

Flowcrete UK Ltd

The Flooring Technology Centre
Booth Lane
Moston
Sandbach
Cheshire CW11 3QF

Tel: 01270 753000 Fax: 01270 753333

e-mail: uk@flowcrete.com

website: www.flowcrete.com



Agrément Certificate

91/2678

Product Sheet 3

K-SCREED FLOOR SCREEDS

HEAVY DUTY K-SCREED

This Agrément Certificate Product Sheet⁽¹⁾ relates to Heavy Duty K-Screed, a modified semi-dry sand/cement levelling floor screed used for fully bonded, floating and unbonded floor constructions.

(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 using Isocrete Polymer 70, the product has a strong and durable bond to the base concrete and has similar movement characteristics to concrete and traditional sand/cement-based screed (see section 6).



Durability — the product, when correctly installed and covered by a suitable floor covering, 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 Fifth issue: 17 October 2018

John Albon – Head of Approvals
Construction Products

Originally certificated on 14 February 1992

Claire Curtis-Thomas
Chief Executive

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.

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

British Board of Agrément

Bucknalls Lane
Watford
Herts WD25 9BA

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tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

Regulations

In the opinion of the BBA, the use of Heavy Duty K-Screed 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, 3.2 to 3.5 and 3.7) of this Certificate.

Additional Information

NHBC Standards 2018

In the opinion of the BBA, Heavy Duty K-Screed, 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 *Floor Finishes*, clause 9.3.4 *Screed*. Screeds must be laid at the minimum thicknesses specified in Table 2 of clause 9.3.4 and where the screed is to be installed over insulation, it should be reinforced.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13813 : 2002. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Heavy Duty K-Screed is a sand/cement/aggregate levelling screed modified by the incorporation of K-Additive a pigmented plasticising/accelerating admixture used to modify and enhance the performance of sand/cement floor levelling screeds.

1.2 A typical Heavy Duty K-Screed mix is shown in Table 1.

Table 1 Typical Heavy Duty K-Screed mix

Material	Standard	Specification	Weight
Portland cement	BS EN 197-1	Class 42.5 N	25 kg
Sand	BS EN 13139	using K-Additive 0/4 mm (MP) Category 1 with not more than 10% passing a 150 µm sieve	67.5 kg
6 mm single size or 5–10 mm aggregate	BS EN 12620		22.5 kg
K-Additive	—	Pack size K3 ⁽¹⁾	one bag
Water	BS EN 1008	—	to give a suitable working mix, using the 'snowball' test

(1) See Table 2.

1.3 K-additive is also available as K-Screed Binder when pre-bagged with the hydraulic binder, including ground granulated blastfurnace slag (GGBS) and polypropylene fibres, requiring only the addition of sand and 5 mm or 6 mm single sized aggregate to BS EN 12620 : 2002 (as described in Table 1) and water, mixed at a ratio of 300 : 1150 : 350,

bagged K-screed binder : sand : aggregate by weight. Water is added to give the required workability as judged by the standard 'snowball test' described in BS 8000-9 : 2003.

1.4 Isocrete Polymer 70 is a terpolymer in liquid form and is used to improve the adhesion of the screed to the concrete substrate.

1.5 The density of the product is dependent on the grade of sand and aggregate used, but will be approximately 1900 kg·m⁻³.

1.6 The product is manufactured in a batch-blending process. Quality control is exercised over raw materials, during manufacture and on the final product.

2 Manufacture

2.1 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.

2.2 The management system of Flowcrete UK Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by BSI (Certificate FM/569508).

3 Delivery and site handling

3.1 K-Additive is delivered to site in 25 kg boxes and is supplied in three pack sizes, the choice of pack size depending on the size of K-Screed batch to be mixed (see Table 2).

Table 2 K-Additive packaging

Pack size	Use	Packs per 25 kg box
K3	Mixers using 25 kg of cement	50
K4C	Mixers using 50 kg of cement	50
K5	Mixers producing a 1 tonne batch of screed	15

3.2 The pre-bagged K-Screed binder is supplied in 25 kg paper sacks.

3.3 K-Additive should be stored under cover and protected from the effects of weather. When stored in these conditions the product has a shelf-life of 12 months.

3.4 Pre-bagged K-Screed binder, when stored unopened under cover and protected from moisture and high temperature will have a shelf life of 6 months. Pallets must not be stored more than two high.

3.5 Isocrete Polymer 70 is supplied in 25 litre containers and should be stored in sealed containers in dry, frost-free conditions. When stored in these conditions the product has a shelf-life of 12 months.

3.6 Cement, sand and graded aggregates should be stored in accordance with normal practice, away from any possible contamination by soil or organic matter.

3.7 The Certificate holder has taken the responsibility of classifying and labelling the product under the *CLP Regulations (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant safety data sheets(s).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Heavy Duty K-Screed.

Design Considerations

4 Use

4.1 Heavy Duty K-Screed is satisfactory for use as a levelling screed for fully bonded, floating and unbonded floor constructions on concrete substrates.

4.2 The product is for use on concrete substrates of:

- in-situ suspended floors
- beam-and-block floors
- precast floor slabs
- treads and risers of concrete staircases.
- ground-floor slabs

4.3 It can be applied at temperatures between 5 and 35°C using normal floor screeding techniques at the thicknesses shown in Table 3, depending on installation details.

Table 3 Minimum thickness

Substrate	Heavy Duty K-Screed thickness (mm)
Prepared precast concrete with Isocrete Polymer 70	40
Normal dense concrete slab with Isocrete Polymer 70	40
Over damp-proof membranes with D49 reinforcement mesh	60

4.4 The product is suitable for use in a range of commercial and domestic situations and should be specified after consideration of the specific performance requirements for a particular application.

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

5 Practicability of installation

The product is designed to be installed by an Isocrete licenced installer, experienced with this type of product.

6 Strength and stability

6.1 The product has adequate strength for use on concrete bases and has sufficient resistance to normal loading and loads associated with light wheeled traffic comparable with conventional sand/cement screeds.

6.2 Under normal circumstances, the bond between the concrete and the product is satisfactory. Heat affects this bond and therefore the Certificate holder's recommendations concerning the use of underfloor heating must be strictly followed.

6.3 On-site investigations using the BRE Screed Tester in accordance with BS 8204-1 : 2003 show that the product may be installed effectively to comply with categories A and B of the screed test specification. They may be laid without serious cracking and have a sound surface.

6.4 The product has similar movement characteristics to concrete and traditional sand/cement-based mortars.

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 will not be necessary. However, if damage or cracking occurs, repairs may be achieved easily by cutting out the damaged area and relaying. Minor cracks may be repaired using a suitable smoothing compound.

9 Durability

The product, when correctly installed and covered by a suitable floor covering, should have a life equal to that of the building in which it is installed.

Installation

10 General

10.1 Installation of Heavy Duty K-Screed should only be conducted by the Certificate holder's approved licensees in accordance with BS 8204-1 : 2003, the Certificate holder's installation instructions and this Certificate.

10.2 The thickness of the screed is given in Table 3 (see also the *Additional Information* part of this Certificate, *NHBC Standards* 2018). Care should be taken to ensure the maximum and minimum thickness is achieved at the maximum point of departure from the datum of the base.

10.3 The standard of installation should generally comply with BS 8000-0 : 2014 and BS 8000-9 : 2003.

10.4 The advice of the Certificate holder should be sought if the product is to be used over insulation or with underfloor heating systems.

10.5 The Certificate holder offers a specification advice service to advise specifiers and architects on the preparation of the contract, base and screeding. The Certificate holder will attend sites to monitor the progress of the screed installation and to conduct random soundness testing of the completed screeds.

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 and organic or other extraneous matter which might impair adhesion of the screed. Any weak or yielding substrate must be removed.

11.2 In certain situations, steel reinforcing mesh should be incorporated in the screed, particularly in conjunction with unbonded screeds and especially over pipes, insulation, conduits and trunking in precast concrete floors. Attention is drawn to the Certificate holder's installation instructions (see also the *Additional Information* part of this Certificate, *NHBC Standards* 2018).

Bonded screeds

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

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

Unbonded screeds

11.5 Where the product is to be laid over a damp-proof membrane (dpm), reference should be made to BRE Current Paper 94/74 *The rippling of thin floor finishes over discontinuous screeds*. This gives guidance on measures to be adopted after the screed has been laid to prevent curling of the screed and subsequent rippling of a thin floor finish. These recommendations should also be followed in situations where the product is applied over insulation.

11.6 The dpm must be well bonded to the concrete substrate and the surface kept clean prior to screeding.

12 Priming

12.1 For bonded screeds, the concrete surface should be primed not less than 12 hours before screeding with a solution of one part Isocrete Polymer 70 to three parts water.

12.2 The primer should be applied evenly to the prepared concrete surface using a soft brush, to avoid ponding, and then allowed to dry. The primed concrete surface is grouted immediately before screeding with one part Portland cement mixed to 'just flowing' consistency with diluted Isocrete Polymer 70 bonding agent (one part Isocrete Polymer 70 to three parts water).

12.3 To ensure the correct application and curing properties, the primer should not be applied at temperatures below 10°C.

13 Mixing

Heavy Duty K-Screed is mixed in the proportions defined by the Certificate holder in a Creteangle, Mixocrete, Screedmaster or similar forced action mixer, in accordance with the Certificate holder's instructions and sections 1.3 and 1.4.

14 Application

14.1 Application of the product must be conducted in accordance with this Certificate and the Certificate holder's instructions.

14.2 For bonded applications, the product is laid onto the cement grout, which must not dry prematurely.

14.3 If the thickness is to be 75 mm or more the product should be laid in two applications, with not more than 30 minutes between each application. Each layer should be of approximately equal thickness and compacted separately.

14.4 The mixed product should be placed and compacted within 30 minutes of mixing.

14.5 The screed is compacted to the required thickness using a weighted roller, hand rammer or similar method. The surface should be closed with a plastic or wooden float and given a light steel trowel or power floated finish.

14.6 The screed is applied over construction joints, but movement joints are continued through the product's surface and sealed with, for example, a polysulfide or polyurethane sealant.

14.7 The surface regularity should comply with the requirements detailed in BS 8204-1 : 2003, Table 5. The screed should be protected if it is likely to be subjected to excessive wear before the floor finish is applied.

15 Curing

15.1 Curing should take place under polythene for the periods listed in Table 4.

<i>Table 4 Curing times</i>	
Heavy Duty K-Screed specification	Curing time (days)
Bonded	5
Unbonded/floating	10

15.2 The screed should be damped down if rapid over-drying takes place.

16 Finishing

16.1 Once laid, the product may be subjected to light foot traffic after 36 to 48 hours, depending on ambient conditions, provided it is protected with a suitable temporary covering. This time will be extended at lower temperatures.

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

16.3 An average drying time of seven days per 25 mm of product thickness should be allowed before laying the floor covering.

16.4 Very low temperatures or excessive moisture in the underlying concrete will delay the hardening and drying of the screed.

16.5 When the product is used with underfloor heating systems, the heat can be turned on 21 days after screeding, as recommended by BS EN 1264-4 : 2009. In the case of hot water systems, the initial temperature setting must not exceed 2°C above the existing temperature of the screed, or be increased by more than 5°C per day until the full operating temperature is reached. Electrical systems should also be brought into operation gradually, from an initial heating period of two hours.

Technical Investigations

17 Tests

17.1 Tests were conducted on Heavy Duty K-Screed and the results assessed to determine:

- mix characteristics
- flexural strength*
- bond strength*/effect of heat and effect of moisture
- compressive strength*.

17.2 An assessment was made of existing data to determine:

- resistance to indentation*
- compatibility with materials in contact
- impact damage*
- water resistance*
- wear resistance*
- soundness.

18 Investigations

18.1 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.

18.2 An assessment was made of the product's scope of use and durability in service.

18.3 An assessment was made of the Certificate holder's criteria for appointing and monitoring their approved licensees.

18.4 Visits were made to sites in progress and existing sites to assess the practicability of installation and performance of the product in service.

18.5 A user survey was conducted to establish the product's ease of use and performance in service.

Bibliography

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

BS 8000-9 : 2003 *Workmanship on building sites — Cementitious levelling screeds and wearing screeds — Code of practice*

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 screeds to receive in-situ floorings — Code of practice*

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

BS EN 197-1 : 2011 *Cement — Composition, specifications and conformity criteria for common cements*

BS EN 1008 : 2002 *Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

BS EN 1264-4 : 2009 *Water based surface embedded heating and coating systems — Installation*

BS EN 12620 : 2002 + A1 : 2008 *Aggregates for concrete*

BS EN 13139 : 2002 *Aggregates for mortar*

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

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

19 Conditions

19.1 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.

19.2 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.

19.3 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.

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

19.5 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.

19.6 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.