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BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate
02/3934
Product Sheet 1

NORBORD FLOORING BOARDS

CABERDEK

This Agrément Certificate Product Sheet(1) relates to Caberdek, a P5 flooring grade chipboard, faced on one side with a cross-orientated, laminated polyethylene peel-off film, for use in joisted floor construction. The film, together with glued and taped joints, provides temporary weather protection to the boards prior to completion of the building envelope.

(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

Loading — the product can resist the loads associated with use in normal joisted constructions (see section 6).

Resistance to weather — a constructed floor will have satisfactory resistance to weather and can be left exposed for up to 42 days (see section 7).

Slip resistance — the peel-off film has a moderate potential for slip in wet conditions, and a low potential for slip in dry conditions (see section 8).

Properties in relation to fire — chipboard has a classification of Dfl-s1 in accordance with harmonised Standard BS EN 13986 : 2004, Table 8 (see section 9).

Durability — the completed flooring will have a life equal to that of the building in which it is installed (see section 13).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Third issue: 22 November 2013
Originally certificated on 17 June 2002

Simon Wroe
Head of Approvals — Materials

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

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

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Regulations

In the opinion of the BBA, Caberdek, if installed, used and maintained in accordance with this Certificate, will meet or contribute to meeting 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:	A1(1)	Loading
Comment:		The product has sufficient strength and stiffness to sustain and transmit the design load, without excessive deflection, to the primary structure. See section 6 of this Certificate.
Requirement:	B3(1)(3)	Internal fire spread (structure)
Comment:		The product can contribute to meeting this Requirement. See section 9 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See section 13 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The product can contribute to a construction meeting this Regulation. See section 13 and the *Installation* part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1(a)	Structure
Comment:		The product has sufficient strength and stiffness to sustain and transmit the design load, without excessive deflection, to the primary structure, with reference to clause 1.1.1[(1)(2)]. See section 6 of this Certificate.
Standard:	2.3	Structural protection
Comment:		The product can contribute to a construction satisfying this Standard, with reference to clauses 2.3.0[(1)(2)], 2.3.1[(1)(2)], 2.3.2[(1)(2)] and 2.3.3[(1)(2)]. See section 9 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product 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:		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

Regulation:	23(a)(i)(iii)(iv)(b)(i)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 13 and the *Installation* part of this Certificate.
Regulation:	30	Stability
Comment:		The product has sufficient strength and stiffness to sustain and transmit the design load, without excessive deflection, to the primary structure. See section 6 of this Certificate.
Regulation:	35(1)(3)(4)	Internal fire spread — Structure
Comment:		The product can contribute to meeting this Regulation. See section 9 of this Certificate.

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 sections: 3 *Delivery and site handling* (3.2 and 3.5) and 8 *Slip resistance* of this Certificate.

Additional Information

NHBC Standards 2013

NHBC accepts the use of Caberdek, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 6.4 *Timber and concrete upper floors*, 6.10 *Light steel framed walls and floors* and 8.3 *Floor finishes*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13986 : 2004. 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 This Certificate relates to Caberdek, a P5* flooring grade chipboard faced on one side with a cross-orientated, laminated peel-off film. The boards are manufactured in accordance with BS EN 312 : 2010.

1.2 The product characteristics are:

Thickness (mm)*	18, 22
Length (mm)	2400
Width (mm)	600
Density (kg·m^{-3})	600 to 690
Edge profile	tongue-and-groove[1].

(1) TG2 panels, which are available as 2400 mm by 1200 mm boards with the tongue-and-groove down the longer edges only, may be used but the butt joints must be bonded using a D3 or D4 type adhesive.

1.3 Ancillary components comprise:

- Caberfix water-resistant tape — for taping joints between boards and for application to exposed board edges
- Caberfix T&G PVA Adhesive — a PVA adhesive to BS EN 204 : 2001, Class D3, for use in bonding board joints
- Caberfix D4 Adhesive — a one-part PU bonding adhesive to BS EN 204 : 2001, Class D4, for use in bonding board joints and also boards to joists
- Caberfix Joint & Joist Adhesive — a one-part polymeric gun-applied adhesive for bonding the boards to joists
- annular ring-shank nails — length 2.5 times the thickness of the board, for fixing the boards to the joists
- Posidrive No 8 screws — particle screws of length 50 mm.

2 Manufacture

2.1 The boards are manufactured by bringing the chipboard, laminate and adhesive together under controlled pressure, temperature and line speed.

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.

3 Delivery and site handling

3.1 The boards are delivered in banded packs wrapped in polythene. Each pack contains a label bearing the product name, board thickness and type.

3.2 The boards are supplied in the pack size given in Table 1.

Table 1 Pack sizes

Thickness (mm)	No of panels per pack	Approx weight (tonne)
18	80	1.4
22	66	1.4

3.3 Boards should be stored off the ground, preferably on bearers, to allow air to circulate. If stored outside, the boards must be protected with a weatherproof sheeting.

3.4 Caberfix adhesives should be stored under cover, in the original packaging, between temperatures of 5°C and 25°C. They have shelf-lives of:

- Caberfix D4 6 to 9 months
- Caberfix Joint & Joist 6 to 9 months
- Caberfix T&G PVA 10 months.

3.5 Caberfix Adhesives have been classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009* (CHIP4)/*Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009*. Containers bear the following hazard warning labels:

- Caberfix D4 Adhesive Harmful
- Caberfix Joint & Joist Adhesive Not required
- Caberfix T&G PVA Adhesive Not required.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Caberdek.

Design Considerations

4 Use

Caberdek is suitable for use as flooring grade chipboard in joisted constructions and, with sealed joints, can be left exposed to the weather for a period of up to 42 days during the building process.

5 Practicability of installation

The product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Loading

The product conforms to the requirements of BS EN 312 : 2010 and can resist the loads associated with its use in normal joisted constructions.

7 Resistance to weather

7.1 When subjected to standing water for a period of 42 days, a test floor with sealed joints performed satisfactorily.

7.2 In persistently wet conditions, some water penetration may be expected. This could result in some swelling around joints and nail fixings.

8 Slip resistance

Slip resistance values indicate that the boards have a moderate potential for slip in wet conditions and a low potential for slip in dry conditions. The results of the performance tests and the classification of slip resistance are given in Table 2.

Table 2 Slip resistance[1]

Result of test	4S/standard pedestrian hard rubber(shoes)	Classification[2]
–	<25	high slip potential
25 (wet)	25–35	moderate slip potential
38 (dry)	>36	low slip potential

(1) TRL pendulum test.

(2) This classification is based on the pendulum test value (PTV) and the recommendations given in *The Assessment of Floor Slip Resistance : The UK Slip Resistance Group Guidelines : Issue 4 : 2011.*

9 Properties in relation to fire

9.1 The product has a classification of Dfl-s1* in accordance with harmonised Standard BS EN 13986 : 2004, Table 8.

9.2 As detailed in BRE report BR 128 : 1988, *Guidelines for construction of fire-resisting structural elements*, an intermediate floor construction incorporating tongue-and-groove boards supported on timber joists at least 37 mm wide, and a ceiling of timber-backed 12.5 mm thick plasterboard fixed with 40 mm long galvanized nails at 150 mm centres and with joints taped and filled, has been assessed as having a fire-resistance rating (in minutes) of:

Loadbearing capacity	30
Integrity	15
Insulation	15.

9.3 Where any other form of floor construction incorporating the product is subject to fire-resistance requirements, an appropriate assessment or test must be carried out by a UK Accreditation Service (UKAS) laboratory accredited for the test concerned.

10 Impact resistance

The boards have satisfactory resistance to hard body impact.

11 Formaldehyde

The boards achieve a Class E1* formaldehyde specification to BS EN 13986 : 2004 and BS EN 312 : 2010.

12 Maintenance

As the product is normally covered with a floor finish and has suitable durability (see section 13), maintenance is not required. However, any damage should be repaired promptly (see section 17).

13 Durability

Provided the product is fixed to suitably stable and durable floor joists, it will have a life equal to that of the building in which it is installed.

Installation

14 General

14.1 Installation of Caberdek boards must be carried out in dry conditions.

14.2 During periods of severe weather it is advisable to remove any pools of standing water prior to commencing work on the installed floor.

14.3 Floor joists and beams must be secured and braced before laying the boards. Prior to fixing, any standing water or moisture on surface flanges should be wiped down.

14.4 On joists up to 450 mm centres, 18 mm thick panels may be used. On joists of wider spacing, up to 600 mm centres, 22 mm thick panels must be used.

14.5 Provision must be made for future access to any pipes and services running between joists. Traps for this purpose should be supported on all sides. If access traps are cut and edges supported, the cut edges must be protected from water by application of Caberfix water-resistant tape.

14.6 All perimeter edges must be sealed using Caberfix water-resistant tape. This is usually carried out after laying the boards but, where this will be impractical (eg because of problems of access), then the edges should be sealed before laying.

14.7 If the board surface or edge tape is damaged during the construction process it must be repaired immediately.

15 Supervision of workmanship

The level of supervision during installation of Caberdek and the associated structure must be sufficient to ensure the quality of workmanship described in BS 8000-5 : 1990.

16 Procedure

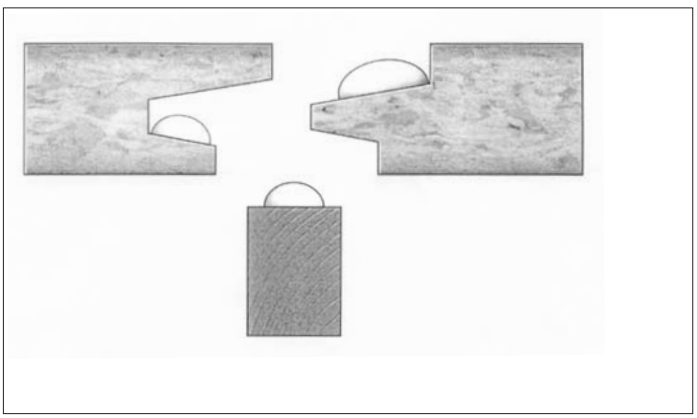
Laying

16.1 The tongue-and-groove flooring boards are laid on top of the joists with the longest edges at right angles to the joists. Short end joints should be staggered by approximately half a board in a brick bond pattern with these ends falling on the centre line of the joist. If they overhang, additional timber supports or noggings must be provided. Although long edges do not need intermediate support between joists, support noggings should be fixed at floor perimeters where unsupported edges abut a wall.

16.2 Laying starts with a single row of boards parallel to the longest wall, allowing for a suitably-sized expansion gap. A minimum gap of 10 mm, or 2 mm per metre run of floor, whichever is greater, should be left against all walls and abutments. Particular attention must be paid to maintaining expansion gaps at all times during construction. When large single-run floors are being laid, it is necessary to incorporate intermediate expansion gaps to allow for possible movement.

16.3 All tongue-and-groove edges must be glued with an ample bead of adhesive applied to the grooved edge and a smaller bead applied to the top edge of the tongue (see Figure 1). When the boards are butted tightly, the glue should reach the top of the joint.

Figure 1 Glueing



16.4 Heads of nails or screws driven through the top surface of the board must be protected by application of a covering layer of Caberfix water-resistant tape.

Fixing to I-joists

16.5 Timber based I-joists are proprietary products which have specific installation requirements, for example relating to lateral restraint. The number of fixings required will vary depending on factors such as the geometry of the particular installation, the dimensions of the I-joist and whether the deck is required to act as a diaphragm. When installing the boards on I-joists, the recommendations of the joist manufacturer should be followed.

16.6 The methods set out in sections 16.11 to 16.23 use a fixing at every joist for each board (equivalent to a fixing every 600 mm along each joist). However, for each installation, guidance from the I-joist manufacturer, or other suitably qualified persons, should be obtained and followed, including increasing the number of fixings where appropriate.

Method 1 — mechanical fixing with tape at joints and perimeter

16.7 Boards are fixed to the joists using 10 gauge annular ring-shank nails of length 2.5 times the thickness of the board, at a rate of four nails at each end and three at intermediate joists (total 17 per board) and hammered flush with the surface of the board. Boards should be fixed along the perimeter at 200 mm to 300 mm centres, approximately 25 mm from the edge of the board.

16.8 The tongue-and-groove joint is sealed with Caberfix T&G PVA Adhesive. Any excess adhesive extruded from the joint should be removed with a damp cloth before sealing the joint with Caberfix water-resistant tape.

16.9 After a run of boards is fixed, all board joints, nail runs and exposed edges around the perimeter are immediately sealed with Caberfix water-resistant tape (but see section 14.6). This operation must be carried out in dry conditions.

16.10 Where nailing could damage ceilings or joists, boards should be fixed using countersunk Posidrive No 8 particle board screws in pre-drilled holes.

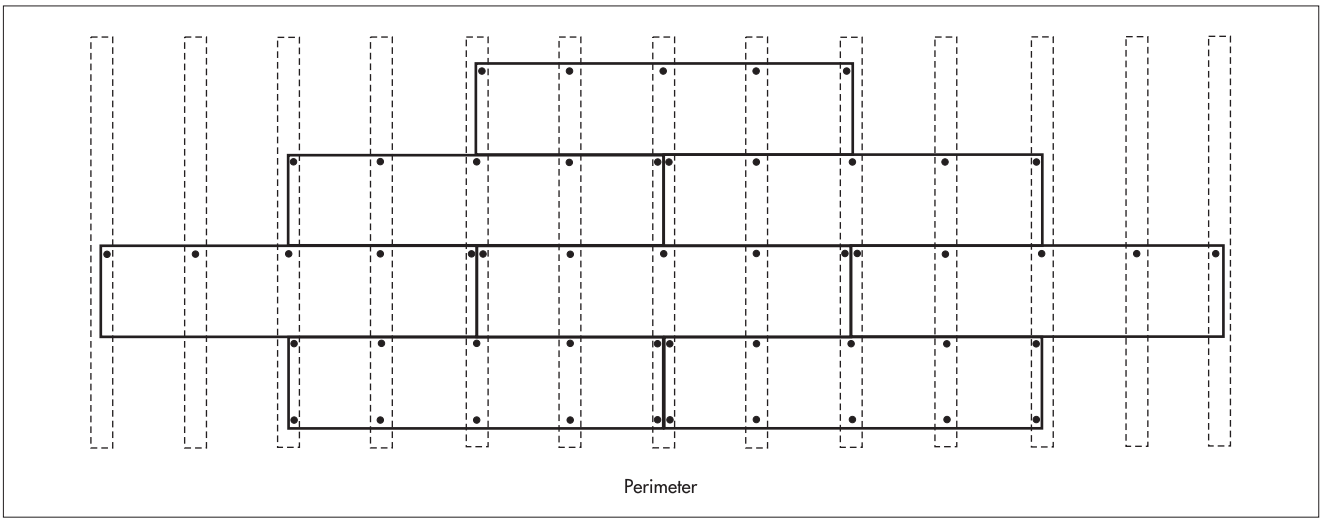
Method 2 — Caberfix Joint & Joist Adhesive with Caberfix water-resistant tape at joints and perimeter

16.11 A 6 mm bead of Caberfix Joint & Joist Adhesive is applied centrally to the top of the I-joists in 600 mm lengths for the first run of boards.

16.12 Boards must be fixed within 15 minutes, the first run being placed into position squarely, avoiding any unnecessary dragging which will disturb the adhesive. The first run is fixed to each joist along the perimeter 50 mm from the board edge using annular ring-shank nails with a length 2.5 times the thickness of the board, or screws. The boards are also fixed by secret nailing through the tongue of the long edge at 20° to the vertical, one annular ring-shank nail (or screw) being fixed to every I-joist.

16.13 Caberfix Joint & Joist adhesive is applied along the next 600 mm run of joists and the next row of boards is staggered to form a brick bond pattern. The boards are then fixed by secret nailing (or screwing) through the board tongue at each joist (see Figure 2).

Figure 2 Nailing pattern for 2400 mm x 600 mm boards fixed to I-joists at 600 mm centres



16.14 The tongue-and-groove joint is sealed with Caberfix T&G PVA Adhesive. Any excess adhesive extruded from the joint should be removed with a damp cloth before sealing the joint with Caberfix water-resistant tape

16.15 After a run of boards is fixed, all board joints, nail runs and exposed edges around the perimeter are immediately sealed with Caberfix water-resistant tape. This operation must be carried out in dry conditions.

16.16 Subsequent rows are fixed as described in sections 16.13 to 16.15. The last row of boards is fixed to each joist along the perimeter, 50 mm from the board edge.

16.17 The floor deck can be walked on immediately after fixing, but further heavy construction work should be avoided for 24 hours.

Method 3 — Caberfix D4 Adhesive without tape

16.18 Two continuous beads of Caberfix D4 Adhesive are applied to the top of the I-joists in 600 mm lengths, for the first run of boards.

16.19 Boards must be fixed within 15 minutes, the first run being placed into position squarely, avoiding any unnecessary dragging which will disturb the adhesive. The first run is fixed to each joist along the perimeter 50 mm from the board edge using annular ring-shank nails with a length 2.5 times the thickness of the board, or screws. The boards are also fixed by secret nailing through the tongue of the long edge at 20° to the vertical, one annular ring-shank nail (or screw) being fixed to every I-joist.

16.20 Caberfix D4 Adhesive is applied along the next 600 mm run of joists and the next row of boards is staggered to form a brick bond pattern. The boards are then fixed by secret nailing (or screwing) through the board tongue at each joist (see Figure 2).

16.21 Any film that has peeled back from the edges of the tongue-and-groove joint should be stuck back down with Caberfix D4, before sealing the joint with Caberfix D4 Adhesive. During curing, the adhesive foams over the edges of the membrane and forms a watertight seal.

16.22 After a run of boards is fixed, all cut board edges and exposed edges around the perimeter are immediately sealed with Caberfix D4 Adhesive.

16.23 Subsequent rows are fixed as described in sections 16.20 to 16.22 The last row of boards is fixed to each joist along the perimeter, 50 mm from the board edge.

Fixing to solid timber joists

16.24 The methods described in sections 16.7 to 16.23 can also be used when fixing the product to solid timber joists.

Finishing

16.25 When all construction and decoration work is complete and the building is weathertight, the deck should be swept down and the peel-off covering removed by pulling firmly but slowly from the short end. A sharp knife should be used around the perimeter to free any of the covering which may have become snagged.

17 Repair

Under normal conditions of occupancy the product is unlikely to suffer damage. However, should it be necessary, repair can be carried out in accordance with the Certificate holder's instructions.

Technical Investigations

18 Tests

Tests were carried out, and the results assessed, to determine:

- slip resistance in dry and wet conditions
- resistance to hard body impact
- tear resistance of Caberdek film and Caberfix water-resistant tape
- resistance to abrasion
- standing water resistance
- dimensional accuracy of panels
- squareness of panels
- resistance to peel
- water resistance of Caberfix water-resistant tape
- water resistance and adhesive characteristics of jointing and bonding adhesives.

19 Investigations

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

19.2 A site in progress was visited to establish the practicability of installation.

19.3 A user survey of builders who had used Caberdek was conducted to establish the practicability and performance.

Bibliography

BS 8000-5 : 1990 *Workmanship on building sites — Code of practice for carpentry, joinery and general fixings*

BS EN 204 : 2001 *Classification of thermoplastic wood adhesives for non-structural applications*

BS EN 312 : 2010 *Particleboards — Specifications*

BS EN 13986 : 2004 *Wood-based panels for use in construction — Characteristics, evaluation of conformity and marking*

20 Conditions

20.1 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.

20.2 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.

20.3 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.

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

20.5 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.

20.6 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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