

Metrotile UK Limited

Unit 3
Sheldon Business Park
Sheldon Corner
Chippenham
Wiltshire SN14 0RQ

Tel: 01294 658514 Fax: 01294 658453

e-mail: sales@metrotile.co.uk

website: www.metrotile.co.uk



Agrément Certificate

07/4470

Product Sheet 7

METROTILE ROOFING SYSTEM

METROTILE MISTRAL

This Agrément Certificate Product Sheet⁽¹⁾ relates to Metrotile Mistral, a preformed aggregate-coated steel tile sheet for use on conventional steel or timber pitched roofs with a minimum roof pitch of 10°.

(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

Weathertightness — the product, when used with a suitable roof tile underlay, has satisfactory resistance to the passage of rain and snow (see section 6).

Strength and stability — the product has adequate resistance to the effects of wind loading likely to be met in service (see section 7).

Performance in relation to fire — the product can achieve a B_{ROOF}(t4) classification to BS EN 13501-5 : 2005 and be unrestricted in terms of proximity to a boundary, however restrictions may apply to completed roof assemblies, depending on the other material/components used and the overall construction (see section 9).

Durability — under normal service conditions, the product will have a life in excess of 40 years (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

Date of First issue: 15 March 2021

Hardy Giesler
Chief Executive Officer



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

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

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

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

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

Regulations

In the opinion of the BBA, Metrotile Mistral, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	B4(1)	External fire spread
Comment:	The product is restricted by this Requirement. See sections 9.3 and 9.4 of this Certificate.	
Requirement:	B3(2)	Internal fire spread (structure)
Comment:	The product may be restricted by this Requirement. See sections 9.1, 9.2 and 9.7 of this Certificate.	
Requirement:	B4(2)	External fire spread
Comment:	The product can be unrestricted by this Requirement. See sections 9.1 and 9.2 of this Certificate.	
Requirement:	C2(b)	Resistance to moisture
Comment:	The product can contribute to satisfying this Requirement. See section 6 of this Certificate.	
Regulation:	7(1)	Materials and workmanship
Comment:	The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.	
Regulation:	7(2)	Materials and workmanship
Comment:	The product is restricted by this Requirement. See sections 9.3 and 9.4 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 product can contribute to a construction satisfying this Regulation. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.	
Regulation:	9	Building standards applicable to construction
Standard:	2.1	Compartmentation
Standard:	2.2	Separation
Comment:	The product may be restricted by these Standards, with reference to clauses 2.1.5 ⁽²⁾ , 2.2.7 ⁽²⁾ and 2.2.10 ⁽¹⁾ . See sections 9.1, 9.2 and 9.7 of this Certificate.	
Standard:	2.6	Spread to neighbouring buildings
Comment:	The product is restricted by this Standard, with reference to clause 2.6.4 ⁽¹⁾⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See sections 9.3, 9.5 and 9.6 of this Certificate.	
Standard:	2.7	Spread on external walls
Comment:	The product is restricted by this Standard with reference to clause 2.7.1 ⁽¹⁾⁽²⁾ . See sections 9.3, 9.5 and 9.6 of this Certificate.	
Standard:	2.8	Spread from neighbouring buildings
Comment:	The product can be unrestricted by this Standard with reference to clause 2.8.1 ⁽¹⁾⁽²⁾ . See sections 9.1 and 9.2 of this Certificate.	
Standard:	3.10	Precipitation
Comment:	The product can contribute to satisfying this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.8 ⁽¹⁾⁽²⁾ . See section 6 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: Comments in relation to the 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 (as amended)

Regulation: 23(a)(i) **Fitness of materials and workmanship**
Comment: (iii)(b)(i) The product is acceptable. See section 11 and the *Installation* part of this Certificate.

Regulation: 28(b) **Resistance to moisture and weather**
Comment: The product can contribute to satisfying the requirements of this Regulation. See section 6 of this Certificate.

Regulation: 35(2) **Internal fire spread — Structure**
Comment: The product may be restricted by this Regulation. See sections 9.1, 9.2 and 9.7 of this Certificate.

Regulation: 36(a) **External fire spread**
Comment: The product is restricted by this Regulation. See sections 9.3 and 9.4 of this Certificate.

Regulation: 36(b) **External fire spread**
Comment: The product can be unrestricted under these Regulations. See sections 9.1 and 9.2 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* (1.2) and 3 *Delivery and site handling* (3.1) of this Certificate.

Additional Information

NHBC Standards 2021

In the opinion of the BBA, Metrotile Mistral, 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 7.2 *Pitched roofs*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product, in accordance with harmonised European Standard EN 14782 : 2006.

Technical Specification

1 Description

1.1 Metrotile Mistral is pressed from epoxy or acrylic-primed, zinc-aluminium-magnesium (ZM) alloy or aluminium-zinc (AZ) coated steel sheet to a shape simulating eight conventional tiles, with profiled interlocking upper and

lower edges (see Figure 1). The tiles have a mineral-filled acrylic coating incorporating stone granules and a clear acrylic glaze coat (see Figure 2).

Figure 1 Metrotile Mistral tiles and nailing points

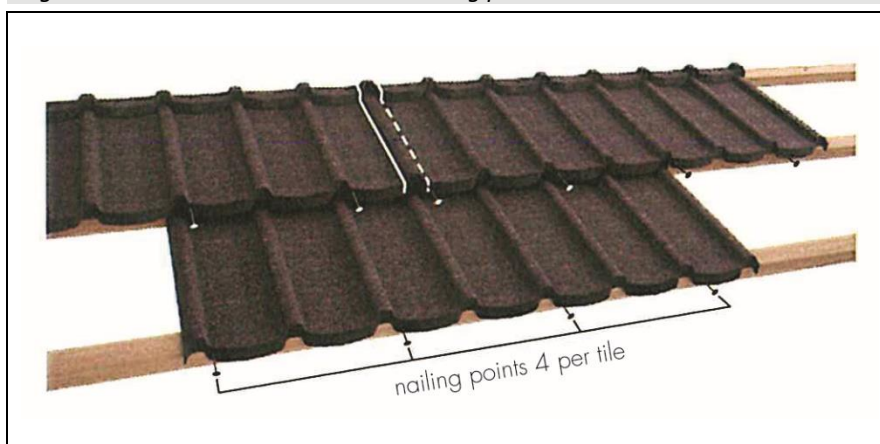
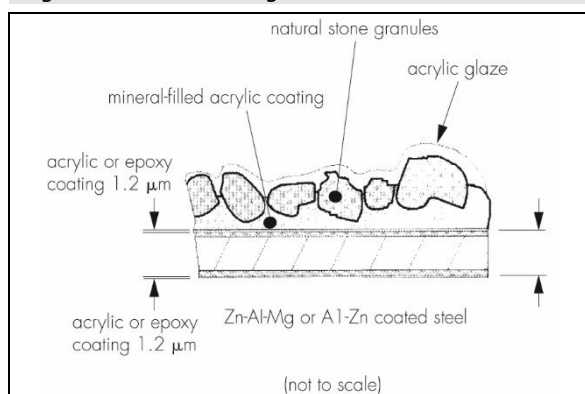


Figure 2 Section through tile



1.2 The tile has the nominal dimensions given in Table 1.

Table 1 Dimensions

Characteristic (unit)	Metrotile Mistral
Thickness of sheet (mm)	0.41
Length of sheet (mm)	1305
Cover length (mm)	1240
Width of sheet (mm)	415
Cover width (mm)	367
Upstand (mm)	25
Side lap (mm)	65
Weight of tile (kg)	2.98
Weight of tiled roof ($\text{kg}\cdot\text{m}^{-2}$)	6.54
Coverage per tile (m^2)	0.46

1.3 The tile is available in all colours manufactured by Roof Tile Group Europe NV.

1.4 Accessories⁽¹⁾ with the granulated finish, produced by pressing and coating to the same specification as described in section 1.1, are:

- ridge/hip cap — to cover 1150 mm
- standard barge cover — to cover 1150 mm
- side flashing — to cover 1150 mm
- barrel cap/vee ridge — to cover 370 mm.

(1) Additional flashings with matching decorative surfaces are available to order.

1.5 The Certificate holder can supply a guillotine and a tile-bending machine. Other accessories include:

- flat-headed tile-fixing nails 50 mm long by 2.8 mm diameter, serrated or annular grooved and painted. Galvanized steel is normally used, except in coastal areas where stainless steel should be used
- finishing kit of pigmented, acrylic-based emulsion and matching granules for use on vertically driven nail heads and to restore damaged areas.

1.6 Other accessories available, but outside the scope of this Certificate, include:

- complete roof ventilation systems
- gas flue ridge terminals
- clear polycarbonate vision tiles.

2 Manufacture

2.1 The tile is manufactured from steel sheet which has a hot-dip ZM coating of $250 \text{ g}\cdot\text{m}^{-2}$ or AZ coating of $150 \text{ g}\cdot\text{m}^{-2}$ to BS EN 10346 : 2015. The steel coils are slit, guillotined and pressed. The pressed blanks are coated on both sides with an epoxy or acrylic primer, and finished with a mineral-filled acrylic coating followed by stone granules and a clear acrylic glaze coat.

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 product is manufactured in Belgium by Roof Tile Group Europe NV and marketed in the UK by the Certificate holder.

2.4 The management systems of Roof Tile Group Europe NV has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by Bureau Veritas Quality International (Certificate BE0096445-1).

3 Delivery and site handling

3.1 The product is delivered to site on timber pallets 1400 mm long by 1100 mm wide. The maximum number of tiles per pallet is 360 giving a total weight of approximately 1059 kg.

3.2 During transport the edges and corners of tiles must be protected to prevent damage.

3.3 On site, the pallets should be stored on a firm, dry base away from the possibility of damage, covered to prevent water ingress, and as close as possible to the building where they are to be installed.

Assessment and Technical Investigations

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

Design Considerations

4 Use

4.1 Metrotile Mistral is satisfactory for use, in conjunction with a suitable roof tile underlay, as a weatherproof and decorative roof covering on conventional timber or steel structures at a minimum pitch of 10° .

4.2 To prevent electro-chemical corrosion, direct contact with copper or its alloys should be avoided and copper roofs should not drain onto the installation.

5 Practicability of installation

The tile should only be installed by roofers/tilers trained and approved by the Certificate holder.

6 Weathertightness



The product, with a suitable underlay, have satisfactory resistance to the passage of rain and snow.

7 Strength and stability

7.1 The product has satisfactory resistance to the effects of wind suction likely to be met in service.

7.2 The product weighs considerably less than conventional roofing materials, and must be securely attached to the structure to prevent wind uplift under adverse conditions.

8 Resistance to damage

8.1 The tile will not be deformed by normal maintenance traffic.

8.2 The tile may be deformed by impact. Damaged product can be replaced but care should be taken to prevent damage to adjacent tiles.

9 Performance in relation to fire

Roof pitches ≤ 70 degrees



9.1 When tested, a construction incorporating the product achieved the classification shown in Table 2 and is therefore unrestricted in terms of proximity to a boundary. See also section 9.2 of this Certificate.

Table 2 Resistance to external fire exposure

Classification	Method	Construction ⁽¹⁾	Report reference
B _{ROOF} (t4) ⁽¹⁾	EN 13501-5 : 2016	MetroBond (grey)	Warringtonfire 19012L

(1) Steel thickness 0.35 to 0.45 mm, bituminous roof tile underlay (optional), 30 mm by 37 mm battens or thinner, rafters 100 mm by 40 mm or thinner and 100 mm A1 mineral wool with or without facing.



9.2 This classification may not be achieved by other constructions and can also be affected by other components of the roof, eg insulation materials, substrates/ decking and membranes. These constructions should therefore be evaluated by reference to the requirements of the documents supporting the relevant national Building Regulations and any consequent restrictions imposed by those documents, on a case by case basis. In the absence of a classification, these constructions should not be used within 20 metres of a boundary (24 metres in Scotland).

Roof pitches $>70^\circ$



9.3 The Certificate holder has not declared a reaction to fire classification for the product to BS EN 13501-1 : 2018.



9.4 In England, Wales and Northern Ireland, the product may be used on buildings with no storey 18 m or more above the ground and 1 metre or more from a boundary, additional limitations apply on Assembly and recreation buildings. With minor exceptions, the product should be included in the calculations of unprotected area.



9.5 In Scotland, the product may be used on buildings more than 1 m from a boundary. With minor exceptions, the product should be included in calculations of unprotected area.

9.6 In Scotland, the product 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.

All roofs



9.7 Where the products are to be carried over compartment walls, designers must ensure that the roof/wall junction detail provides sufficient resistance to fire penetrating into the neighbouring compartment.

9.8 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 barriers, service penetrations and combustibility limitations for other materials and components used in the overall construction.

10 Maintenance



10.1 For maintenance work, roof ladders or crawling boards should be used, but care is still required to prevent damage. It is recommended that soft-soled shoes are worn.

10.2 Small areas where the coating has been damaged should be recoated using the finishing kit.

11 Durability



11.1 The acrylic and ZM or AZ alloy coatings will protect the steel substrate against corrosion and will give the product a life in excess of 40 years.

11.2 Localised maintenance treatment may be necessary within 30 years, to restore the appearance where chippings may have been lost or the coating eroded.

12 Reuse and recyclability

The product contains steel, which can be recycled.

Installation

13 General

13.1 The installation of Metrotile Mistral should comply with the requirements of BS 8000-0 : 2014, BS 8000-6 : 2013 and this Certificate.

13.2 The product can be installed at all temperatures likely to be met in roofing works. However, at temperatures below -10°C, extra care is required, particularly when driving nails and cutting and bending tiles.

13.3 The roof construction must be adequate to resist the loadings detailed in BS EN 1991-1-1 : 2002 and BS EN 1991-1-4 : 2005, and their UK National Annexes. The roof construction should be in accordance with the relevant requirements of BS 5534 : 2014.

13.4 The minimum batten sizes permitted depend on the rafter spacing, as detailed in Table 3.

Table 3 Batten sizes and rafter or roof truss centres

Minimum batten size (mm)	Rafter spacing (mm)
50 x 25	450
50 x 40	600
50 x 40	900
50 x 50	1200

13.5 The roof space and batten space must be adequately ventilated in accordance with BS 5250 : 2011.

13.6 Where timber boarding is laid on the rafters, a timber counter batten should be installed in accordance with BS 5534 : 2014.

13.7 The underlay must be to BS 8747 : 2007, Annex B, Type 1F or 5U, or covered by a BBA Certificate and installed in accordance with that Certificate.

14 Procedure

14.1 Rafters must be securely tied to the building structure, for example, with galvanized steel straps complying with BS EN 1996-1-1 : 2005, BS EN 1996-2 : 2006 or PD 6697 : 2010.

14.2 Where the rafters/trusses are spaced at 900 or 1200 mm centres, polypropylene or nylon tape is nailed across the rafters to support the underlay, unless an approved self-supporting underlay is used.

14.3 Battens are secured over the underlay and roof trusses and fixed at the spacings given in Figure 3. The fixings used to secure the battens to the rafters must be adequate to resist the predicted wind loads.

Figure 3 Spacing and fixing detail

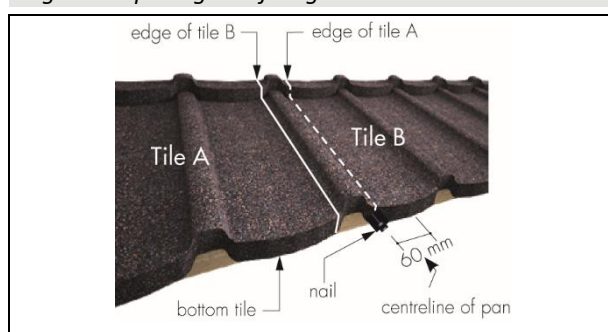
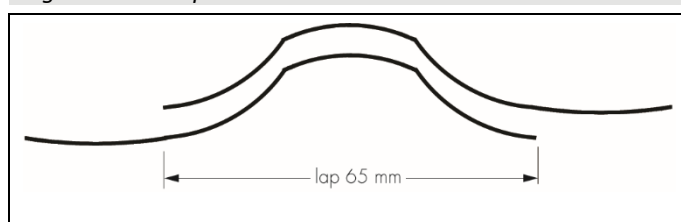


Figure 4 Overlap details



14.4 The tile is laid onto the battens with the front flange of the upper tilesheet overlapping the rear upstand of the lower. Adjacent tiles are overlapped with side laps of 65 mm (one corrugation).

14.5 Fixing is achieved by nailing through the front downturned flange into the side of the batten, at the rate of four nails per tilesheet (see Figures 1 and 3).

14.6 The tile is, preferably, cut and formed with a guillotine and a tile-bending machine, but small quantities may be cut with tin snips or sheet metal cutters, and bent by hand.

14.7 The accessories are cut, formed and installed as necessary to complete the installation.

15 Repair

When repairs are required, the Certificate holder's instructions must be followed.

Technical Investigations

16 Tests

Tests were carried out and the results assessed to determine:

- resistance to chipping
- ease of forming
- resistance to artificial weathering
- durability of tilesheets
- strength of tilesheets
- resistance to rain penetration
- corrosion resistance
- watertightness
- resistance to wind uplift
- resistance to thermal shock
- resistance to loading.

17 Investigations

17.1 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.

17.2 An assessment was made of the fire performance of the product.

Bibliography

- BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*
- BS 5534 : 2014 + A2 : 2018 *Slating and tiling for pitched roofs and vertical cladding — Code of practice*
- BS 8000-0 : 2014 *Workmanship on construction sites- Introduction and general principles*
- BS 8000-6 : 2013 *Workmanship on building sites — Code of practice for slating and tiling of roofs and walls*
- BS 8747 : 2007 *Reinforced bitumen membranes (RBMs) for roofing — Guide to selection and specification*
- BS EN 1991-1-1 : 2002 *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
- NA to BS EN 1991-1-1 : 2002 UK National Annex to *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads on buildings*
- 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 1996-1-1 : 2005 + A1 : 2012 *Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
- BS EN 1996-2 : 2006 *Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*
- BS EN 10346 : 2015 *Continuously hot-dip coated steel flat products for cold forming — Technical delivery conditions*
- BS EN 13501-5 : 2016 *Fire classification products and building elements — Classification using data from external fire exposure to roofs tests*
- BS EN ISO 9001 : 2015 *Quality management systems — Requirements*
- EN 14782 : 2006 *Self-supporting metal sheet for roofing, external cladding and internal lining — Product specification and requirements*
- PD 6697 : 2010 *Recommendations for the design of masonry structures to BS EN 1991-1-1 and BS EN 1996-2*

18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

18.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

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

18.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.