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Agrément Certificate  
No 91/2678

## K-SCREED FLOOR SCREEDS

### PRODUCT SHEET 1 — STANDARD K-SCREED

#### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate replaces and extends 83/1210 and relates to Standard K-Screed, a modified semi-dry sand/cement levelling floor screed used for fully bonded, partially bonded and unbonded floor constructions.

#### 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

**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 5).

**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 (see section 8).



The BBA has awarded this Agrément Certificate for Standard K-Screed to Flowcrete UK Ltd as fit for its intended use provided it is installed, used and maintained as set out in this Agrément Certificate.

On behalf of the British Board of Agrément

Head of Approvals  
— Materials

Chief Executive

Date of First issue: 28 October 1991

Date of Third issue: 19 May 2008

*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 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 the Building Regulations for Standard K-Screed:



**The Building Regulations 2000 (as amended) (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, 2.3 and 2.5).

## Non-regulatory Information

### NHBC Standards 2007

NHBC accepts the use of Standard K-Screed, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 8.3 *Floor finishes*, clause D3 *Screeding*.

### Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA the use of Standard K-Screed when installed and used in accordance with this Certificate is capable of satisfying the requirements of the *Zurich Building Guarantee Technical Manual*, Section 3 *Substructure*, Sub-section *Floors* and Section 5 *Internal/external works, services & finishes*, Sub-section *Internal works – Floors*.

## General

This Certificate relates to Standard K-Screed, a modified semi-dry sand/cement levelling floor screed laid onto the concrete substrate fully bonded, partially bonded and unbonded depending on the proposed use.

The product has satisfactory resistance to impact and point loading, and also to abrasion from light-wheeled trolleys and foot traffic.

The product is satisfactory for use as a floor levelling screed with a suitable floor covering, when applied to a suitably prepared and adequately strong concrete base.

Installation of the product is conducted only by the Certificate holder's approved licensees in accordance with BS 8204-1 : 2003.

## Technical Specification

### 1 Description

1.1 Standard K-Screed is a sand/cement levelling screed modified by the incorporation of K-Additive.

1.2 K-Additive is a pigmented plasticising/accelerating admixture used to modify and enhance the performance of sand/cement floor levelling screeds.

1.3 A typical Standard K-Screed mix is shown in Table 1.

Table 1 Typical Standard K-Screed mix

Material	Standard	Specification	Weight
Portland cement	BS EN 197-1	Class 42.5 N	25 kg
Sand	BS EN 12620	not more than 10% passing a 150 µm sieve	90 kg
K-Additive	—	Pack size K3 <sup>(1)</sup>	one bag
Water	BS EN 1008	—	to give a suitable working mix, using the 'snowball' test

(1) See Table 2.

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 used, but will be approximately 1800 kgm<sup>-3</sup>.

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

## 2 Delivery and site handling

2.1 K-Additive is delivered to site in 25 kg boxes. K-Additive 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

2.2 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.

2.3 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.

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

2.5 The product is not classified as 'hazardous' under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002* (CHIP3). When handling materials such as cements and K-Additive, operators should avoid contact with skin, eyes or respiratory system.

## Assessment and Technical Investigations

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

### Design Considerations

## 3 Use

3.1 Standard K-Screed is satisfactory for use as a levelling screed for fully bonded, partially bonded and unbonded floor construction on concrete substrates.

3.2 The product is for use on concrete substrates of:

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

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

Table 3 Minimum thickness

Substrate	Standard K-Screed thickness (mm)
Shot blasted or scabbled normal dense concrete slab with Isocrete Polymer 70	20
Prepared precast concrete concrete planks with Isocrete Polymer 70	30
Over underfloor heating systems	50
Over damp-proof membrane	40
Over 35 mm ISD grade expanded polystyrene	60

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

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

## 4 Practicability of installation

The product can be installed easily by operatives experienced with floor screeds.

## 5 Strength and stability

5.1 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.

5.2 Under normal circumstances the bond between the concrete and the product is satisfactory. Tests have shown that heat affects this bond and therefore, the Certificate holder's recommendations concerning the use of underfloor heating must be followed strictly.

5.3 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.

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

## 6 Resistance to wear and surface hardness

The product will, under normal circumstances, 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.

## 7 Maintenance

Under normal circumstances no maintenance or repair will 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.

## 8 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

## 9 General

9.1 Installation of Standard 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.

9.2 The thickness of the screed is given in Table 3. Care should be taken to ensure that the maximum and minimum thickness is achieved at the maximum point of departure from the datum of the base.

9.3 The standard of installation should generally comply with BS 8000-9 : 2003.

9.4 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.

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

9.6 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.

## 10 Preparation

10.1 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.

10.2 In certain situations steel reinforcing mesh should be incorporated in the screed, particularly in conjunction with unbonded screeds and especially over pipes, conduits, trunking and major joints in precast concrete floors. Attention is drawn to the Certificate holder's installation instructions.

### Bonded screeds

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

10.4 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.

### Partially bonded screeds

10.5 Where a high degree of bond is not required the concrete should have a suitable, tamped surface, free from excessive laitance or loose material.

## Unbonded screeds

10.6 Where the product is to be laid over a damp-proof membrane, 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.

10.7 The damp-proof membrane must be well bonded to the concrete substrate and the surface kept clean prior to screeding.

## 11 Priming

11.1 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.

11.2 The primer should be applied evenly to the prepared concrete surface using a soft brush, 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 Polymer 70 to three parts water).

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

## 12 Mixing

The product 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 section 1.3.

## 13 Application

13.1 The application of the product must be conducted in accordance with this Certificate and the Certificate holder's instructions.

13.2 For bonded and partially bonded screeds, the product is laid onto the cement grout, which must not dry prematurely.

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

13.4 In thick screeds over 75 mm, 25% of the normal sharp sand is replaced with 6 mm single size, graded, clean aggregate.

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

13.6 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.

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

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

## 14 Curing

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

Standard K-Screed specification	Curing time (days)
Bonded	5
Unbonded	10

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

## 15 Finishing

15.1 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.

15.2 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 : 2001. Typically, floor coverings can be installed after one to three weeks depending on the screed thickness and drying conditions.

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

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

15.5 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 : 2001. 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 2°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

### 16 Tests

Tests were conducted on Standard K-Screed to determine:

- resistance to impact damage
- resistance to static loading
- bond strength/effect of heat and effect of moisture
- surface soundness
- flexural strength to BS 4551 : 1980
- compressive strength to BS 4551 : 1980
- bond strength
- mix characteristics.

### 17 Investigations

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

17.2 An assessment was made of existing data to determine:

- resistance to static loading
- impact resistance
- abrasion resistance
- compatibility with materials in contact
- water resistance
- soundness.

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

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

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

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

17.7 No failures of the product in use have been reported to the BBA.

## Bibliography

BS 4551 : 1980 *Methods of testing mortars, screeds and plasters*

BS 8000-9 : 2003 *Workmanship on building sites Code of practice for cement/sand floor screeds and concrete floor toppings*

BS 8203 : 2001 *Code of practice for installation of resilient floor coverings*

BS 8204-1 : 2003 *Screeds, bases and in-situ floorings — Code of practice for concrete bases and screeds to receive in-situ floorings*

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

BS EN 197-1 : 2000 *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 : 2001 *Floor heating — Systems and components — Installation*

BS EN 12620 : 2002 *Aggregates for concrete*

## 18 Conditions

18.1 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.

18.2 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

18.3 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.

18.4 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.

18.5 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.



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## K-SCREED FLOOR SCREEDS

### PRODUCT SHEET 2 — COMPOSITE K-SCREED

#### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate replaces and extends 83/1210 and relates to Composite K-Screed, a medium grade lightweight aggregate base screed with a Standard K-Screed levelling screed used for fully bonded, partially bonded and unbonded floor constructions.

#### 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

**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 5).

**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 (see section 8).



The BBA has awarded this Agrément Certificate for Composite K-Screed to Flowcrete UK Ltd as fit for its intended use provided it is installed, used and maintained as set out in this Agrément Certificate.

On behalf of the British Board of Agrément

Head of Approvals  
— Materials

Chief Executive

Date of First issue: 28 October 1991

Date of Third issue: 19 May 2008

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## Regulations

In the opinion of the BBA, there are no requirements in the Building Regulations for Composite K-Screed:



**The Building Regulations 2000 (as amended) (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, 2.3 and 2.5).

## Non-regulatory Information

### NHBC Standards 2007

NHBC accepts the use of Composite K-Screed, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 8.3 *Floor finishes*, clause D3 *Screeding*.

### Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA the use of Composite K-Screed when installed and used in accordance with this Certificate is capable of satisfying the requirements of the *Zurich Building Guarantee Technical Manual*, Section 3 *Substructure*, Sub-section *Floors* and Section 5 *Internal/external works, services & finishes*, Sub-section *Internal works — Floors*.

## General

This Certificate relates to Composite K-Screed, a medium grade lightweight aggregate base screed with a Standard K-Screed levelling screed used for fully bonded, partially bonded and unbonded floor constructions depending on the proposed use.

The product has satisfactory resistance to impact and point loading, and also to abrasion from light-wheeled trolleys and foot traffic.

The product is satisfactory for use as a floor levelling screed with a suitable floor covering, when applied to a suitably prepared and adequately strong concrete base.

Installation of the product is conducted only by the Certificate holder's approved licensees in accordance with BS 8204-1 : 2003.

## Technical Specification

### 1 Description

1.1 Composite K-Screed is a Standard K-Screed levelling screed on a medium lightweight aggregate, no fines base screed. The aggregate may be sintered pfa (pulverised-fuel ash) or expanded clay.

1.2 Standard K-Screed is a sand/cement levelling screed modified by the incorporation of K-Additive as detailed in Product Sheet 1 of this Certificate.

1.3 K-Additive is a pigmented plasticising/accelerating admixture used to modify and enhance the performance of sand/cement floor levelling screeds.

1.4 A typical Standard K-Screed mix is shown in Table 1.

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

1.6 The density of the product is approximately 1200 kgm<sup>-3</sup> for sintered pfa/cement (ratio 7:1), or 600 kgm<sup>-3</sup> for expanded clay aggregate/cement (ratio 6:1).

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

Table 1 Typical Standard K-Screed mix

Material	Standard	Specification	Weight
Portland cement	BS EN 197-1	Class 42.5 N	25 kg
Sand	BS EN 12620	not more than 10% passing a 150 µm sieve	90 kg
K-Additive	—	Pack size K3 <sup>(1)</sup>	one bag
Water	BS EN 1008	—	to give a suitable working mix, using the 'snowball' test

(1) See Table 2.

## 2 Delivery and site handling

2.1 K-Additive is delivered to site in 25 kg boxes. K-Additive 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

2.2 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.

2.3 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.

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

2.5 The product is not classified as 'hazardous' under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002* (CHIP3). When handling materials such as cements and K-Additive, operators should avoid contact with skin, eyes or respiratory system.

## Assessment and Technical Investigations

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

### Design Considerations

## 3 Use

3.1 Composite K-Screed is satisfactory for use as a levelling screed for fully bonded, partially bonded and unbonded floor constructions on concrete substrates.

3.2 The product is for use on concrete substrates of:

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

3.3 It can be applied at temperatures between 5°C to 35°C using normal floor screeding techniques at the thicknesses shown in Table 3, depending on installation details. The overall floor thickness and minimum thickness of Standard K-Screed is given in Table 4.

Table 3 Minimum Composite K-Screed and weights per unit area

Overall	Thickness (mm)		Weight (kgm <sup>-2</sup> )		
	Standard K-Screed	Lightweight aggregate	Sintered pfa aggregate	Expanded clay aggregate	
65	25	40	94	69	
75	25	50	105	75	
85	25	60	116	81	
95	25	70	128	87	
105	30	75	144	95	
115	30	85	156	105	
150	30	120	198	126	

Table 4 Overall and K-Screed thicknesses

Overall thickness (mm)	Standard K-Screed thickness (mm)
65–100	25
101–150	30
151–200	40
>200	50

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

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

## 4 Practicability of installation

The product can be installed easily by operatives experienced with floor screeds.

## 5 Strength and stability

5.1 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.

5.2 Under normal circumstances the bond between the concrete and the product is satisfactory. Tests have shown that heat affects this bond and therefore the Certificate holder's recommendations concerning the use of underfloor heating must be followed strictly.

5.3 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.

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

## 6 Resistance to wear and surface hardness

The product will, under normal circumstances, 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.

## 7 Maintenance

Under normal circumstances no maintenance or repair will 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.

## 8 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

## 9 General

9.1 Installation of Composite 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.

9.2 The thickness of the screed is given in Tables 3 and 4. Care should be taken to ensure that the maximum and minimum thickness is achieved at the maximum point of departure from the datum of the base.

9.3 The standard of installation should generally comply with BS 8000-9 : 2003.

9.4 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.

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

9.6 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.

## 10 Preparation

10.1 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.

10.2 In certain situations steel reinforcing mesh should be incorporated in the screed, particularly in conjunction with unbonded screeds and especially over pipes, conduits, trunking and major joints in precast concrete floors. Attention is drawn to the Certificate holder's installation instructions.

### Bonded screeds

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

10.4 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.

### Partially bonded screeds

10.5 Where a high degree of bond is not required the concrete should have a suitable, tamped surface, free from excessive laitance or loose material.

### Unbonded screeds

10.6 Where the product is to be laid over a damp-proof membrane, 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.

10.7 The damp-proof membrane must be well bonded to the concrete substrate and the surface kept clean prior to screeding.

## 11 Priming

11.1 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.

11.2 The primer should be applied evenly to the prepared concrete surface using a soft brush, 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 Polymer 70 to three parts water).

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

## 12 Mixing

12.1 Composite K-Screed is mixed in the proportions defined by the Certificate holder, in a free fall mixer, in accordance with the Certificate holder's instructions

12.2 Standard 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 section 1.4.

## 13 Application

13.1 The application of the product must be conducted in accordance with this Certificate and the Certificate holder's instructions.

13.2 For bonded and partially bonded screeds, the product is laid onto the cement grout, which must not dry prematurely.

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

13.4 Prior to mixing, Composite K-Screed lightweight aggregate is wetted to reduce suction. The base is laid onto the primed surface, which must not dry prematurely.

13.5 Composite K-Screed is applied over construction joints, but movement joints are continued through the Composite K-Screed surface with the Standard K-Screed being laid for the full depth of the screed in a fillet adjacent to the joint. The joint is then sealed, for example, with a polysulfide or polyurethane sealant.

13.6 Normally, the Standard K-Screed is applied the day after laying the lightweight Composite K-Screed, but in colder weather this period may need to be extended.

13.7 Application of the Standard K-Screed is conducted in accordance with the Certificate holder's instructions and Product Sheet 1 of this Certificate.

## 14 Curing

14.1 Composite K-Screed should be cured under polythene for five days.

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

## 15 Finishing

15.1 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.

15.2 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 : 2001. Typically, floor coverings can be installed after one to three weeks depending on the screed thickness and drying conditions.

15.3 An average drying time of 28 days per 25 mm of product thickness should be allowed before laying the floor covering.

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

15.5 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 : 2001. 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 2°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

### 16 Tests

Tests were conducted on Composite K-Screed to determine:

- resistance to impact damage
- resistance to static loading
- bond strength/effect of heat and effect of moisture
- surface soundness
- flexural strength to BS 4551 : 1980
- compressive strength to BS 4551 : 1980
- mix characteristics.

### 17 Investigations

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

17.2 An assessment was made of existing data to determine:

- resistance to static loading
- impact resistance
- abrasion resistance
- compatibility with materials in contact
- water resistance
- soundness.

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

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

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

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

17.7 No failures of the product in use have been reported to the BBA.

## Bibliography

BS 4551 : 1980 *Methods of testing mortars, screeds and plasters*

BS 8000-9 : 2003 *Workmanship on building sites Code of practice for cement/sand floor screeds and concrete floor toppings*

BS 8203 : 2001 *Code of practice for installation of resilient floor coverings*

BS 8204-1 : 2003 *Screeds, bases and in-situ floorings — Code of practice for concrete bases and screeds to receive in-situ floorings*

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

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

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BS EN 1264-4 : 2001 *Floor heating — Systems and components — Installation*

BS EN 12620 : 2002 *Aggregates for concrete*

## 18 Conditions

18.1 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.

18.2 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

18.3 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.

18.4 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.

18.5 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.



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Agrément Certificate  
No 91/2678

## K-SCREED FLOOR SCREEDS

### PRODUCT SHEET 3 — HEAVY DUTY K-SCREED

#### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate replaces and extends 83/1210 and relates to Heavy Duty K-Screed, a modified semi-dry sand/cement levelling floor screed used for fully bonded, partially bonded and unbonded floor constructions.

#### 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

**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 5).

**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 (see section 8).



The BBA has awarded this Agrément Certificate for Heavy Duty K-Screed to Flowcrete UK Ltd as fit for its intended use provided it is installed, used and maintained as set out in this Agrément Certificate.

On behalf of the British Board of Agrément

Head of Approvals  
— Materials

Chief Executive

Date of First issue: 14 February 1992

Date of Third issue: 19 May 2008

*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 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 the Building Regulations for Heavy Duty K-Screed:



**The Building Regulations 2000 (as amended) (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, 2.3 and 2.5).

## Non-regulatory Information

### NHBC Standards 2007

NHBC accepts the use of Heavy Duty K-Screed, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 8.3 *Floor finishes*, clause D3 *Screeding*.

### Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA the use of Heavy Duty K-Screed when installed and used in accordance with this Certificate is capable of satisfying the requirements of the *Zurich Building Guarantee Technical Manual*, Section 3 *Substructure*, Sub-section *Floors* and Section 5 *Internal/external works, services & finishes*, Sub-section *Internal works — Floors*.

## General

This Certificate relates to Heavy Duty K-Screed, a modified semi-dry sand/cement levelling screed used for fully bonded, partially bonded and unbonded floor constructions depending on the proposed use.

The product has satisfactory resistance to impact and point loading, and also to abrasion from light-wheeled trolleys and foot traffic.

The product is satisfactory for use as a floor levelling screed with a suitable floor covering, when applied to a suitably prepared and adequately strong concrete base.

Installation of the product is conducted only by the Certificate holder's approved licensees in accordance with BS 8204-1 : 2003.

## Technical Specification

### 1 Description

1.1 Heavy Duty K-Screed is a sand/cement/aggregate levelling screed modified by the incorporation of K-Additive.

1.2 K-Additive is a pigmented plasticising/accelerating admixture used to modify and enhance the performance of sand/cement floor levelling screeds.

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

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 kgm<sup>-3</sup>.

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

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 12620	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 <sup>(1)</sup>	one bag
Water	BS EN 1008	—	to give a suitable working mix, using the 'snowball' test

(1) See Table 2.

## 2 Delivery and site handling

2.1 K-Additive is delivered to site in 25 kg boxes. K-Additive 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

2.2 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.

2.3 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.

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

2.5 The product is not classified as 'hazardous' under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002* (CHIP3). When handling materials such as cements and K-Additive, operators should avoid contact with skin, eyes or respiratory system.

## Assessment and Technical Investigations

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

### Design Considerations

#### 3 Use

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

3.2 The product is for use on concrete substrates of:

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

3.3 It can be applied at temperatures between 5°C to 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)
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

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

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

## 4 Practicability of installation

The product can be installed easily by operatives experienced with floor screeds.

## 5 Strength and stability

5.1 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.

5.2 Under normal circumstances the bond between the concrete and the product is satisfactory. Tests have shown that heat affects this bond and therefore the Certificate holder's recommendations concerning the use of underfloor heating must be followed strictly.

5.3 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.

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

## 6 Resistance to wear and surface hardness

The product will, under normal circumstances, 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.

## 7 Maintenance

Under normal circumstances no maintenance or repair will 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.

## 8 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

## 9 General

9.1 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.

9.2 The thickness of the screed is given in Table 3. Care should be taken to ensure that the maximum and minimum thickness is achieved at the maximum point of departure from the datum of the base.

9.3 The standard of installation should generally comply with BS 8000-9 : 2003.

9.4 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.

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

9.6 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.

## 10 Preparation

10.1 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.

10.2 In certain situations steel reinforcing mesh should be incorporated in the screed, particularly in conjunction with unbonded screeds and especially over pipes, conduits, trunking and major joints in precast concrete floors. Attention is drawn to the Certificate holder's installation instructions.

### Bonded screeds

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

10.4 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.

### Partially bonded screeds

10.5 Where a high degree of bond is not required the concrete should have a suitable, tamped surface, free from excessive laitance or loose material.

## Unbonded screeds

10.6 Where the product is to be laid over a damp-proof membrane, reference should be made to BRE Current Paper 94/74 The rippling of thin floor finishes over discontinuous in 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.

10.7 The damp-proof membrane must be well bonded to the concrete substrate and the surface kept clean prior to screeding.

## 11 Priming

11.1 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.

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

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

## 12 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 section 1.3.

## 13 Application

13.1 The application of the product must be conducted in accordance with this Certificate and the Certificate holder's instructions.

13.2 For bonded and partially bonded screeds, the product is laid onto the cement grout, which must not dry prematurely.

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

13.4 The mixed product should be placed and compacted within 20 minutes of mixing.

13.5 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.

13.6 The screed is applied over construction joints, but movement joints are continued through the Heavy Duty K-Screed surface and sealed, for example, with a polysulphide or polyurethane sealant.

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

## 14 Curing

14.1 Curing should take place under polythene for the periods given in Table 4.

Table 4 Curing times

Heavy Duty K-Screed specification	Curing time (days)
Bonded	5
Unbonded	10

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

## 15 Finishing

15.1 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.

15.2 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 : 2001. Typically, floor coverings can be installed after one to three weeks depending on the screed thickness and drying conditions.

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

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

15.5 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 : 2001. 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 2°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

### 16 Tests

Tests were conducted on Heavy Duty K-Screed to determine:

- mix characteristics
- flexural strength to BS 4551 : 1980
- bond strength/effect of heat and effect of moisture
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17.1 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

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- resistance to static loading
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- impact resistance
- water resistance
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17.3 An assessment was made of the product's scope of use and durability in service.

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

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

17.7 No failures of the product in use have been reported to the BBA.

## Bibliography

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