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Agrément Certificate
97/3428
Product Sheet 8

K REND EXTERNAL RENDERS

K REND K1 SPRAY

This Agrément Certificate Product Sheet⁽¹⁾ relates to K Rend K1 Spray, a spray or hand-applied one-coat render, for use on new or existing buildings over medium density concrete blockwork manufactured in accordance with BS EN 771-3 : 2011.

(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

Weather resistance — the product tends to shed water and will considerably reduce the amount of water penetrating through to the substrate (see section 6).

Performance in relation to fire — the product is classified as non-combustible and is therefore unrestricted by the national Building Regulations (see section 7).

Impact resistance — the product has adequate resistance to impact damage and cracking (see section 9).

Durability — the product, when applied over medium density concrete blockwork, will perform satisfactorily for a period in excess of 30 years (see section 11).



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

A handwritten signature in black ink, appearing to read 'John Albon'.

Date of First issue: 4 July 2016

John Albon — Head of Approvals
Construction Products

A handwritten signature in black ink, appearing to read 'Claire Curtis-Thomas'.

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body — Number 1113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

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

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Regulations

In the opinion of the BBA, K Rend K1 Spray, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	B4(1)	External fire spread
Comment:		The product is unrestricted by this Requirement. See section 7 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Regulation:	7	Walls rendered with the product can satisfy this Requirement. See section 6.2 of this Certificate.
Comment:		Materials and workmanship The product is acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Durability, workmanship and fitness of materials
Comment:		Use of the product satisfies the requirements of this Regulation. See sections 10 and 11.1 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.7	Spread on external walls
Comment:		The product is non-combustible, and is unrestricted by these Standards, with reference to clauses 2.6.4 ⁽¹⁾⁽²⁾ , 2.6.5 ⁽¹⁾ , 2.6.6 ⁽²⁾ , 2.7.1 ⁽¹⁾⁽²⁾ . See section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		A wall rendered with the product can satisfy the requirements of this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ , 3.10.2 ⁽¹⁾⁽²⁾ , 3.10.3 ⁽¹⁾⁽²⁾ and 3.10.5 ⁽¹⁾⁽²⁾ . See section 6.2 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for this product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23(a)(b)(i)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		Walls rendered with the product can satisfy this Regulation. See section 6.2 of this Certificate.
Regulation:	36(a)	External fire spread
Comment:		The product is unrestricted by this Regulation. See section 7 of this Certificate.

Construction (Design and Management) Regulations 2015

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

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

See sections: 3 *Delivery and site handling* (3.1 and 3.5) and 15 *Mixing* (15.2) of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of K Rend K1 Spray, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards, Part 6 Superstructure (excluding roofs), Chapter 6.1 External masonry walls*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 998-1 : 2010. 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 K Rend K1 Spray is a self-coloured, spray- or hand-applied, one-coat polymer-modified cementitious render available in a variety of standard colours, for use where two-coat traditional renders would normally be specified. It is for use over medium density ($1400 \text{ kg}\cdot\text{m}^{-3}$ to $1800 \text{ kg}\cdot\text{m}^{-3}$) concrete blockwork to BS 771-3 : 2011, with a compressive strength of $7 \text{ N}\cdot\text{mm}^{-2}$. The blocks are outside the scope of this Certificate.

1.2 K Rend Alkali Resistant mesh is an alkali-resistant glassfibre mesh with a nominal weight of $161 \text{ g}\cdot\text{m}^{-2}$ and mesh size of 3.5 mm by 4.0 mm, for application as rectangular patches around openings.

1.3 The product is applied to a finished thickness between 16 mm and 18 mm and has a weight of between $26 \text{ kg}\cdot\text{m}^{-2}$ and $29 \text{ kg}\cdot\text{m}^{-2}$, and is applied with a scraped texture surface finish.

2 Manufacture

2.1 The product is manufactured in a batch blending process and is tinted to the appropriate colour (if required) using a computer-controlled tinting machine.

2.2 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.

2.3 The management system of Kilwaughter Chemicals Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by BSI (Certificate FM 85394).

3 Delivery and site handling

3.1 The product is delivered in sealed 25 kg bags on pallets. Each pallet contains 40 bags and weighs 1000 kg and bears the Certificate holder's name, batch number and date of production.

3.2 The product is a cementitious material and must be stored under cover, in dry conditions and protected from moisture and frost. To avoid 'warehouse set' caused by compaction, the height of bags stacked on a pallet must not exceed 1 m and no more than four pallets should be stacked.

3.3 The product should be used in the order in which it is received and each delivery should be kept separate to avoid confusion. When stored unopened, the product has a shelf-life of 12 months from the date of manufacture.

3.4 Each bag bears the manufacturer's logo and a batch number and each pallet bears the BBA logo incorporating the number of this Certificate.

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). The product must be handled using the routine precautions for Portland cement.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on K Rend K1 Spray.

Design Considerations

4 Use

4.1 K Rend K1 Spray is satisfactory for external use as a render finish over $7 \text{ N}\cdot\text{mm}^{-2}$ medium density concrete blockwork ($1400 \text{ kg}\cdot\text{m}^{-3}$ to $1800 \text{ kg}\cdot\text{m}^{-3}$) manufactured in accordance with BS EN 771-3 : 2011, in the exposure zones specified in section 6.2 of this Certificate.

4.2 New constructions to be rendered with the product should be designed and constructed in accordance with the relevant recommendations of BS EN 1996-2 : 2006 and its UK National Annex, and BS EN 13914-1 : 2016.

The designer should select a construction appropriate to its location, paying due attention to design, detailing and workmanship and the materials to be used.

4.3 It is essential that all walls where the product is applied are designed and constructed to prevent moisture penetration and the formation of condensation. Substrates must be properly prepared and suitable for receiving a rendered finish.

4.4 The scope of this Certificate covers the product use on areas of the wall above the damp-proof course (dpc) level.

4.5 The product is not suitable for application to previously-decorated surfaces.

4.6 Additional advice for project specifications where applications are onto high- or low-absorption medium density concrete blockwork should be sought from the Certificate holder.

4.7 In common with traditional renders, it is essential that the surface to be rendered is clean and provides a sound mechanical key, to ensure a satisfactory bond between the substrate and the product. In instances where this is not the case, the Certificate holder should be consulted for advice on substrate preparation.

5 Practicability of installation

Installation is designed to be carried out by a competent skilled renderer, or a contractor, experienced with this type of product.

6 Weather resistance

6.1 The product will improve the weather resistance of a wall and provide a new decorative finish.



6.2 The product is suitable for use in exposure zones up to and including the 'severe' wind-driven rain index category in accordance with PD 6697 : 2010.

6.3 The product tends to shed water and will considerably reduce the amount of water absorbed by the substrate.

7 Performance in relation to fire



The render is classified as 'non-combustible', as described in the national Building Regulations, as it contains less than 1% organic material and is therefore unrestricted by these Regulations. This classification applies to the complete colour range.

8 Water vapour resistance

The water vapour permeability coefficient (μ) of the render is 14.

9 Impact resistance

The product has adequate resistance to impact damage and cracking in all normal circumstances. Where the product may be exposed to severe impact (eg on some industrial sites), or is to be applied over existing background cracks, precautions may be required to reduce the risk of damage.

10 Maintenance



Regular maintenance checks should be carried out to ensure that architectural details for shedding water clear of the building are present and functioning. External plumbing, fittings, gutters and downpipes must be in good condition to minimise water penetration into the render. Any damage to the render should be repaired immediately (see section 19).

11 Durability



11.1 The render, applied over medium density concrete blockwork, will perform satisfactorily for a period in excess of 30 years.

11.2 The product may become discoloured over time, the rate depending on the local environment. Appearance can normally be restored by cleaning with water and a suitable brush. In industrial atmospheres, light-coloured renders should be avoided.

11.3 The product has adequate colourfastness for a period in excess of 20 years but will be discoloured by water runs, and care should be taken to ensure that the measures given in section 10 are taken.

11.4 The product may suffer from algal growth in a similar manner to traditional external rendered finishes. For additional preventative advice, the Certificate holder should be consulted.

11.5 In common with traditional renders, the product may be susceptible to lime bloom. The incidence of this may be reduced by proper protection and by avoiding application in adverse weather conditions. The effect is less noticeable on white or paler colours. For additional preventative advice, the Certificate holder should be consulted.

12 General

12.1 Application of the product must be carried out strictly in accordance with this Certificate, the Certificate holder's instructions and the relevant recommendations of BS EN 13914-1 : 2016. The Certificate holder should be consulted to provide a specification for each individual job. When use of the product for the first time is being considered, the Certificate holder should be consulted.

12.2 The product should not be applied in rain or mist, at temperatures above 35°C or below 5°C, or if exposure to frost is likely to occur during drying. In common with traditional sand/cement renders, the product must not be applied to frost-bound walls.

12.3 In sunny weather, work should commence on the shady side of the building and be continued round, following the sun to prevent the render drying out too rapidly.

12.4 To minimise colour shade variations and to avoid dry line jointing, continuous surfaces should be completed without a break. If breaks cannot be avoided they should be made where services or architectural features, such as reveals or lines of doors and windows, will help to mask cold joints. Where long, uninterrupted runs are planned, bags of the product should be checked for batch numbers; bags with different batch numbers should be checked for colour consistency.

13 Site survey and preliminary work

13.1 Advice concerning site survey and preliminary work for application of the product is available to the designer or rendering contractor on request from the Certificate holder.

13.2 A pre-application survey of the property must be carried out to determine its suitability to receive the product and whether repairs to the building structure are necessary before application. A specification must also be prepared by the designer for each elevation indicating:

- preliminary treatment of the background
- the position of beads
- detailing around windows, doors and at eaves
- dpc level
- exact position of movement joints
- areas where flexible sealants must be used
- any alterations to external plumbing, fixtures and fittings.

13.3 The mortar in new masonry must conform to the block manufacturer's recommendations.

13.4 All necessary repairs to the building structure must be completed before application.

13.5 It is recommended that external plumbing to existing buildings be removed and, where necessary, alterations made to underground drainage to accommodate its repositioning on the finished face of the render.

13.6 On existing buildings, purpose-made over-sills may be necessary to extend beyond the finished face of the product. Sills should have an efficient throat or drip on the underside and be designed to prevent water running onto the wall below, or into the jambs. New buildings should incorporate suitably wide sills.

13.7 In common with traditional renders, new walls to be rendered should be left for as long as possible to dry out and to minimise subsequent substrate movement. Where this may not be practical, the Certificate holder should be consulted for additional advice.

13.8 At the top of walls the product must be protected by an adequate overhang or by adequately sealed, purpose-made flashing.

14 Preparation of substrate

14.1 All damage to the substrate from frost attack, salts or corrosion must be carefully repaired. Damaged blocks must be replaced and any holes or insufficiently-filled joints repaired using a suitable mortar. Loose and spalling render or projecting mortar joints should be removed and uneven surfaces levelled using an appropriate render to minimise variations in the thickness of the product. For additional advice, the Certificate holder should be consulted.

14.2 The relevant recommendations of BS EN 13914-1 : 2016 must be followed if a satisfactory bond is to be achieved. In particular, the surface to be rendered must provide a good mechanical key and adequate suction, and be free from paint, oil, soot, efflorescence, dust, lichens, mould and similar growth, or anything else that could prevent a satisfactory bond.

14.3 It is essential that the substrate to be rendered is clean. This applies to both new and old surfaces.

14.4 The substrate should be checked for suction by spraying the surface with clean water. If water is not absorbed, it will be impossible to obtain a good bond and the application should not commence until the surface has dried out. If, however, the water is readily absorbed by the substrate, the background may be too absorbent and some wetting will

be necessary to prevent the water required for the hydration and workability of the product from being extracted too quickly.

14.5 Additional advice and a project specification should be sought from the Certificate holder for use:

- on low suction smooth substrates
- on high suction substrates.

14.6 Wherever possible, independent scaffolding should be used to avoid the need to subsequently make good putlog holes and other breaks in the work.

15 Mixing

15.1 The product is added to clean water at a rate of approximately 4.5 to 5.5 litres of water per 25 kg of product, and thoroughly mixed using a drill and paddle, continuous spray-rendering machine or free fall mixer for a minimum of 10 minutes until the correct workability is achieved. Advice should be sought from the Certificate holder regarding suitable equipment and water/render ratios for the mechanical spray application.

15.2 Where excessive concentrations of dust may accumulate, the measures defined in the Health and Safety Executive Publication EH40/05 *Occupational Exposure Limits* (2nd Edition 2011, amended March 2013) for unlisted substances must be adhered to.

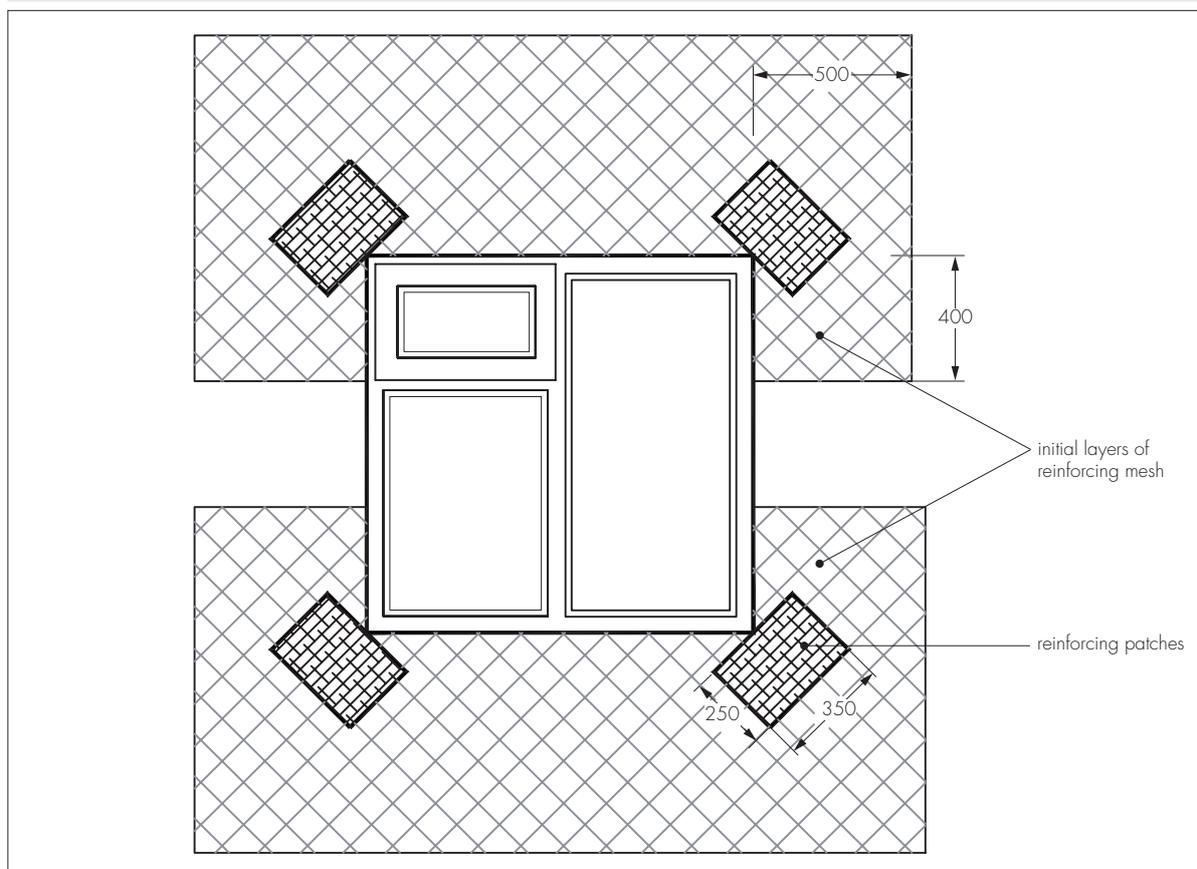
15.3 In common with traditional renders, slumping of the material may occur if the mix is too wet, increasing the risk of settlement cracks developing.

16 Application

16.1 The thickness of the finished coating should be between 16 and 18 mm. The scraped finish will require the application of 2 mm more render than the specified thickness to allow for material lost in the scraping process.

16.2 The product is applied by hand using a hawk and trowel or spray applied using suitable equipment, to the required thickness of 6 to 8 mm. Reinforcing mesh is applied around all openings including reveals (and is immediately embedded into the basecoat), followed by additional pieces of reinforcing mesh (which are also embedded) applied diagonally at the corners of openings, to provide the necessary reinforcement in accordance with the Certificate holder's instructions (see Figure 1).

Figure 1 Reinforcement at openings



16.3 Once the first pass stiffens, the second pass is applied to a thickness between 10 and 12 mm and is levelled to a uniform thickness.

16.4 Scraping should take place when the render sets but before it fully hardens (typically between 4 and 36 hours). It is essential that all areas are textured at the same stage of readiness to achieve an even shade of finish.

16.5 Following completion of the texturing process, any loose material should be removed using a soft brush and any minor repairs carried out using the excess material.

17 Curing

17.1 Care must be taken to protect the product from drying too rapidly owing to exposure to direct sunlight or drying wind.

17.2 The product must be protected from rain, mist and cold (less than 5°C on a falling thermometer) during the early curing period, as drying could be excessively prolonged under such circumstances.

17.3 Polythene sheeting is recommended for curing and should be arranged to hang clear of the face of the wall so as not to form a tunnel through which the wind could increase the evaporation of water from the render. The polythene sheeting must not be in intermittent contact with the product as this will produce a patchy appearance.

17.4 On completion of the rendering, the surface must be checked to ensure an even coverage, texture and consistency of colour.

18 Finishing

On completion of the render installation, the surface is checked to ensure an even coverage.

19 Repair

Any damage to the render must be repaired immediately in accordance with the relevant recommendations of BS EN 13914-1 : 2016. The advice of the Certificate holder should be sought for particular installations.

Technical Investigations

20 Tests

20.1 Tests were carried out on K Rend K1 Spray and the results assessed to determine:

- impact resistance following wet/heat and freeze/thaw cycling
- flexural and compressive strength
- water vapour resistance.

20.2 An assessment was made of data to BS EN 998-1 : 2010 for K Rend K1 Spray in relation to:

- dry bulk density*
- compressive strength at 28 days*
- adhesion*
- capillary water absorption*
- water vapour permeability coefficient*
- reaction to fire*.

21 Investigations

21.1 A survey of known users of the product was conducted.

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

Bibliography

BS EN 771-3 : 2011+ A1 : 2015 *Specification for masonry units — Aggregates concrete masonry units (dense and lightweight aggregates)*

BS EN 998-1 : 2010 *Specification for mortar for masonry — Rendering and plastering mortar*

BS EN 1996-2 : 2006 *Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*

NA to BS EN 1996-2 : 2006 *UK National Annex to Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*

BS EN 13914-1 : 2016 *Design, preparation and application of external rendering and internal plastering — External rendering*

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

PD 6697 : 2010 *Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2*

22 Conditions

22.1 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.

22.2 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.

22.3 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.

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

22.5 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.

22.6 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.