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Agrément Certificate
97/3428
Product Sheet 5

K REND EXTERNAL RENDERS

K REND SILICONE TC15 RENDER SYSTEM 3

This Agrément Certificate Product Sheet[1] relates to the K Rend Silicone TC15 Render System 3, a thin coat external render for use over mechanically fixed EPS 70 insulation boards (to BS EN 13163 : 2012) on walls of new or existing buildings, with height restrictions. The render has not been assessed by the BBA as part of an external wall insulation system.

(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 system tends to shed water and will considerably reduce the amount of water penetrating through to the substrate (see section 7).
Strength and stability — the system has adequate resistance to impact damage and cracking (see section 8).
Performance in relation to fire — the system, applied over an EPS 70 substrate, achieved a fire Classification of B-s2, d0 in accordance with BS EN 13501-1 : 2007 and its use is restricted under the national Building Regulations (see section 10).
Durability — the system, applied over mechanically fixed EPS 70 complying with BS EN 13163 : 2012, will perform satisfactorily for a period in excess of 30 years (see section 12).

The BBA has awarded this Certificate to the company named above for the system described herein. This system 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 Third issue: 15 May 2020

Originally certificated on 19 August 2013

Hardy Giesler
Chief Executive Officer

The BBA is a UKAS accredited certification body – Number 113.
The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.
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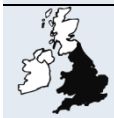
Regulations

In the opinion of the BBA, the K Rend Silicone TC15 Render System 3, 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 use of the render is restricted by this Requirement. See sections 10.1 to 10.3 of this Certificate.

Requirement: **C2(b)(c)** **Resistance to moisture**
Comment: Walls rendered with the system can satisfy this Requirement. See section 7.2 and 9 of this Certificate

Regulation: **7(1)** **Materials and workmanship**
Comment: The render is an acceptable material. See section 12.1 and the *Installation* part of this Certificate

Regulation: **7(2)** **Materials and workmanship**
Comment: The use of the render is restricted by this Regulation. See sections 10.1 and 10.2 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation: **8(1)(2)** **Durability, workmanship and fitness of materials**
Comment: The use of the render satisfies the requirements of this Regulation. See sections 11 and 12.1 and the *Installation* 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 use of the render is restricted by these Standards, with reference to clauses 2.6.4[(1)(2)], 2.6.5[(1)], 2.6.6[(2)] and 2.7.1[(1)(2)]. See sections 10.1, 10.2, 10.4 and 10.5 of this Certificate.

Standard: 3.10 Precipitation
Comment: Walls rendered with the system 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 7.2 of this Certificate.

Standard: 3.15 Condensation
Comment: The render can contribute to satisfying this Standard, with reference to clauses 3.15.1[(1)(2)], 3.15.4[(1)(2)] and 3.15.5[(1)(2)]. See section 9 of this Certificate.

Standard: 7.1(a) Statement of sustainability
Comment: The render can contribute to meeting 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: Comments in relation to the system 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)**	**Fitness of materials and workmanship**
Comment:	**(b)(i)**	The render is acceptable. See section 12.1 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		Walls rendered with the system can satisfy this Regulation. See section 7.2 of this Certificate.
Regulation:	**29**	**Condensation**
Comment:		The render can contribute to satisfying this Regulation. See section 9 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The use of the render is restricted by this Regulation. See sections 10.1 to 10.3 of this Certificate.

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 sections: 3 *Delivery and site handling* (3.1 and 3.4) and 13 *Procedure* (13.7) of this Certificate.

Additional Information

NHBC Standards 2020

In the opinion of the BBA, system, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Part 6 *Superstructure (excluding roofs),* Chapter 6.11 *Render.*

CE marking

The Certificate holder has taken the responsibility of CE marking the render, in accordance with harmonised European Standard BS EN 998-1 : 2016 and BS EN 15824 : 2009.

Technical Specification

1 Description

1.1 The K Rend Silicone TC15 Render System 3 is a thin coat render for use over mechanically-fixed EPS 70 insulation boards complying with BS EN 13163 : 2012, and comprises:

- K Rend Silicone TC15 Render — a synthetic resin topcoat render incorporating a silicone resin emulsion and acrylic dispersant to BS EN 15824 : 2009. The product is available in 20 standard colours
- K Rend TC Primer — a bonding coat (to BS EN 998-1 : 2016) available in a range of colours to match the K Rend Silicone TC15 render
- K Rend HP14 Basecoat — a polymer-modified cementitious spray- or hand-applied base render used as a primary coat over mechanically-fixed EPS 70 insulation boards manufactured in accordance with BS EN 13163 : 2012
- K Rend Alkali Resistant mesh — a 1.1 mm thick polypropylene reinforcing mesh with an opening size of 4.0 x 4.3 mm, available in rolls 1 m wide and 53 m in length, for embedment between coats of HP14 basecoat.

1.2 The render is applied onto EPS 70 insulation boards to BS EN 13163 : 2012. The boards are outside the scope of this Certificate.

2 Manufacture

2.1 The render components are manufactured in a batch-blending process. K Rend Silicone TC15 Render and K Rend TC Primer are 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 Minerals Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015, BS EN ISO 14001 : 2015 and ISO 45001 : 2018 by BSI (Certificates FM 85394, EMS 611117 and OHS 611118 respectively).

3 Delivery and site handling

3.1 K Rend HP14 Basecoat is delivered in sealed 25 kg bags on pallets. K Rend TC Primer is delivered in 15 kg tubs and K Rend Silicone TC15 Render is delivered in 25 kg tubs on pallets.

3.2 K Rend HP14 Basecoat, K Rend TC Primer and K Rend Silicone TC15 Render must be stored in dry conditions, off the ground, in a secure store and protected from frost. Pallets should not be stacked on top of K Rend TC Primer and K Rend Silicone TC 15 Render. To avoid warehouse set caused by compaction, the height of bags stacked on a pallet of K Rend HP14 Basecoat must not exceed 1 m and no more than four pallets should be stacked. Renders should be used in the order in which they are received and each delivery kept separate to avoid confusion. When stored unopened the products have a shelf-life of 12 months from the date of manufacture.

3.3 Each bag of K Rend HP 14 Basecoat and each tub of both K Rend TC Primer and K Rend Silicone TC15 Render bears the product and Certificate holder's name, batch number, date of production and the BBA logo incorporating the number of this Certificate.

3.4 The Certificate holder has taken the responsibility of classifying and labelling the system components 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).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the K Rend Silicone TC15 Render System 3.

Design Considerations

4 Use

4.1 The K Rend Silicone TC15 Render System 3 is satisfactory for external use as a render finish to mechanically fixed EPS 70 insulation boards to BS EN 13163 : 2012, on new or existing masonry, brick or blockwork walls.

4.2 The render has not been assessed as part of an external wall insulation system.

4.3 New buildings subject to national Building Regulations should be constructed in accordance with the relevant recommendations of:

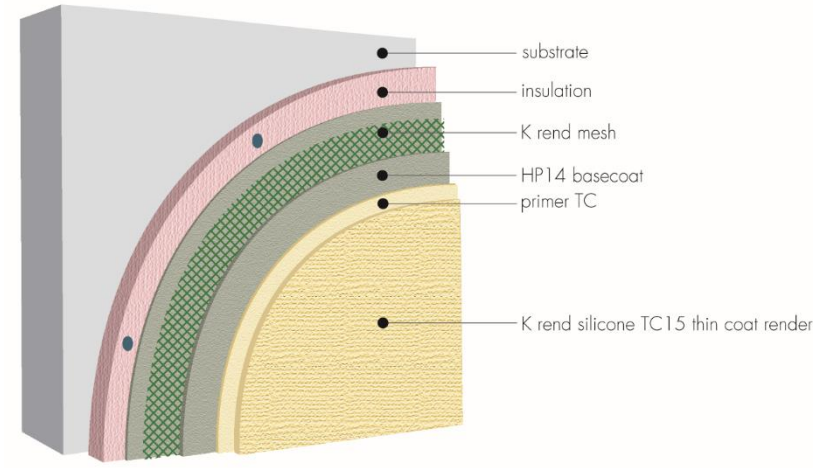
- BS EN 1996-2 : 2006 and its UK National Annex — the designer should select a construction appropriate to the local wind-driven rain index, paying due regard to the design detailing, workmanship and materials to be used

- BS EN 13914-1 : 2016
- BS 8000-3 : 2001.

4.4 It is essential that all new walls are designed and constructed to prevent moisture penetration and the formation of condensation.

4.5 K Rend Silicone TC15 render, applied at a thickness of 1.5 mm, has a weight per unit area of 2.5 kg·m^{-2}. K Rend HP14 Basecoat, applied at a thickness of 6 mm, has a weight per unit area of 11 kg·m^{-2} (Figure 1).

Figure 1 The build-up of the render



5 Practicability of installation

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

6 Thermal performance

The thermal performance of the render applied over EPS 70 insulation boards has not been evaluated as part of the assessment leading to the issue of this Certificate.

7 Weather resistance

7.1 The system will improve the weather resistance of a wall and provide a new decorative finish.

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

7.3 Walls to which the render and EPS insulation are to be applied must be designed and constructed in relation to local exposure conditions to minimise the incidence of rain penetration.

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

8 Strength and stability

8.1 The render has adequate resistance to impact damage and cracking for areas where there is little possibility of impact or abrasion damage, ie at low levels in areas of restricted access or at higher levels in public areas. For specific situations the advice of the Certificate holder should be sought.

8.2 It is essential that the surface of the EPS 70 insulation boards is clean and has a sound mechanical key to ensure a satisfactory bond between the substrate and the render.

8.3 The structural performance of EPS 70 insulation boards and any insulation fixings has not been assessed as part of this Certificate.

9 Water vapour resistance

The water vapour resistance of the render may be taken as 2.33 $MN \cdot s \cdot g^{-1}$.

10 Performance in relation to fire

10.1 A render system comprising HP14 Basecoat with an embedded K Rend Alkali Reistance mesh, primed with K Rend TC Primer, coated with an off-white K Rend Silicone TC 15 top coat and applied over EPS 70 insulation boards, achieved a reaction to fire classification of B-s2, d0 in accordance with BS EN 13501-1 : 2007.

10.2 The Certificate holder has not declared a reaction to fire classification to BS EN 13501-1 : 2018 for the EPS insulation substrate.

10.3 England, Wales and Northern Ireland, the system is considered suitable for use on or at any distance from the boundary and for buildings with no storey more than 18 m above the ground.

10.4 In Scotland, the system is not classified as non-combustible and may be used on buildings more than 1 m from a boundary and, on houses, 1 m or less from a boundary. With minor exceptions, the panels should be included in calculations of unprotected area, except on houses where the external wall behind has the appropriate fire resistance.

10.5 In Scotland, the panels should not be used on any building with a storey more than 11 m above the ground, or on any entertainment or assembly building with a total storey area more than 500 m^2, or on any hospital or residential care building with a total storey area more than 200 m^2.

11 Maintenance

Regular maintenance checks should be carried out on architectural details and on external plumbing and fittings to ensure that they are functioning correctly and to prevent water damage to the render.

12 Durability

12.1 The render, applied over EPS insulation boards adequately fixed to a suitable sound substrate, will perform satisfactorily for a period in excess of 30 years.

12.2 The system may become discoloured with time, the rate depending on the local environment. Appearance can normally be restored by cleaning with water and mild detergent. In industrial atmospheres light colours should be avoided.

12.3 K Rend Silicone TC 15 top coat satisfactorily resists the formation of algae.

13 General

13.1 Prior to application of the render to EPS a specification is prepared for the building indicating:

- the position of beads
- detailing around windows, doors and at eaves
- damp-proof course (dpc) level
- exact position of expansion joints
- areas where flexible sealants must be used
- any alterations to external plumbing
- where required, the position of fire barriers.

13.2 Application of the K Rend Silicone TC15 Render System 3 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.

13.3 Application of the render should not be carried out if the temperature of the air or the surface of the wall to be treated is below 5°C or above 35°C. Installation must not take place during rain, strong wind or sunshine. The materials must be protected from rain, frost and direct sunlight whilst curing. Further information may be obtained from the Certificate holder.

13.4 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.

13.5 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 drainpipes, reveals or lines of doors and windows will help mask cold joints. Where long, uninterrupted runs are planned, tubs of the material should be checked for batch numbers. Tubs with different batch numbers should be checked for colour consistency.

Mixing

13.6 K Rend HP 14 Basecoat is added to clean water at a rate of approximately 4 to 5 litres of water per 25 kg of product. It is thoroughly mixed using a drill and paddle or free fall mixer for a minimum of 10 minutes, until the correct workability is achieved.

13.7 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.

13.8 In common with traditional renders, slumping of the material may occur if the mix is too wet, and will increase the risk of settlement cracks developing.

13.9 The basecoat will remain workable for approximately 45 minutes at 20°C after mixing. It must not be remixed after it has begun to set.

13.10 K Rend TC Primer and K Rend Silicone TC15 Render must be stirred before use.

Application

13.11 Render beads and expansion beads are fixed in accordance with the render bead supplier's instructions and the Certificate holder's recommendations.

13.12 The initial application of K Rend HP 14 Basecoat is applied by hawk and trowel onto the EPS boards to a thickness of 3 mm. The basecoat can also be spray-applied.

13.13 K Rend Alkali Resistant mesh is embedded across the entire area of basecoat, overlapping by 100 mm where necessary.

13.14 Before the initial basecoat layer has set, a key is formed by scratching the render surface, which is then left for 2 hours.

13.15 A new batch of K Rend HP 14 Basecoat is prepared and applied as before up to a total thickness of 6 mm.

13.16 The basecoat is lightly wetted with water, and smoothed over with a trowel. The surface is then left to cure for a minimum of 14 days before the K Rend TC Primer is applied.

13.17 Once the basecoat has initially set, K Rend TC Primer is applied by roller at 0.25 $kg \cdot m^{-2}$ and left to dry for a minimum of 24 hours.

13.18 Once the primer is dry, K Rend TC15 Silicone Render is float-applied at 2.5 $kg \cdot m^{-2}$ to 1.5 mm thickness, to give an overall thickness of approximately 8 mm.

Curing

13.19 The completed render must be protected from rain, mist or cold (less than 5°C on a falling thermometer) in order to prevent an excessively prolonged drying period.

13.20 The use of polythene sheeting is recommended during curing and should hang clear of the face of the wall. It should be arranged so that it does not form a tunnel through which wind could increase the rate of water evaporation from the surface.

13.21 Care must be taken to protect the render from rapid drying owing to exposure to direct sun or drying wind to ensure complete hydration of the render.

14 Finishing

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

15 Repair

Any damage to the render must be repaired immediately in accordance with the relevant recommendations of BS EN 13914-1 : 2016, using the K Rend Silicone TC15 Render System 3. The advice of the Certificate holder should be sought for particular installations.

Technical Investigations

16 Tests

16.1 Tests were carried out on the K Rend Silicone TC15 Render System 3 and the results assessed as follows:

- K Rend Silicone TC15 Render System 3 over EPS 70 insulation boards
  — effect of thermal cycling
  — effect of freeze/thaw
  — effect of accelerated ageing on impact resistance
  — effect of accelerated ageing on bond strength
- K Rend Silicone TC15 Render System 3
  — water vapour permeability
- K Rend HP14 Basecoat
  — flexural and compressive strength
- K Rend Silicone TC15 Topcoat
  — algal growth.

16.2 An assessment was made of data to BS EN 998-1 : 2016 for K Rend HP14 Basecoat in relation to:

- classification for hardened mortar properties
  — compressive strength at 28 days

— capillary water absorption
— thermal conductivity

- properties relevant for intended use
  — dry bulk density
  — compressive strength at 28 days
  — adhesion
  — capillary water absorption
  — water vapour permeability coefficient
  — thermal conductivity
  — reaction to fire
- properties of the fresh mortar
  — workable life
  — air content
  — mixing of mortar.

16.3 An assessment was made of data to BS EN 15824 : 2009 for K Rend Silicone TC15 Render in relation to:

- water vapour permeability
- water absorption
- adhesion
- durability
- reaction to fire.

17 Investigations

17.1 Installations were carried out to assess the practicability of the render application to EPS 70 insulation boards.

17.2 A survey of known users of the system was conducted.

17.3 An evaluation was made of data relating to reaction to fire of the render over EPS 70 insulation boards.

17.4 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.

Bibliography

BS 8000-3 : 2011 *Workmanship on building sites — Code of practice for masonry*

BS EN 998-1 : 2016 *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 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN 13163 : 2012 *Thermal insulation products for buildings — Factory made products of expanded polystyrene (EPS) — Specification*

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

BS EN 15824 : 2009 *Specifications for external renders and internal plasters based on organic binders*

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

BS EN ISO 14001 : 2015 *Environmental management systems — Requirements with guidance for use*

ISO 45001 : 2018 *Occupational health and safety management systems — Requirements with guidance for use*

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

18 Conditions

18.1 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.

18.2 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.

18.3 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.

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

18.5 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.

18.6 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.

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