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Agrément Certificate
88/2033
Product Sheet 1

SUPAFIL

KNAUF INSULATION SUPAFIL 40 CAVITY WALL INSULATION

This Agrément Certificate Product Sheet⁽¹⁾ relates to Knauf Insulation Supafil 40 Cavity Wall Insulation, a granulated glass mineral wool fibre material injected in loose form, for use in external masonry cavity walls up to and including 12 m in height, with nominal cavity widths not less than 50 mm, in new and existing domestic and non-domestic buildings. The product may also be used in buildings over 12 m in height where a height restriction waiver has been issued by the Certificate holder.

(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

Thermal properties — the product has a declared thermal conductivity* (λ_D) of $0.040 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ (see section 6).

Water penetration — the product will resist the transfer of water across the cavity to the inner leaf (see section 7).

Condensation — the product will contribute to limiting the risk of condensation (see section 8).

Behaviour in relation to fire — the product is classified as non-combustible (see section 9).

Durability — the product is durable, rot-proof, water resistant and sufficiently stable to remain effective as an insulant for the life of the building (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

Handwritten signature of John Albon in black ink.

John Albon — Head of Approvals
Construction Products

Handwritten signature of Claire Curtis-Thomas in black ink.

Claire Curtis-Thomas
Chief Executive

Date of Third issue: 30 July 2015

Originally certificated on 14 September 1988

Certificate amended on 13 March 2019 to include Regulation 7(2) and associated text.

The BBA is a UKAS accredited certification body – Number 113.

*The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.
Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.*

British Board of Agrément

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Comment:	The product can contribute to satisfying this Regulation. See sections 4.5 and 7.2 of this Certificate.
Regulation:	29 Condensation
Comment:	The product will contribute to satisfying this Regulation. See section 8.3 of this Certificate.
Regulation:	39(a)(i) Conservation measures
Regulation:	40(2) Target carbon dioxide emission rate
Comment:	The product can contribute to satisfying these Regulations. See sections 6.1 and 6.3 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 section: 3 *Delivery and site handling* (3.1) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of Knauf Insulation Supafil 40 Cavity Wall Insulation, other than in very severe exposure locations with fair-faced masonry, provided it is installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.1, *External masonry walls*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in association with harmonised European Standard BS EN 14064-1 : 2010. An asterisk (*) appearing in the Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Knauf Insulation Supafil 40 Cavity Wall Insulation is a granulated glass mineral wool fibre material treated with a water-repellent additive, which complies with the requirements of BS EN 14064-1 : 2010.

1.2 The target mean density of this product when installed is 18 kg·m⁻³ over the entire installation. Individual areas within the wall must not have an absolute density variation of more than ± 5 kg·m⁻³ from the target mean density when measured over an area of 0.5 m².

2 Manufacture

2.1 Molten glass is spun into fibres through holes in rotating dishes. Silicone oil is applied to the fibres from spray nozzles.

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 Knauf Insulation Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by Bureau Veritas (Certificates BE001519-1 and BE005999-1 respectively).

3 Delivery and site handling

3.1 The product is delivered to site in polythene-wrapped bales weighing approximately 17.6 kg, which should not be opened until required for use. The bales are marked with the BBA logo incorporating the number of this Certificate.

3.2 It is essential that the product is stored such that it is raised off the ground and is inside or under cover on a flat, dry, level surface. The product must be protected from rain, snow and other sources of dampness and prolonged exposure to sunlight. Nothing should be stored on top of the product.

3.3 Damaged, contaminated or wet materials must not be used.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Knauf Insulation Supafil 40 Cavity Wall Insulation.

Design Considerations

4 General

4.1 Knauf Insulation Supafil 40 Cavity Wall Insulation is satisfactory for use as an injected cavity wall insulation and is effective in reducing the thermal transmittance (U value) of external cavity walls with masonry inner and outer leaves (where masonry includes clay and calcium silicate bricks, concrete blocks and natural and reconstituted stone blocks). The product is for use in new and existing domestic and non-domestic buildings up to and including 12 m in height, with cavity widths not less than 50 mm. It is essential that such walls are designed and constructed to incorporate the precautions given in this Certificate to prevent moisture penetration.

4.2 This Certificate covers the use of the product in any exposure zone, subject to the following conditions being met. They are particularly important in areas subject to severe or very severe driving rain:

- a site survey should be carried out prior to installation (see sections 12 and 13).
- the minimum cavity width must be 50 mm
- walls must be in a good state of repair and show no evidence of frost damage
- mortar joints must not show evidence of more than hairline cracking. Raked or recessed mortar joints should be avoided in very severe exposure areas.

Partial filling – omitted areas

4.3 Whenever practicable, all of the cavity space from ground level to the roof or gable copings should be filled, except when:


- separately insulating semi-detached or terraced properties. The cavity barrier used for this purpose is retained in the cavity and must be as defined in section 16.3
- filling up to the underside of a horizontal boundary, other than the roof, where that horizontal boundary is protected by a cavity tray or similar waterproof barrier
- treating properties where the wall to be insulated is below a waterproof cladding (eg tile hung) and this cladding either extends up to the roof or is protected at the top by other means (eg window sills)
- treating areas of wall where access for drilling may be limited by features such as carports and conservatories as defined in sections 17.6 and 17.7.

Existing buildings

4.4 In an existing building, the product may be installed only:

- where there are no signs of dampness on the inner face of the cavity wall, other than those caused solely by condensation
- where the cavity is not being used as a source of combustion air or as a flue for ventilation purposes.

New buildings

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

- BS 8000-3 : 2001
- BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006 and their UK National Annexes.

4.6 Other new buildings not subject to regulatory requirements should also be built in accordance with the Standards identified in section 4.5.

4.7 In a new building where the product is to be installed:

- cavity battens or boards must be used to reduce the amount of mortar droppings left in the cavity
- injection of the product is to be left until the cavity is sealed from the weather, ie the roof is in place and the window and door openings are sealed.

4.8 The Certificate holder has at least one member of staff who has been deemed competent by the BBA under the BBA/TIMSA Scheme for Calculation Competency (U value and Condensation Risk Analysis). Competent persons should be contacted for accurate, quality-assured U value and condensation risk analysis. The Certificate of Competency can be found on the BBA website (www.bbacerts.co.uk) as Certificate CS/1001.

5 Practicability of installation

The product must be installed by operatives trained and approved by the Certificate holder and subsequently approved by the BBA. The Certificate holder operates an Approved Installer Scheme⁽¹⁾ for this product under which the installers

Scotland — Mandatory Standard 3.4, clause 3.4.1⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Technical Booklet C, Sections 6.3 to 6.6.

7.2 When the product is properly installed in accordance with this Certificate, it will resist any water transfer across the cavity to the inner leaf.

8 Condensation

Surface condensation



8.1 Walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $0.7 \text{ W}\cdot\text{m}^{-2}\text{K}^{-1}$ at any point and the junctions with other elements are designed in accordance with the guidance referred to in section 6.4 of this Certificate.



8.2 Walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $1.2 \text{ W}\cdot\text{m}^{-2}\text{K}^{-1}$ at any point and the junctions with other elements are designed in accordance with the guidance referred to in BS 5250 : 2011, Annex G. Further guidance may be obtained from BRE Report BR 262 : 2002 and section 6.4 of this Certificate.

Interstitial condensation



8.3 Walls will limit the risk of interstitial condensation adequately when they are designed and constructed in accordance with BS 5250 : 2011, Annexes D and G, and the relevant guidance.

9 Behaviour in relation to fire



9.1 The fire classification* of the product when tested to BS EN 13820 : 2003 is Class A1 (as it contains less than 1% organic material) and is, therefore, non-combustible.

9.2 Designers should refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity closers and barriers, fire stopping of service penetrations and combustibility limitations for other materials and components used in the overall wall construction.

10 Maintenance

As the product is confined within the wall cavity and has suitable durability (see section 11), maintenance is not required.

11 Durability



11.1 The product is unaffected by the normal conditions in a wall, and is durable, rot-proof, water-resistant and sufficiently stable to remain effective as insulation for the life of the building.

11.2 Should it become necessary for any reason, the product can be evacuated from the cavity void.

Installation

12 Site assessment

Prior to the installation, an assessment must be carried out by a trained assessor, who may also be the installing technician, to ascertain the suitability of the property or properties to receive Knauf Insulation Supafil 40 Cavity Wall Insulation. An assessment report is prepared and held at the installer's offices. Particular problems are specifically identified and any reasons for rejection of the work noted. Care should be taken at this stage for the assessor and the party commissioning the work to identify, and agree in writing as appropriate, any areas of the wall that will not be filled (see section 17.6 and 17.7) and any special requirements for making good (see section 17.4).

13 Site preparation

13.1 The installing operative ensures that the property has been correctly assessed and is suitable for insulation with the product. Any problems encountered during installation which prevent compliance with this Certificate are referred to the installation company before proceeding.

13.2 Essential ventilation openings, such as those providing combustion air or underfloor ventilation, and all flues in the cavity wall must be checked. If adequate sleeving or other cavity closures are not present, installation must not proceed until these openings have been sleeved or otherwise modified to prevent blockage by the insulant.

13.3 Wherever practicably possible, all uncapped cavity walls must be sealed prior to installation, for example with plugs of mineral fibre.

14 Approved installers

Installation of the product is carried out by the Certificate holder or their approved installers. An approved installer is defined as a company.

- required to satisfy an initial site installation check by the BBA following approval by the Certificate holder and is subject to the *BBA Assessment and Surveillance Scheme for Installation of Cavity Wall Insulation*
- approved by the Certificate holder and the BBA to install the product
- having undertaken to comply with the Certificate holder's installation procedure
- employing technicians who have been issued with appropriate identity cards by the Certificate holder; at least one member of each installation team must carry a card
- subject to inspections by the Certificate holder. The Certificate holder oversees the activities of approved installers operating under the BBA Surveillance Scheme for Cavity Wall Insulation. It is a requirement that the Certificate holder undertakes inspections of each card-carrying technician using their products and maintains records, as detailed in the *BBA Assessment and Surveillance Scheme for BBA Approved Installers of Cavity Wall Insulation*.

15 Supervision

15.1 Installation of the product should be carried out in accordance with the *BBA Assessment and Surveillance Scheme for Installation of Cavity Wall Insulation*.

15.2 During installation, the following simple checks can be made, as an aid to determining that the installation conforms to the certificated method:

- the pattern of holes complies with the description given in section 17.1
- injection of material takes place in each hole, to complete the filling of the cavity space.

16 General

16.1 The installation of the product is undertaken using blowing machines tested and accepted for use with the product by the BBA.

16.2 The installer provides all necessary hoses, drilling tools, equipment and materials for making good the walls after the installation.

16.3 Where a semi-detached or terraced property is to be insulated, a cavity brush is inserted at the line dividing the properties to contain the insulation. This consists of a continuous nylon brush which is left in place when the installation is completed.

17 Procedure

17.1 Holes of 22 mm or 25 mm in diameter to suit the diameter of the injection nozzle used (see section 17.3) are drilled in a diamond pattern at approximately 1.35 m centres. The topmost injection holes should not be more than 350 mm below the top of the cavity and not more than 1.0 m apart. The bottom row of holes should start approximately 800 mm above dpc level. Additional holes may be required to ensure complete filling around building features, eg under window sills around air bricks in column areas between doors and windows, at the tops of walls and under gables. Again, the topmost holes should not be more than 1.0 m apart under the horizontal boundaries and 1.35 m apart under the sloping boundary at the top of the gable end (see Figures 1 and 2).

Figure 1 Typical drilling pattern — frontage

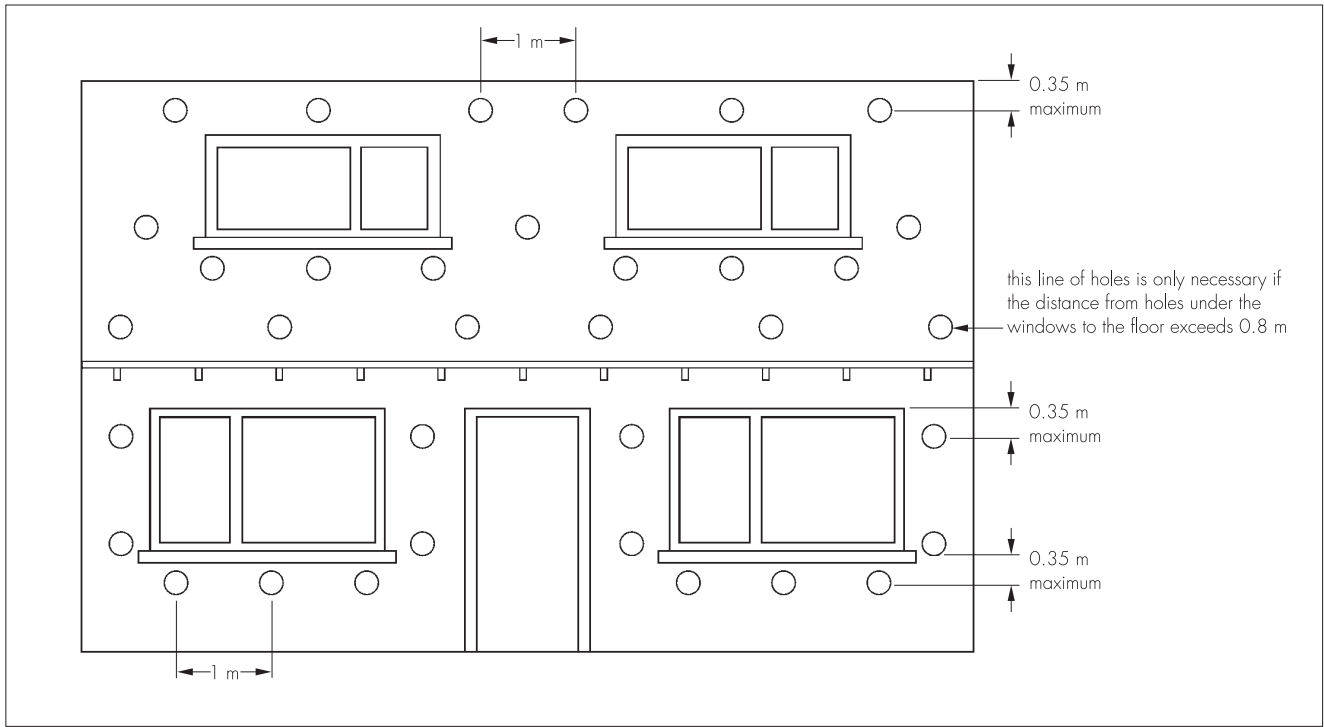
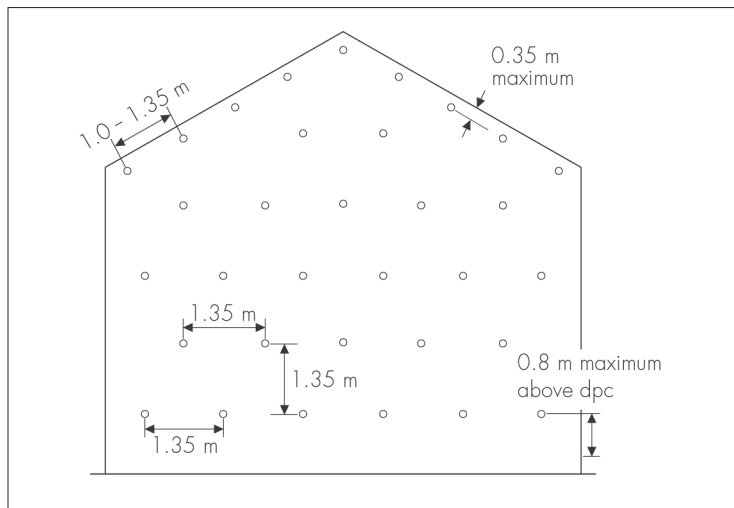


Figure 2 Typical drilling pattern — plain gable end



17.2 To prevent debris falling onto the insulation, filling the cavity should not start until one elevation and at least 2 m of the adjoining elevations are drilled out. The adjoining elevation is filled only after completing the drilling.

17.3 The product is blown into the cavity under pressure through 22 mm or 25 mm clearance holes via a flexible pipe fitted with either a 22 mm or 25 mm outside diameter injection nozzle, depending on the type of machine used. Filling proceeds from the bottom to the top of the walls and from one end of an elevation to the other.

Finishing

17.4 After injection, the drill holes are fully filled with mortar of a similar type, colour, texture and weathertightness to that of the existing wall. Where a wall requires a high degree of colour matching, the level of finish-matching should

be agreed in writing during the site assessment. All trunked air vents, eg those providing underfloor ventilation and combustion air for heating appliances, are checked – any obstructions must be cleared. All flues must be carefully checked by an appropriate test (eg a smoke test) to verify that they are clear and unobstructed.

17.5 Insulant blown through the top of the cavity into the loft space is removed and any points of leakage sealed (see section 13.3).

Omitted areas

17.6 In some circumstances access for drilling injection holes and filling with insulation may be limited by features such as carports, conservatories, cladding or tiling. The practicability of safely accessing and making good these areas, or installing the insulation through the inner leaf, may outweigh the benefits of insulating these areas.

17.7 It is permissible to omit such areas only when:

- a full justification detailing the reasons to omit areas is included in the survey report
- the assessor obtains written consent for omitting any areas of the wall from the party commissioning the work.
The assessor must inform the commissioning party in writing that 'heat loss' through uninsulated areas will not be reduced, and that they will also be subject to a slightly higher risk of condensation.

18 Height restriction waivers

18.1 The product is for use in buildings up to and including 12 m in height, in existing domestic and non-domestic buildings. It may also be used in buildings over 12 m in height where a height restriction waiver has been issued by the Certificate holder.

18.2 The Certificate holder has a detailed programme for the assessment of buildings over 12 m, as approved and maintained under surveillance by the BBA. Each installation beyond 12 m must be individually assessed by the Certificate holder against this agreed assessment programme and documented approval given prior to the commencement of work.

Technical Investigations

19 Tests

Results of tests were assessed to determine:

- resistance to rain penetration of an insulated cavity wall
- adequacy of fill using specified installation machinery and drilling pattern
- thermal conductivity to BS EN 12667 : 2001
- short term water absorption by partial immersion
- characterisation of the product.

20 Investigations

20.1 Existing data on durability and properties in relation to fire were evaluated.

20.2 The Certificate holder's training arrangements were evaluated.

20.3 An assessment of the practicability of installation was carried out.

20.4 A condensation risk analysis was carried out.

20.5 A series of U value calculations was carried out.

20.6 A calculation was undertaken to confirm the thermal conductivity (λ_D value).

21 Other investigations

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.

Bibliography

BS 5250 : 2011 *Code of practice for control of condensation in buildings*

BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*

BS EN 1996-1-1 : 2005 Eurocode 6 : *Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

NA to BS EN 1996-1-1 : 2005 UK National Annex to Eurocode 6 : *Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

BS EN 1996-1-2 : 2006 Eurocode 6 : *Design of masonry structures — General rules — Structural fire design*

NA to BS EN 1996-1-2 : 2005 UK National Annex to Eurocode 6 : *Design of masonry structures — General rules — Structural fire design*

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 1996-3 : 2006 Eurocode 6 : *Design of masonry structures : Simplified calculation methods for unreinforced masonry structures*
NA to BS EN 1996-3 : 2006 UK National Annex to Eurocode 6 : *Design of masonry structures : Simplified calculation methods for unreinforced masonry structures*
BS EN 12667 : 2001 *Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance*
BS EN 13820 : 2003 *Thermal insulating materials for building applications — Determination of organic content*
BS EN 14064-1 : 2010 *Thermal insulation products for buildings – In-situ formed loose-fill mineral wool (MWW) products – Specification for the loose-fill products before installation*
BS EN ISO 6946 : 2007 *Building components and building elements – Thermal resistance and thermal transmittance – Calculation method*
BS EN ISO 9001 : 2008 *Quality Management Systems – Requirements*
BS EN ISO 14001 : 2004 *Environmental management systems – Requirements with guidance for use*
BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*
BRE Report (BR 262 : 2002) *Thermal insulation : avoiding risks*
BRE Report (BR 443 : 2006) *Conventions for U-value calculations*

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.