A1 : 2009 *Screeds, bases and in situ floorings — Concrete bases and cementitious levelling screeds to receive floorings — Code of practice*

BS 8204-7 : 2003 *Screeds, bases and in-situ floorings — Pumpable self-smoothing screeds — Code of practice*

BS EN 13813 : 2002 *Screed material and floor screeds — Screed material — Properties and requirements*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

### 17 Conditions

17.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- 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.

17.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

17.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and 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.

17.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

17.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- 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
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

17.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal 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, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue 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.