

Alucoil SA

Pol Ind Bayas
C/Ircio, parc R72-R77
09200 Miranda de Ebro (Burgos)
Spain

Tel: 00 34 947 33 33 20 Fax: 00 34 947 33 12 24

e-mail: info@alucoil.com

website: www.alucoil.es



Agrément Certificate

08/4551

Product Sheet 1

LARSON WALL CLADDING PANELS

LARSON PE AND LARSON FR WALL CLADDING PANELS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Larson PE and Larson FR Wall Cladding Panels, for use in providing a decorative/protective façade over the external walls of buildings subject to height restrictions.

(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

Practicability of installation — the panels are suitable for installation by cladding contractors providing they have undergone suitable training (see section 4).

Strength and stability — the panels can be incorporated in a cladding system designed to resist wind loads normally encountered in the UK (see section 5).

Behaviour in relation to fire — Larson FR and Larson PE panels have reaction to fire classifications of B-s1, d0 and E, respectively, to BS EN 13501-1 : 2007. They are restricted in some cases (see section 6).

Air and water penetration — baffled vertical and horizontal joints between the panels will minimise water entering the cavity. Water collecting in the cavity due to rain or condensation will be removed by drainage and ventilation (see section 7).

Maintenance — damaged panels may be replaced individually without disturbing adjacent ones (see section 8).

Durability — the panels should have a service life comparable to that of conventional metal sheet cladding materials (see section 9).



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

Brian Chamberlain

Claire Curtis-Thomas

Date of Second issue: 4 August 2017

Brian Chamberlain

Claire Curtis-Thomas

Originally certificated on 22 April 2008

Head of Technical Excellence

Chief Executive

Certificate amended on 30 August 2017 for inclusion of revised NHBC statement.

Certificate amended on 10 July 2019 to include Regulation 7(2) for England and associated text.

Certificate amended on 13 January 2020 to include new regulatory guidance for fire in Scotland and Wales.

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.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

British Board of Agrément

Bucknalls Lane
Watford
Herts WD25 9BA

©2017

tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

Regulations

In the opinion of the BBA, Larson PE and Larson FR Wall Cladding Panels, if installed, used and maintained in accordance with the provisions of 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: A1 Comment:	Loading The products are acceptable for use as set out in sections 3.2 and 5.1 to 5.10 of this Certificate.
Requirement: B3(4) Comment:	Internal fire spread (structure) The products are restricted by this Requirement. See section 6.2 of this Certificate.
Requirement: B4(1) Comment:	External fire spread The products are restricted by this Requirement. See sections 6.1, 6.4 and 6.7 of this Certificate.
Requirement: C2(b)(c) Comment:	Resistance to moisture The products will meet the stated requirements. See section 7 of this Certificate.
Regulation: 7(1) Comment	Materials and workmanship The products are acceptable. See sections 9.1 to 9.3 and the <i>Installation</i> part of this Certificate.
Regulation: 7(2) Comment:	Materials and workmanship The products are restricted by this Regulation. See sections 6.1, 6.4 and 6.7 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2) Comment:	Durability, workmanship and fitness of materials The products can contribute to a construction satisfying this Regulation. See sections 8 and 9.1 to 9.3 and the <i>Installation</i> part of this Certificate.
Regulation: 9 Standard: 1.1 Comment:	Building standards applicable to construction Structure The products are acceptable, with reference to clause 1.1.1 ⁽¹⁾⁽²⁾ . See sections 3.2 and 5.1 to 5.10 of this Certificate.
Standard: 2.4 Comment:	Cavities The products are restricted by this Standard, with reference to clause 2.4.2 ⁽¹⁾⁽²⁾ . See section 6.2 of this Certificate.
Standard: 2.6 Comment:	Spread to neighbouring buildings The products are restricted by this Standard, with reference to clauses 2.6.4 ⁽¹⁾⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See sections 6.1, 6.5, 6.6, 6.8 and 6.9 of this Certificate.
Standard: 2.7 Comment:	Spread on external walls The products are restricted by this Standard, with reference to clause 2.7.1 ⁽¹⁾⁽²⁾ . See sections 6.1, 6.5, 6.6, 6.8 and 6.9 of this Certificate.

Standard:	3.10	Precipitation
Comment:		The products will contribute to satisfying this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ to 3.10.3 ⁽¹⁾⁽²⁾ . See section 7 of this Certificate.
		(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 sections 9.1 to 9.3 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to ground moisture and weather
Comment:		The products will contribute to satisfying this Regulation. See section 7 of this Certificate.
Regulation:	30	Stability
Comment:		The products are acceptable as set out in sections 3.2 and 5.1 to 5.10 of this Certificate.
Regulation:		Internal fire spread — structure
Comment:	35(4)	The products are restricted by this Regulation. See section 6.2 of this Certificate.
Regulation:		External fire spread
Comment:	36(a)	The products are restricted by this Regulation. See sections 6.1, 6.4 and 6.7 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 section: *2 Delivery and site handling (2.4)* of this Certificate.

Additional Information

NHBC Standards 2017

In the opinion of the BBA, Larson PE and Larson FR Wall Cladding Panels, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 6.9 *Curtain walling and cladding*.

General

This Certificate relates to Larson PE and Larson FR Wall Cladding Panels, comprising an aluminium/polyethylene (PE) or aluminium/mineral (FR) composite material fixed to an aluminium sub-frame to provide a decorative/protective façade over the external walls of buildings.

The sub-frame and its attachment to the substrate wall are outside the scope of this Certificate as are other miscellaneous construction details.

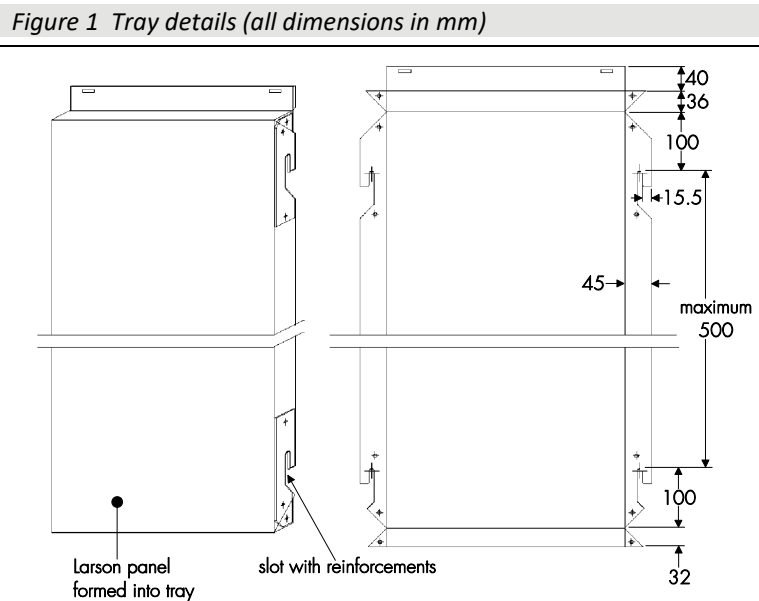
It is important for designers, planners, contractors and/or installers to ensure that the installation of the cladding is in accordance with the Certificate holder's instructions and the information given in this Certificate.

Technical Specification

1 Description

1.1 Larson PE and Larson FR Wall Cladding Panels comprise two 0.5 mm thick aluminium alloy sheets (EN AW-5005, H22) bonded to each side of a 3 mm thick, low-density polyethylene (LDPE) and a mineral filled core, respectively. A PVDF coating protects and imparts colour to the exposed face while a primer coat protects the internal face. The panels are available in two grades, Larson and Larson FR, differentiated by the composition of the panel core.

1.2 The panels are flanged to the required depth, governed by design, to form a tray. The vertical flanges incorporate a series of reinforced slots to fit onto support brackets on the sub-frame (not covered by this Certificate) (see Figure 1).



1.3 The 4 mm thick panel is available in standard sizes of:

Width (mm) 1000–1250 and 1500
Length⁽¹⁾ (mm) 3200–4000 and 5000

(1) Other lengths, from 2000 mm to 7000 mm, can be obtained to order.

1.4 Approximate panel weights per square metre are 5.5 kg·m² (Larson PE) and 7.78 kg·m² (Larson FR).

1.5 Production control is by self inspections and verification testing by IETcc, who are ultimately responsible for ensuring that product quality is maintained.

2 Delivery and site handling

2.1 The panels, separated by blocks, are delivered to site on pallets. The pallets bear product details such as type, size, quantity, identification code, manufacturing references and colour.

2.2 The pallets, up to a maximum stack of six, should be stored on dry, flat and level surface, suitably protected from the weather. The maximum storage period is six months. The protective film on the panels should be removed as soon after installation as possible.

2.3 The panels should be handled with care to avoid damage to the surface and flanges. They should be lifted off, rather than slid across, each other.

2.4 Care should be exercised when handling the panels to avoid injury from sharp edges. Protective clothing should be worn and all Health and Safety rules should be observed.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Larson PE and Larson FR Wall Cladding Panels.

Design Considerations

3 General

3.1 Larson PE and Larson FR Wall Cladding Panels can be incorporated in back ventilated and drained cladding systems on buildings of up to 18 metres in height (see section 6). The cavity behind the cladding should be as wide as possible, with a minimum ventilation area of 100 cm² per metre run of cladding (see section 7). The ventilation openings should be suitably protected or baffled, to prevent the ingress of birds, vermin and rain.



3.2 The wall and the sub-frame to which the cladding is fixed should be structurally sound and constructed in accordance with the requirements of the relevant building regulations and national standards.

3.3 The wall to which the cladding is fixed should be watertight and resistant to the transmission of heat and sound.

3.4 The insulation behind the cladding should be suitably fixed to the supporting wall, and protected, to resist the forces of wind suction. Insulation should be of a rigid type (eg boards or batts). The ventilation pathway behind the cladding must not be allowed to become blocked nor the insulation dislodged where it may be vulnerable to wetting.

3.5 To allow for longitudinal expansion, a minimum gap of 2 mm per metre length between adjacent support rails should be provided. The cladding panels must not straddle this gap.

3.6 All design aspects of the installation should be checked by a suitably qualified engineer or other appropriately qualified person.

4 Practicability of installation

The products are suitable for installation by cladding contractors provided they have undergone suitable training. The Certificate holder can provide advice on installation if required.

5 Strength and stability

Wind loading



5.1 For design purposes, the following panel properties may be adopted:

permissible stress (aluminium sheet)	— 51 Nmm ⁻²
section modulus	— 1.85 cm ³ m ⁻¹
flexural rigidity	— 260 Nm ² m ⁻¹

5.2 Aluminium rivets or pinned brackets should be used to attach the panels to the support frame. The design of the fixings should ensure adequate capacity against wind loading.

5.3 To allow for panel expansion, fixings in clearance holes should be provided as required. The coefficient of thermal expansion of the panel may be taken to be 6.8 by 10⁻⁵ K⁻¹.

5.4 The maximum allowable wind loading will be the lesser of the values obtained by considering the panels and fixings separately.

5.5 When calculating wind loads, higher-pressure coefficients applicable to corners of the building should be used.

5.6 Design of the sub-frame should be such as to limit mid-span deflection to L/200 and cantilever deflection to L/150. The maximum panel centre deflection will be governed by specific project requirements but should not exceed the lesser of: 1/30th of the diagonal formed by four adjacent fixings, or 50 mm.

5.7 Design of the sub-frame attachment to the substrate wall should ensure adequate pull-out capacity due to wind suction.

5.8 A suitably qualified engineer must check the design and installation of the cladding system.

5.9 The supporting wall must be able to take the full wind, as well as any racking, loads on its own. No contribution from the cladding may be assumed in this regard.

5.10 Wind loads should be calculated in accordance with BS EN 1991-1-4 : 2005 and BS 6399-2 : 1997.

Impact

5.11 As the products are susceptible to damage from hard body impacts, it is recommended that their use is limited to locations where there is little possibility of such impacts. That is, at ground level in private areas where there is some incentive to exercise care, and at higher levels in public areas, as described in categories C to F of BS 8200 :1985.

6 Behaviour in relation to fire



6.1 The external surface of the panels has the reaction to fire classifications shown in Table 1. The reaction to fire classification of specific build-ups may be different and must be confirmed by an appropriately qualified fire expert or testing at a laboratory accredited by the United Kingdom Accreditation Service (UKAS) or other mutually recognised accreditation scheme.

Table 1 Reaction to fire classifications to BS EN 13501-1 : 2007

Product	Thickness	Reaction to fire classification	Reaction to fire classification report reference ⁽¹⁾
Larson PE	4 mm	E ⁽²⁾	16/13129-1954 M1 Part 2 dated 17.11.16
Larson FR	4 mm	B-s1, d0 ⁽³⁾	17/15103-1906 M3 Part 2 dated 2.5.18

(1) Copies are available from the Certificate holder on request

(2) Freely suspended panels

(3) Any colour, with metal fixings and sub-frame and an air gap over any substrate A2-s1, d0 or better.



6.2 The reverse side of the panels (facing into the cavity) has a rating shown in Table 1. Cavity barriers should be provided in accordance with the requirements of the documents supporting the national Building Regulations.

6.3 Designers should refer to the relevant national Building Regulations and guidance for alternative approaches and detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity barriers, fire stopping of services and combustibility limitations for other materials and components used in the overall wall construction, for example, support frames and thermal insulation.

Larson FR



6.4 In England, Wales and Northern Ireland the panels are not classified as 'non-combustible' or of 'limited combustibility' and may be used on buildings at any proximity to a boundary and with no storey more than 18 m above the ground.



6.5 In Scotland, the panels are 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.

6.6 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 m², or on any hospital or residential care building with a total storey area more than 200 m².

Larson PE



6.7 In England, Wales and Northern Ireland the products are not classified as non combustible or of limited combustibility and may be used on buildings with no storey 18 m or more above the ground and 1 metre or more from a boundary. With minor exceptions, the panels should be included in calculations of unprotected area.



6.8 In Scotland, the panels are not classified as 'non-combustible' and may be used on buildings more than 1 m from a boundary. With minor exceptions, the panels should be included in calculations of unprotected area.

6.9 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 m², or on any hospital or residential care building with a total storey area more than 200 m².

7 Air and water penetration



7.1 The products are suitable for use in back-ventilated and drained cladding systems.

7.2 The supporting wall must be watertight and reasonably airtight.

7.3 Providing the joints between panels are adequately baffled, the amount of water entering the cavity by wind driven rain will be minimal. Water collecting in the cavity due to rain or condensation will be removed by drainage and ventilation.

7.4 The air space between the back of the boards and the supporting wall or insulation should be as wide as possible and should allow for normal building tolerances.



8.1 For normal soiling, the surface may be cleaned using hot water/household detergent, applied with a suitable cleaning pad or sponge. Abrasive cleaners should not be used. For more difficult chemical soiling, the manufacturer's specialist advice must be sought.

8.2 Annual maintenance inspections should be carried out to ensure that rain-ware is complete and in good order and that the tiles, flashings and seals are in place and are secure.

8.3 Damaged panels should be replaced as soon as practicable following the manufacturer's instructions and observing all necessary health and safety regulations.

9 Durability



9.1 Based on historical evidence and testing, the products, when incorporated in a rainscreen cladding system can be expected to have an ultimate service life in excess of 30 years.

9.2 The products are resistant to all normal atmospheric corrosive agents and will withstand considerable distortion without loss of coating adhesion.

9.3 The performance of the coating will depend on the colour chosen, building location, façade aspect and the immediate environment. In a non-corrosive atmosphere, the products can be expected to retain a good appearance for up to 20 years. In coastal or severe industrial regions, this is reduced to 15 years. Colour change will be generally small and uniform on any one elevation although it may be more pronounced with vermilion, golden yellow and silver.

9.4 Based on proven technology and historical evidence, the bond between the aluminium sheets and the polyethylene core is considered durable.

9.5 The effect of differential thermal expansion between the panel constituents is negligible and allowance for expansion can be made by the appropriate use of clearance holes at fixings.

10 General

10.1 Larson PE and Larson FR Wall Cladding Panels must be installed in accordance with the manufacturer's recommendations, the requirements of this Certificate and specifications laid down by the consulting engineer.

10.2 Installers must be trained and approved by the Certificate holder who can provide technical assistance at the design stage and at the start of the installation.

10.3 If significant colour variations between batches is likely, it may be necessary to mix the panels from different pallets so as to obtain a uniform shade over the façade.

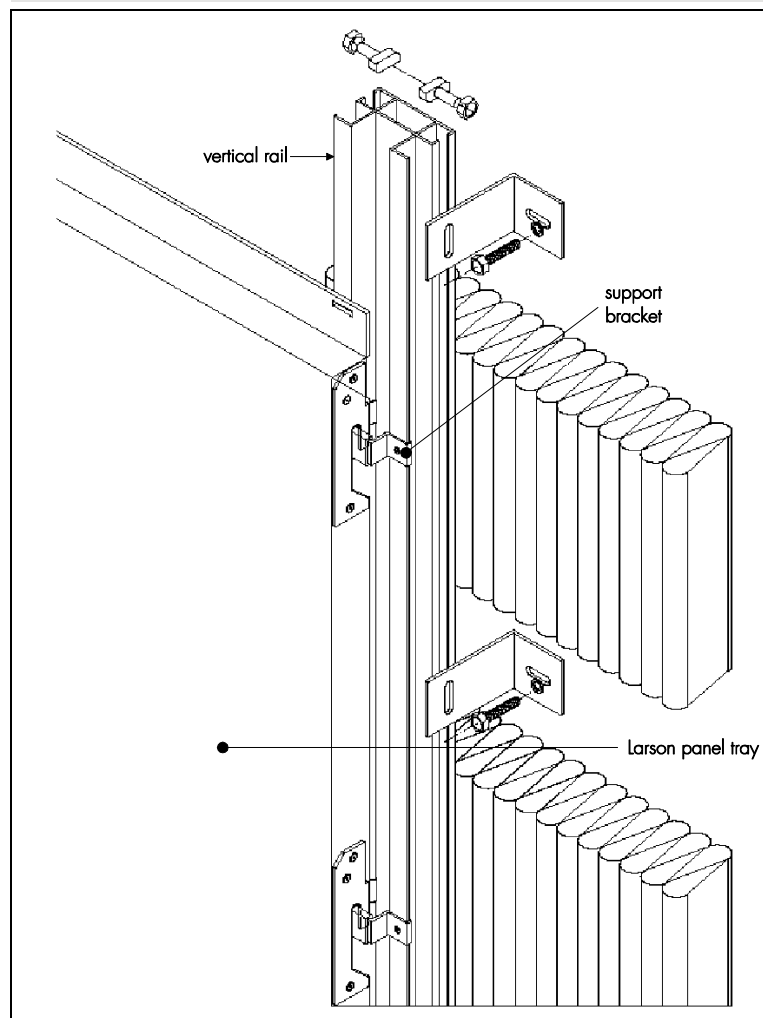
11 Procedure

11.1 Based on preliminary survey of the wall, and architectural/structural design, a grid layout for the sub-frame is first prepared.

11.2 After correct alignment and levelling, support brackets are riveted to previously installed vertical rails at predetermined positions, coinciding with the tray slots.

11.3 The trays are then hung from the support brackets (see Figure 2).

Figure 2 Typical installation



12 Investigations

12.1 Based on the Spanish Technical Approval, an assessment was made of Larson PE and Larson FR Wall Cladding Panels' resistance to wind and impact loading, durability, the production method and associated quality control procedures.

12.2 From test data, an assessment was made of the product's behaviour in relation to fire.

12.3 Based on a user survey, an assessment was made of the product's practicability of installation and its performance in use.

12.4 The Certificate holder's technical literature was examined for any inconsistencies and general content.

Bibliography

BS 476-6 : 1989 *Fire tests on building materials and structures — Method of test for fire propagation for products*
BS 476-7 : 1997 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*

BS 8414-1 : 2015 + A1 : 2017 *Fire performance of external cladding systems — Test method for non-loadbearing external cladding systems applied to the masonry face of a building*

BS 8414-2 : 2015 + A1 : 2017 *Fire performance of external cladding systems — Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 8200 : 1985 *Code of practice for design of non-loadbearing external vertical enclosures of buildings*

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

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

13 Conditions

13.1 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.

13.2 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.

13.3 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.

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

13.5 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.

13.6 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.