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Agrement Certificate

17/5453

Product Sheet 1

BRITISH GYPSUM TEMPORARY WEATHER PROTECTION

GLASROC X SHEATHING BOARDS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Glasroc X Sheathing Boards, non-combustible glass-fibre reinforced gypsum fibreboard with a protective coating for use in conjunction with Glasroc X Sealant to seal board joints and Glasroc X Screws. The boards are for use on the external face of inner leaf walls of steel frame constructions as non-loadbearing external sheathing boards, providing temporary weather protection prior to over-cladding with a permanent weatherproof façade.

(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

Strength and stability — the boards can accept the wind actions and impact loads likely to be met in service (see section 6).

Performance in relation to fire — the boards are non-combustible and have a reaction to fire classification of A1 in accordance with EN 13501-1 : 2007 (see section 7).

Weathertightness — provided the joints are sealed, the boards have adequate resistance to the passage of moisture and to provide a temporary level of weather resistance (see section 9).

Water absorption — the boards have a designation of GM-H1 in accordance with BS EN 15283-1 : 2008 and therefore have an increased resistance to water absorption (see section 10).

Durability — provided that all joints between boards are sealed and fixings are finished flush to the surface of the boards, Glasroc X Sheathing Boards may be exposed for up to 6 months under normal periods and conditions of wind, rain and heat exposure, prior to over cladding (see section 13).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Simon Wroe
Head of Approvals – Engineering

Claire Curtis-Thomas
Chief Executive

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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.bbacersts.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, Glasroc X Sheathing Boards, 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:	B3	Internal fire spread (structure)
Comment:		The products will contribute to a structure satisfying this Requirement. See section 7 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The products are acceptable. See section 13 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:		The use of the products satisfies the requirements of this Regulation. See sections 12 and 13 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.4	Cavities
Comment:		The products will contribute to an external wall satisfying the requirements of this Standard, with reference to clauses 2.4.1 ⁽¹⁾⁽²⁾ and 2.4.2 ⁽¹⁾⁽²⁾ . See section 7 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The products 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 the products 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	Fitness of materials and workmanship
Comment:		The products are acceptable. See section 13 and the <i>Installation</i> part of this Certificate.
Regulation:	34	Internal fire spread — linings
Comment:		The products will contribute to an external wall satisfying the requirements of this Regulation. See section 7 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: 1 *Description* (1.1), 3 *Delivery and site handling* (3.1, 3.3 and 3.4) and 15 *General* (15.7 to 15.9) of this Certificate.

Additional Information

NHBC Standards 2017

In the opinion of the BBA, Glasroc X Sheathing Boards, 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 6.10 *Light steel framed walls and floors*, sub-sections 6.10.16 and 6.10.17.

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard BS EN 15283-1 : 2008. 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 Glasroc X Sheathing Boards comprise non-combustible glass-fibre reinforced gypsum fibreboard encased by hydrophobic-treated glass mat liners, incorporating a protective coating (see Figure 1). The boards have the following nominal characteristics:

Length (mm)	2400
Width (mm)	1200
Thickness (mm)	12.5
Weight (kg·m ⁻²)	10.9
Apparent density (kg·m ⁻³)	772
Edge	square
Colour	white (with blue printing on the external face)
Water vapour resistance (S _d in m)	0.1
Water vapour resistance factor (μ)	7
Thermal conductivity (W·M ⁻¹ ·K ⁻¹)*	0.186
Flexural strength (N)	
longitudinal	733
transverse	699.

Figure 1 Glasroc X Sheathing Board and Glasroc X Screw



1.2 Items used in conjunction with the boards include:

- Glasroc X Screw — self-drilling, phosphate-coated carbon steel screws 25 mm in length and 3.8 mm diameter (with 8 mm head diameter) to one specification, used at maximum 300 mm centres
- Glasroc X Sealant — a white silicone sealant used at all horizontal and vertical joints between boards and steel framework.

1.3 Other components specified for use with the boards, but outside the scope of this Certificate, include:

- steel-frame — light gauge metal studs at 600 mm maximum centres, fixed vertically to the main structure
- sealer — butyl tape or EPDM for use around exposed edges of the boards at openings such as windows and doors.

2 Manufacture

2.1 The raw materials, gypsum and glass-fibre reinforcement are mixed with water into a slurry and poured out onto a reinforced mat base with a second reinforced mat laid on top to form the board. Once hardened, the boards are cut and dried, prior to trimming and storage. The manufacturing process and quality controls are in accordance with BS EN 15283-1 : 2008.

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 systems of the manufacturer have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by TÜV NORD CERT GmbH (Certificate 44 100 065009).

3 Delivery and site handling

3.1 The boards are supplied covered with polythene hoods on timber pallets, in quantities of 50 per pallet. Each pallet weighs approximately 1570 kg. The boards are printed with Glasroc X diagonally and specific codes that identify the place, date and time of manufacture.

3.2 The boards must be stored on a firm, flat and level surface. If the boards are temporarily stored outside they must be sufficiently supported off the ground and covered by a securely anchored polythene sheet or tarpaulin to protect them from dampness, weather, contamination and mechanical damage, eg from construction traffic.

3.3 Packs of boards should be stacked no higher than two pallets from the ground for safe handling on site. This can be increased to four pallets in warehousing, providing the floor loading is checked as being adequate.

3.4 Manual off-loading of the boards should be carried out with care to avoid unnecessary strain and injury.

3.5 Glasroc X Sealant must be stored in cool, dry conditions between temperatures of 5°C and 25°C.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Glasroc X Sheathing Boards.

4 Use

4.1 Glasroc X Sheathing Boards are satisfactory for use as a temporary, weather-resistant, external, non-loadbearing sheathing on steel framed buildings with vertical steel studs at maximum 600 mm centres and specified fixings at maximum 300 mm centres.

4.2 The boards will provide temporary protection to weather for a period of up to 6 months and must be over-clad within this period with a permanent weatherproof façade. The design, installation and performance of the permanent façade are outside the scope of this Certificate.

4.3 Glasroc X Sealant must be applied to all joints between boards during installation and proprietary sealer applied around exposed edges, such as openings, to ensure protection against water ingress.

4.4 Any external finishes/cladding must be such that the cavity behind meets the minimum cavity width required by *NHBC Standards 2017*.

5 Practicability of installation

The boards are designed to be installed by a competent contractor experienced with these types of products.

6 Strength and stability

6.1 The contribution of the boards to the stability of the substrate wall steel frame is assumed to be negligible. The steel frame without the boards, must be able to take the full wind actions and racking loads and be capable of sustaining the weight of the boards. The adequacy of the steel frame is outside the scope of this Certificate and must be verified by a suitably qualified and experienced individual.

6.2 A suitably-qualified and experienced individual must check the design and method of installation of the boards.

6.3 The design pull-through resistance per fixing (as specified in section 1.2) used for securing the boards to the steel studs depends on the proximity to the edge and is given in Table 1.

Table 1 Design pull-through resistance (kN)

Position	Pull-through resistance (kN)
	Glasroc X Sheathing Boards with 25 mm Glasroc X Screws
Centre	0.157
Edge	0.081
Corner	0.058

Notes:

- values apply for 3.8 mm diameter self-drilling screws with countersunk head 8 mm diameter drilled flash with the external face of the board
- a factor of 3.0 was applied to the characteristic value determined by tests to ETAG 034 : 2012.

6.4 For evaluation of wind load, the designer should apply the partial factor for actions of 1.5, in accordance with the UK National Annex to BS EN 1990 : 2002, Table NA.A1.2(A) to the characteristic wind load determined in accordance with BS EN 1991-1-4 : 2005. Special consideration should be given to locations with high wind load pressure coefficients as additional fixings may be necessary.

6.5 The number of fixings (as specified in section 1.2) should be determined from the minimum of the pull-through resistance of the boards.

6.6 Glasroc X Sheathing Boards were tested for dynamic wind load resistance in accordance with ETAG 034 : 2012, Part 1. The design wind load resistance value was evaluated applying a global safety factor of 1.5 to the ultimate wind load resistance and is given in Table 2.

Table 2 Design wind load resistance

Design wind load resistance (KPa)	Distance between vertical support rails (mm)
1.33	600

6.7 When tested for hard and soft body impacts, the boards were found suitable for use in the areas defined under categories III to IV in Table 3 of ETAG 034, Part I : 2012, which is reproduced (in part) in Table 3 of this Certificate. The boards can be damaged by heavy impacts; therefore, any damaged boards must be replaced and joints re-sealed prior to over-cladding.

Table 3 Definition of Use Categories (reproduced from ETAG 034, Part I, 6.4.4. Table 4)

Use category	Description
I	A zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use.
II	A zone liable to impacts from thrown or kicked objects, but in public locations where the height of the kit will limit the size of the impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care.
III	A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.
IV	A zone out of reach from ground level.

Note: Categories I and II shown for information only and are not suitable for these products.

7 Performance in relation to fire



7.1 The reaction to fire classification* for Glasroc X Sheathing Boards in accordance with EN 13501-1 : 2007 is A1.

7.2 Glasroc X Sealant has a reaction to fire classification of E in accordance with EN 13501-1 : 2007.

7.3 The boards are not subject to any height or boundary restriction when used in a wall specification where the components satisfy the non-combustibility requirement of materials in the relevant national Building Regulations. When used in conjunction with combustible materials, the whole wall construction must satisfy the requirements of BRE Report BR 135 : 2013.

7.4 For resistance to fire, the performance of a wall incorporating the boards must be determined by tests from a suitably accredited laboratory, and is outside the scope of this Certificate.

7.5 Cavity barriers must be incorporated as required under the national Building Regulations, but must not block essential ventilation and drainage pathways. Guidance on fire barriers can be found in BRE Report BR 135 : 2013.

8 Proximity of flues

When installing the boards in close proximity to certain flue pipes or heat-producing appliances, the following provisions of the national Building Regulations must be met:

England and Wales — Approved Document J

Scotland — Mandatory Standard 3.19, clauses 3.19.1⁽¹⁾⁽²⁾ to 3.19.4⁽¹⁾⁽²⁾ and 3.19.8⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Technical Booklet L.

9 Weathertightness

The boards can provide weather protection during the construction phase and prior to the completion of a permanent external weatherproof façade, provided the joints between the boards and all exposed edges are sealed, and fixings are correctly flush-fitted (ie not overtightened). However, this period should be kept to a minimum.

10 Water absorption

The water absorption of the boards is 4.4% when tested in accordance with BS EN 15283-1 : 2008 and therefore is designated* as Type H1.

11 Condensation risk

11.1 When measured in accordance with EN ISO 12572 : 2001 at 23°C and 94/50% RH, the water vapour transmission rate of the boards was 198.7 g·m⁻²·day⁻¹. This equates to a water vapour resistance of 0.448 MN·s·g⁻¹ and a water vapour resistance factor (μ) of 7.

11.2 When over-cladding, the overall design and the recommendations given in BS 5250 : 2011 must be considered.

12 Maintenance



12.1 As the products have suitable durability (see section 13) and will normally be confined within the building structure or behind the over cladding/façade, maintenance is not required.

12.2 Under normal conditions of use, the boards are unlikely to suffer damage, but if damage does occur any damaged boards and sealant must be replaced in accordance with this Certificate and observing all necessary health and safety requirements.

13 Durability



13.1 Provided that all joints between boards are sealed and fixings are finished flush to the boards (eg not overtightened), Glasroc X Sheathing Boards may be exposed to weather for a period of up to 6 months under normal periods and conditions of wind, rain and heat exposure prior to overcladding.

13.2 Glasroc X Sheathing Boards have been tested and are resistant to algal growth.

14 Reuse and recyclability

The boards are made from gypsum, which can be recycled. A recycling service is available from the Certificate holder.

Installation

15 General

15.1 Glasroc X Sheathing Boards must be installed in accordance with this Certificate and the Certificate holder's instructions.

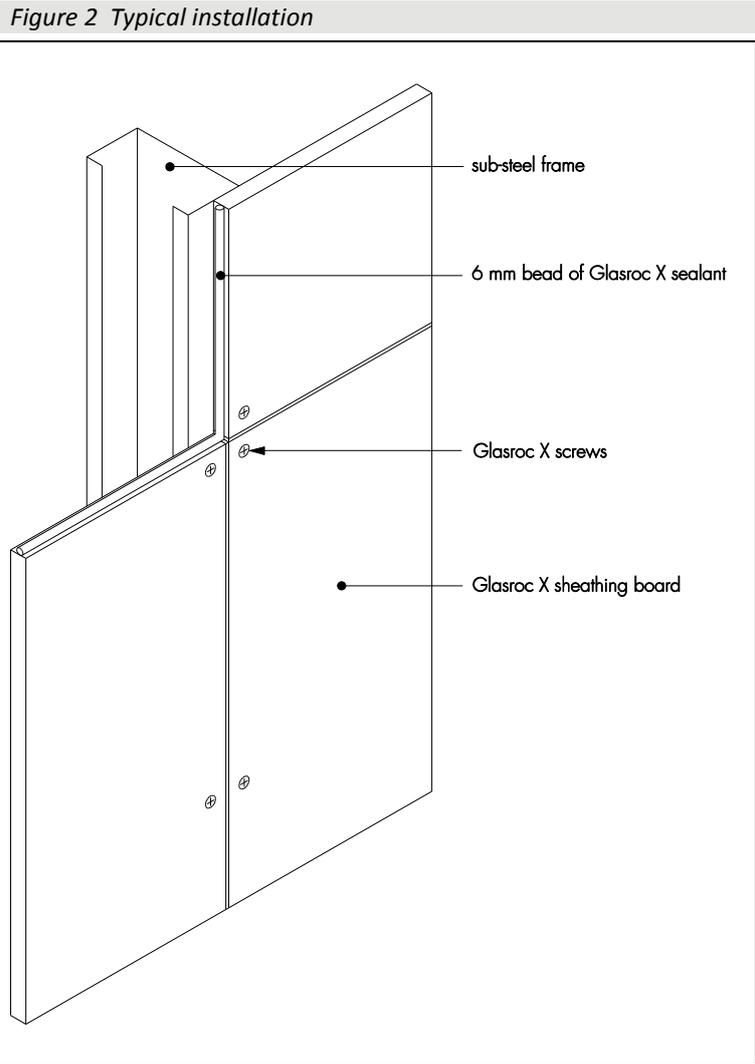
15.2 Reasonable precautions must be taken to ensure the boards are not damaged during installation and in-service.

15.3 The boards are fixed to a galvanized steel frame with a minimum gauge of 1.2 mm and maximum stud centres of 600 mm (see Figure 2). The adequacy of fixing the galvanized steel studs to the structural frame is outside the scope of this Certificate and must be verified by a suitably qualified individual.

15.4 All exposed edges of the boards must be sealed in accordance with this Certificate.

15.5 The boards should be fixed with a 6 mm gap from masonry or similar materials to prevent moisture absorption.

15.6 The lowest point of the boards must be kept above damp-proof course level.



15.7 The boards may be cut using a plasterboard saw or by scoring through the surface glass mat with a board knife. The core is snapped over a straight edge and the boards turned over and cut through the back face glass mat.

15.8 When cutting the boards, power and hand tools should be used with care and in accordance with the Certificate holder's recommendations. Power tools should only be used by people who have been instructed and trained to use them safely. Appropriate personal protective equipment should be used and monitoring of exposure levels during this activity should be considered.

15.9 It is important to observe appropriate health and safety legislation when working on site, ie personal protective clothing and equipment. The Certificate holder should be consulted for material safety data sheets and advice. When working in enclosed areas, precautions should be taken to ensure dust levels are controlled in accordance with the current issue of EH40/2005.

16 Procedure

16.1 The first board is fixed to the steel sub-frame using the specified screws at maximum 300 mm centres along the vertical studwork, ensuring that the Glasroc X Screws are flush-fitted (ie not overtightened) and a minimum of 15 mm from the edge of the board. The boards can be installed in either a horizontal or vertical orientation.

16.2 Once the first board is installed, the edge is checked to make sure it is clean, dry and free from dust, or loose or flaking surface coatings, prior to a continuous bead of Glasroc X Sealant being applied along the full board edge. The next board is butted up allowing the sealant to squeeze through the joint, ensuring a complete seal between the boards and that no gaps are present. The boards are fixed to the sub-frame as described in section 16.1.

16.3 Subsequent boards are installed in the same manner, with sealant applied to all board edges as the construction progresses.

16.4 Where board edges are exposed to accommodate openings, such as corners, windows and doors, appropriate cold-applied sealing methods, such as butyl tape, should be used to seal any exposed edges.

17 Repair

17.1 The completed installation must be inspected with any damaged boards and sealant replaced.

17.2 Particular attention must be made to the integrity of the protective coating, especially within the proximity of the fixings. Where significant damage to the coating has occurred, the affected boards must be replaced.

18 Over-cladding/façades

Wall claddings must be fixed through the boards into the structural framing. The over-cladding or façade manufacturer must be consulted for fixing specifications. Any damaged or loose boards must be removed or replaced before fixing the façade.

Technical Investigations

19 Tests

Tests were conducted and the results assessed to determine:

- density
- dimensional stability
- flexural strength
- hygrothermal cycling
- resistance to impact
- resistance to wind loading
- resistance to pull-through of fixings
- weathertightness
- water absorption
- water vapour permeability
- resistance to algal growth.

20 Investigations

20.1 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.

20.2 An assessment was made of test reports relating to the reaction to fire classification of the products to EN 13501-1 : 2007.

Bibliography

BRE Report BR 135 : 2013 *Fire performance of external thermal insulation for walls of multistorey buildings*

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

NA to BS EN 1990 : 2002 + A1 : 2005 *UK National Annex for Eurocode — Basis of structural design*

BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 — Actions on structures — General actions — Wind actions*

NA to BS EN 1991-1-4 : 2005 + A1 : 2010 *UK National Annex to Eurocode 1 — Actions on structures — General actions — Wind actions*

BS EN 15283-1 : 2008 + A1 : 2009 *Gypsum boards with fibrous reinforcement — Definitions, requirements and test methods — Gypsum boards with mat reinforcement*

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

EH40/2005 *Occupational exposure limits*

EN 13501-1 : 2007 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

EN ISO 12572 : 2001 *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties*

ETAG 034 Part 1 : 2012 *Kits for External Wall Claddings*

21 Conditions

21.1 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 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.

21.2 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.

21.3 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.

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

21.5 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.

21.6 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.