



## Creaton AG

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**Agrément  
Certificate  
No 04/4137**  
Second issue\*

Designated by Government  
to issue  
European Technical  
Approvals

## TONALITY CLADDING SYSTEMS

Panneaux de façade  
Verkleidungsplatten

## Product



• THIS CERTIFICATE OF CONFIRMATION RELATES TO TONALITY CLADDING SYSTEMS.

• The systems are open-jointed, back ventilated and drained cladding, comprising clay tiles hanging on three types of aluminium support rails, for use as protective/decorative cladding to external walls of buildings.

• It is essential that the cladding is installed in accordance with the manufacturer's instructions and the requirements of this Certificate.

• The systems are manufactured by Creaton AG and distributed in the UK by:

TI Tiles International Ltd  
Westview House, Devro Campus,  
Gartferry Road, Moodiesburn  
Chryston, Glasgow G69 0JE  
Tel: 08700 500981  
Fax: 08700 500982  
e-mail: sales@tilesint.co.uk

continued

## Regulations

### 1 The Building Regulations 2000 (as amended) (England and Wales)



The Secretary of State has agreed with the British Board of Agrément the requirements of the Building Regulations to which cladding products can contribute in achieving compliance. In the opinion of the BBA, Tonality Cladding Systems, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: **A1**

Loading

Comment:

The systems are acceptable for use as set out in sections 7.2 and 9.1 to 9.6 of this Certificate.

Requirement: **B4(1)**

External fire spread

Comment:

The systems are judged to meet the Class 0 requirements. See sections 10.1 to 10.5 of this Certificate.

Requirement: **C2(b)(c)**

Resistance to moisture

Comment:

The systems are not watertight but will resist the passage of rainwater to the supporting structure. See sections 11.1 to 11.5 of this Certificate.

Requirement: **Regulation 7**

Materials and workmanship

Comment:

The systems are acceptable. See sections 13.1 to 13.4 and the *Installation* part of this Certificate.

continued

Confirmation of a German Agrément No Z-33.1-567 issued by DIBt, 7 May 2002, to Creton AG.

## 2 The Building (Scotland) Regulations 2004 (as amended)



In the opinion of the BBA, Tonality Cladding Systems, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Mandatory Standards as listed below.

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The systems can contribute to a construction satisfying this Regulation. See sections 12.1 and 1.2 and 13.1 to 13.4 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	1.1(a)(b)	Structure
Comment:		The systems are acceptable, with reference to clause 1.1.1 <sup>(1)(2)</sup> . See sections 7.2 and 9.1 to 9.6 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The systems can contribute to satisfying this Standard with reference to clause 2.6.4 <sup>(1)(2)</sup> . See sections 10.1 to 10.5 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The systems can contribute to satisfying this Standard with reference to clause 2.7.1 <sup>(1)(2)</sup> . See sections 10.1 to 10.5 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The systems are not watertight but will resist the passage of rainwater to the supporting structure, with reference to clauses 3.10.1 <sup>(1)(2)</sup> to 3.10.3 <sup>(1)(2)</sup> . See sections 11.1 to 11.5 of this Certificate. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).

## 3 The Building Regulations (Northern Ireland) 2000 (as amended)



In the opinion of the BBA, Tonality Cladding Systems, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The systems are acceptable. See sections 13.1 to 13.4 and the <i>Installation</i> part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The systems are acceptable. See sections 12.1 and 12.2 of this Certificate.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		The systems are not watertight but will resist the passage of rainwater to the supporting structure. See sections 11.1 to 11.5 of this Certificate.
Regulation:	D1	Stability
Comment:		The systems are acceptable as set out in sections 7.2 and 9.1 to 9.6 of this Certificate.
Regulation:	E5	External fire spread
Comment:		The systems are judged to meet the Class 0 requirements. See sections 10.1 to 10.5 of this Certificate.

## 4 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 section: 6 *Delivery and site handling* (6.5 and 6.6).

## Technical Specification

### 5 Description

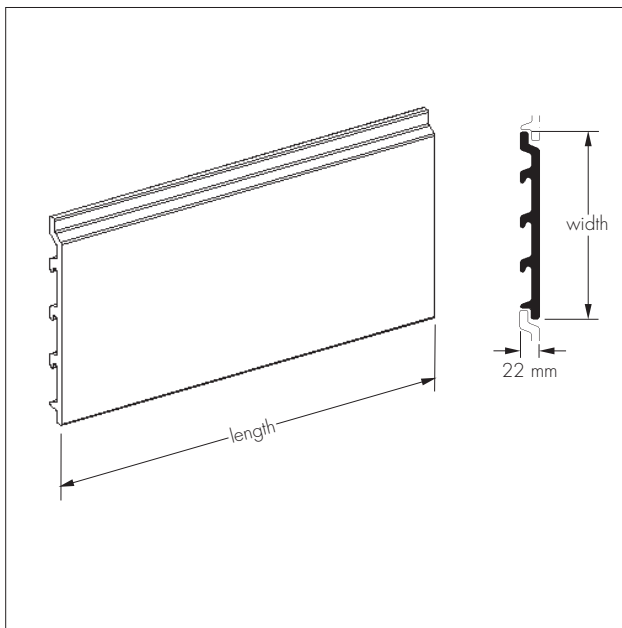
5.1 The Tonality Cladding Systems are open-jointed, back ventilated and drained systems comprising clay tiles hanging on three types of aluminium support rails.

5.2 The tiles are of one basic design<sup>(1)</sup> (see Figure 1), in solid through or glazed colours in the following module sizes and finishes:

- width (mm) 150, 175, 200, 225, 250, 300
- length (mm) 300 to 1200
- thickness (mm) 22
- surface smooth, grooved or pilaster strip finish.

(1) Mitred tiles are available for corners.

Figure 1 Tonality tile



5.3 This Certificate covers a single blend of clay tile. Due to their natural origin, some shade variation between tiles may occur.

5.4 The tiles have a mean dry density of  $30 \pm 2 \text{ kgm}^{-2}$  and a mean water absorption of 2.8%.

5.5 The tiles are formed by vacuum extrusion and fired in an automated kiln.

5.6 Quality control is exercised during the production of the tiles. Checks are made on appearance, dimensions, weight, moisture absorption and behaviour under freeze-thaw cycling. An inspection body, on behalf of DIBt, is responsible for ensuring that the quality of the system components is maintained.

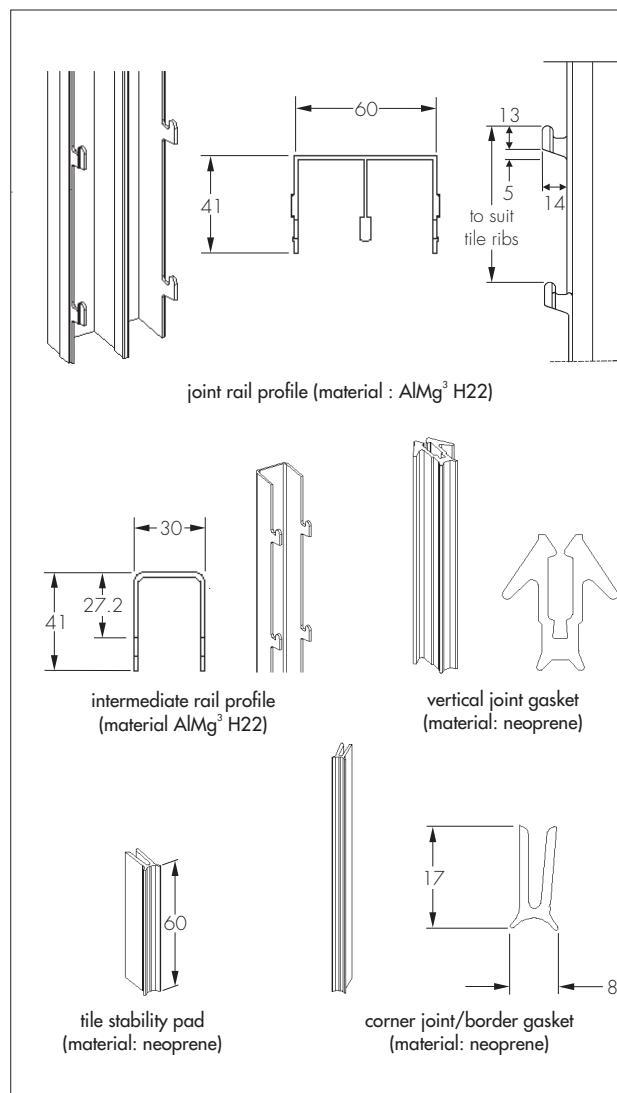
5.7 The components of the aluminium support rails, bought-in to agreed specifications, are shown in Figures 2 to 4.

5.8 The additional intermediate rail in Figure 2 is used in areas more susceptible to impact damage.

5.9 There is an 8 mm baffled opening between tiles horizontally. For the Classic Rail System (CLS) there is a black neoprene seal gasket between tiles vertically (see Figure 2). No rubber gaskets are required for the Adaptive Rail System (ADS) and Clinch Rail System (BAS) (see Figures 3 and 4). The geometry of each tile is shown in Figure 5.

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

Figure 2 Classic Rail System (CLS) (all dimensions in mm)



## 6 Delivery and site handling

6.1 Tiles are delivered to site polythene wrapped and banded on wooden pallets. Pallets should be stored on level ground and not stacked.

6.2 Each pallet of tiles bears a label with product details (such as type, size, quantity) and the edge of each tile is marked with an identification code including a manufacturing reference.

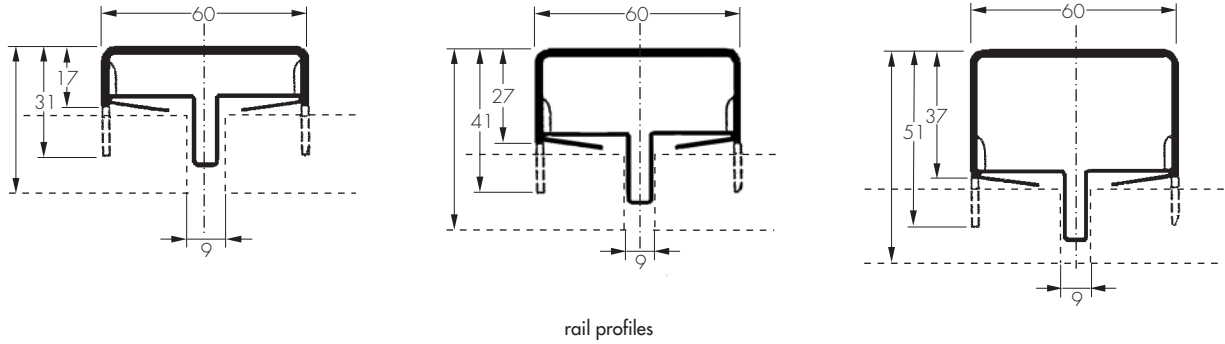
6.3 Rails are delivered to site banded onto a wooden pallet with ancillary items, eg neoprene gaskets, in separate cardboard boxes.

6.4 Packs of rails should be stacked horizontally on sufficient bearers to prevent distortion, to a maximum height of 1 m. Other components should be stored in a safe weatherproof store.

6.5 Tiles should be handled with care to avoid damage or breakage. Care is required when handling long lengths of rail, particularly at height.

6.6 Care should be exercised, when handling rails, to avoid injury from sharp edges. Protective clothing should be worn and all Health and Safety rules should be observed.

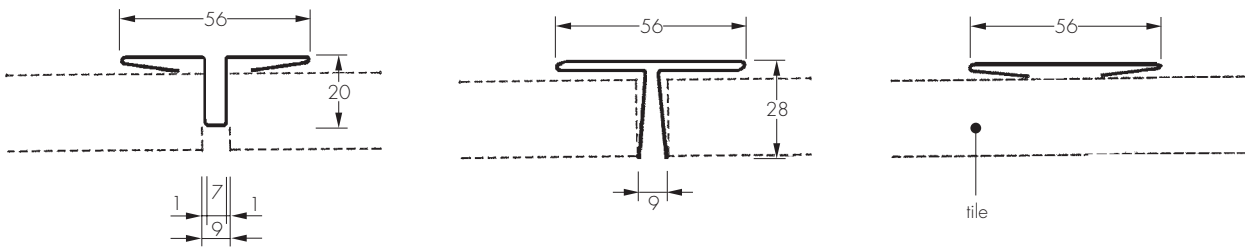
Figure 3 Adaptive Rail System (ADS) (all dimensions in mm, unless shown otherwise)



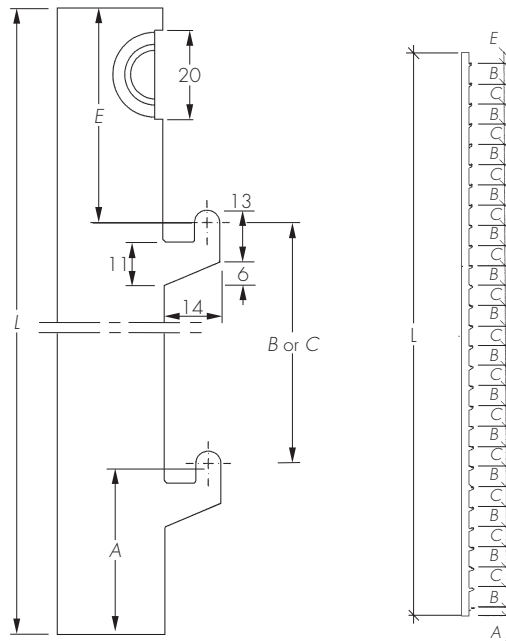
rail profiles

rail profile section properties

Profile depth	31 mm	41 mm	51 mm
Cross-sectional area (cm <sup>2</sup> )	1.72	2.12	2.52
Second moment of area (cm <sup>4</sup> )	0.28	1.22	3.13
Section modulus (cm <sup>3</sup> )	0.24	0.66	1.26



joint profiles



rail profile details

Grid	No of grids	L	A	B	C	E
150	18	2694	29	87.5	62.5	27.5
175	16	2794	39	87.5	87.5	42.5
200	14	2794	41	100	100	53
225	12	2694	93	100	125	26
250	11	2744	41	150	100	53
300	9	2694	91	150	150	53

Figure 4 Clinch Rail System (BAS) (all dimensions in mm)

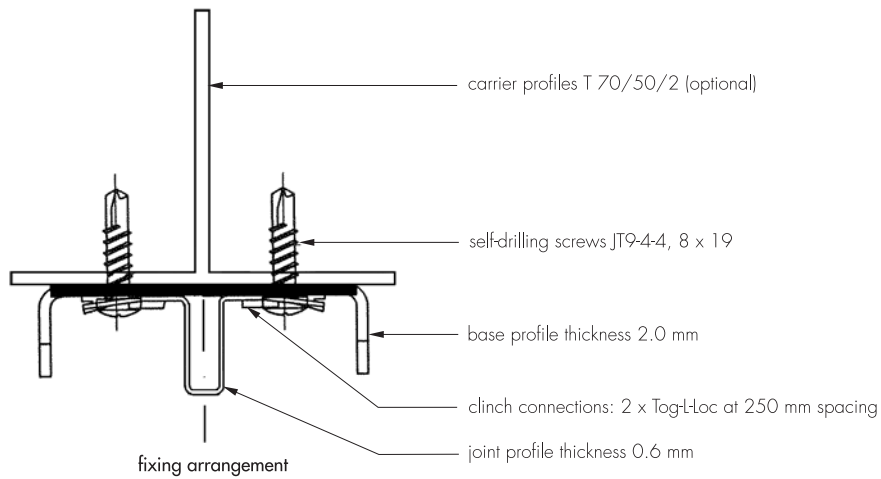
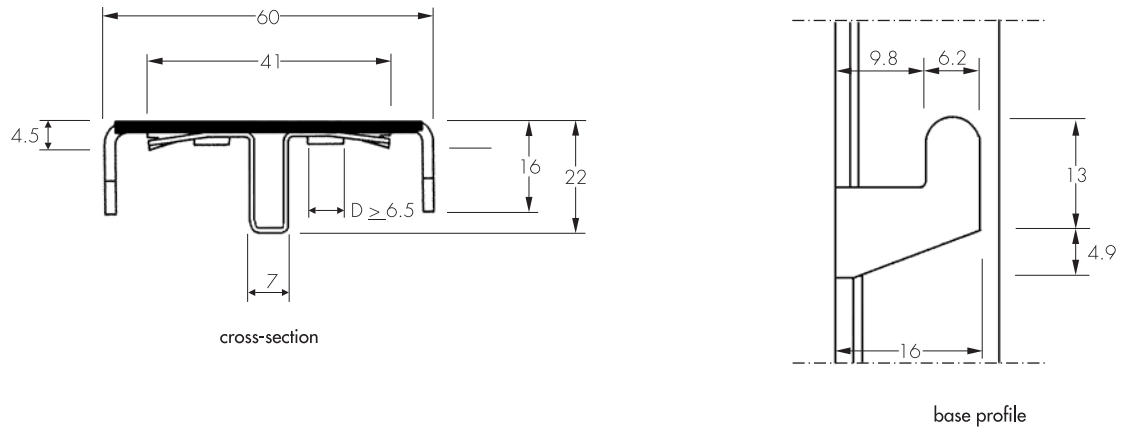
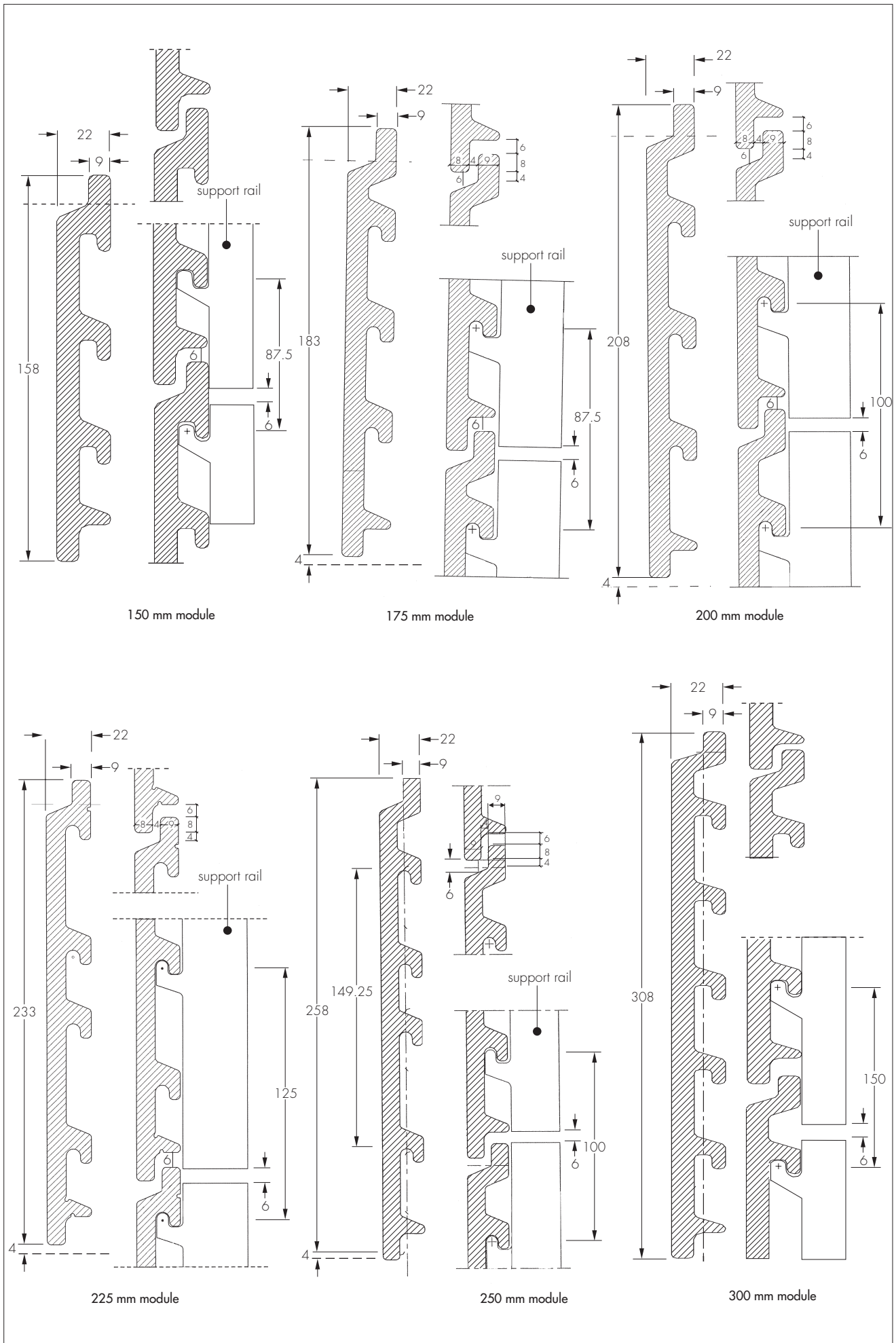


Figure 5 Tile geometries (all dimensions in mm)



## 7 General

7.1 Ventilation and drainage must be provided behind the cladding, suitable for a back ventilated and drained system. A 25 mm wide air space is provided behind the back face of the tiles together with a minimum ventilation area of 80 cm<sup>2</sup> per metre run. The ventilation openings should be suitably protected, or baffled, to prevent the ingress of birds, vermin and rain.



7.2 The wall and 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.

7.3 The wall to which the cladding is fixed should be watertight, reasonably airtight and resistant to the transmission of sound.

7.4 Insulation behind the cladding needs to be suitably fixed to the inner leaf to resist the forces of wind suction incident upon them as a result of the open joints of the cladding. Insulation should be of rigid type. The ventilation pathway behind the cladding must not be allowed to become blocked nor the insulation moved into a position where it may be vulnerable to wetting.

7.5 The coefficient of expansion for aluminium is 0.023 mm m<sup>-1</sup>K<sup>-1</sup>. The length of vertical rails should not exceed 2.8 m in continuous heights. A gap of 6 mm between ends of 2.8 m vertical rails should be adequate for temperature ranges normally encountered in the UK. This gap should not be covered by a tile. Installation temperatures between 5°C and 30°C are recommended.

7.6 A suitably qualified engineer must check all design aspects of each installation.

## 8 Practicability of installation

The system is suitable for installation by cladding contractors provided they have undergone suitable training.

## 9 Strength and stability

### Wind loading



9.1 Maximum allowable rail spacings, in metres corresponding to wind pressure and suction, for the three support systems are shown in Tables 1, 2 and 3.

9.2 When calculating wind loads, higher pressure coefficients applicable to corners of the building should be used. To minimise the effects of high wind loading at corners, or wherever abrupt changes in wind pressure are likely, appropriate angle profile should be used to support the tiles.

Table 1 Rail spacings — Classic and Adaptive and Clinch Rail Systems

Designation	Wind pressure (kNm <sup>-2</sup> )						
	+0.5	+0.80	+1.00	+1.50	+2.0	+2.5	+3.0
Tile 150 <sup>(1)</sup>	1.20	1.20	1.20	1.20	1.10	0.98	0.89
Tile 175	1.17	0.96	0.83	0.68	0.59	0.52	0.48
Tile 200	1.20	1.15	1.00	0.82	0.71	0.63	0.58
Tile 225	1.20	1.02	0.88	0.72	0.63	0.56	0.51
Tile 250 <sup>(1)</sup>	1.20	1.20	1.20	1.04	0.90	0.81	0.74
Tile 300 <sup>(1)</sup>	1.20	1.20	1.20	0.99	0.86	0.77	0.70

(1) Used only in Adaptive and Clinch Rail Systems.

Table 2 Rail spacings — Classic and Adaptive Systems

Designation	Wind suction (kNm <sup>-2</sup> )						
	-0.5	-0.80	-1.00	-1.50	-2.00	-2.50	-3.00
Tile 150 <sup>(1)</sup>	1.20	1.20	1.20	1.20	1.20	1.20	1.07
Tile 175	1.20	1.20	0.97	0.65	0.49	0.39	0.32
Tile 200	1.20	1.13	0.85	0.57	0.43	0.34	0.28
Tile 225	1.20	1.20	0.98	0.65	0.49	0.39	0.33
Tile 250 <sup>(1)</sup>	1.20	1.20	1.20	1.20	1.20	0.96	0.80
Tile 300 <sup>(1)</sup>	1.20	1.20	1.20	1.11	0.83	0.67	0.56

(1) Used only in Adaptive and Clinch Rail Systems.

Table 3 Rail spacings — Clinch Rail System

Designation	Wind suction (kNm <sup>-2</sup> )						
	-0.50	-0.80	-1.00	-1.50	-2.0	-2.5	-3.00
Tile 150	1.20	1.20	1.20	1.20	1.15	0.92	0.77
Tile 175	1.20	1.20	0.97	0.65	0.49	0.39	0.32
Tile 200	1.20	1.13	0.85	0.57	0.43	0.34	0.28
Tile 225	1.20	1.20	0.98	0.65	0.49	0.39	0.33
Tile 250	1.20	1.10	0.83	0.55	0.41	0.33	0.28
Tile 300	1.20	0.86	0.64	0.43	0.32	0.26	0.21

9.3 The sub-frame and the support rails should be so designed as to limit mid-span deflections to L/200, and cantilever deflections to L/150.

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

9.5 As the cladding is open-jointed, 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 systems may be assumed in this regard.

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

### Impact

9.7 In common with all clay tiles, the tiles are susceptible to damage from hard body impacts. It is recommended that use of the system is restricted to locations where there is some incentive to exercise care and little chance of hard body impacts, such as detailed under categories C, D and F in Table 2 of BS 8200 : 1985.

9.8 The level of safety may be increased to category B by the use of additional intermediate rails (see Figure 2).

## 10 Behaviour in relation to fire



10.1 The tiles and aluminium support rails are non-combustible and, therefore, may be regarded as having a Class 0 surface in relation to the Approved Document B of The Building Regulations 2000 (as amended) (England and Wales) and a 'low risk' material as defined in Annex 2C of The Building (Scotland) Regulations 2004 (as amended).

10.2 For the Classic Rail System, the rubber pads are largely protected by the tiles and, although the seal gasket extends between the tiles vertically up the installation, it is considered that these ancillary components are present in such relatively small quantities that they are unlikely to significantly affect the overall fire performance of the cladding.

10.3 For resistance to fire, the performance of a wall incorporating the cladding systems can only be determined by tests from a suitably accredited laboratory and is not covered by this Certificate.

10.4 The incorporation of combustible material behind the cladding should be avoided wherever possible; any insulation should be non-combustible.

10.5 Cavity barriers should be incorporated behind the cladding as required under the national Building Regulations, but should not block essential ventilation pathways, for example by use of intumescent cavity barriers (specific types not covered by this Certificate) or overhanging incombustible breaks at each floor level.

## 11 Air and water penetration



11.1 The cladding is not airtight or watertight, but intentionally open-jointed, back ventilated and drained.

11.2 The inner wall supporting the cladding must be watertight and reasonably airtight.

11.3 A water-repellent insulant is recommended where insulation is used behind the cladding.

11.4 Providing all joints are adequately baffled, the amount of water entering the cavity by wind-driven rain will be minimal. Any water collecting in the cavity due to rain or condensation will be removed by drainage and ventilation.

11.5 The air space between the back of the tiles and the supporting wall should be as wide as possible allowing for normal building tolerances. Guidance on recommended cavity widths is given in the NHBC Standards 2007, Chapter 6.9, D8 *Rainscreen cladding*.

## 12 Maintenance



12.1 The tiles are generally self-cleaning. However, where necessary, the tiles may be washed with warm water (max 30°C) without additional detergents, solvents or brushes. A high-pressure cleaning device (not water jets) may be used, but a small area should be tested to obtain the correct setting before the whole area is treated. For the removal of graffiti and other persistent stains the manufacturer's advice should be sought.

12.2 Damaged tiles should be replaced as soon as practicable in accordance with the manufacturer's procedure:

- locate damaged tile
- push tile directly above upwards by its normal clearance and keep in position
- remove damaged tile using similar procedure and place in container
- position replacement tile, push in and pull down over profile hooks
- push in and pull down tile directly above.

12.3 Checks should be carried out periodically to ensure that ventilation and drainage pathways remain clear.

## 13 Durability



13.1 Freeze-thaw tests indicate that there will be no significant change in the physical properties of the tiles on ageing.

13.2 The tiles will have a life equivalent to known, good quality, clay tiles, when used in normal exposure conditions in the United Kingdom (ie in excess of 35 years).

13.3 The aluminium rails and brackets will have a lifetime at least commensurate with the tiles they are supporting.

13.4 Based on knowledge of the material, the neoprene rubber fittings, used in the Classic Rail System, should have a service life similar to that of the tiles in normal UK conditions.

13.5 After natural weathering some slight change in colour of the tiles may occur. However, this is not likely to be progressive.

## Installation

### 14 General

14.1 Tonality Cladding Systems must be installed in accordance with the manufacturer's recommendations, the requirements of this Certificate and the specification laid down by the consulting engineer.

14.2 Reference should be made to Figures 2 to 5 when reading the procedural details given in section 15.

14.3 As colour variation within batches is minimal, it is not necessary to mix tiles from different pallets in order to obtain a uniform shade over the façade.

14.4 Horizontal rails and other components making up the sub-frame are outside the scope of this Certificate.

### 15 Procedure

15.1 The vertical rails are set out in accordance with the design drawings. This stage is critical and should be checked several times.

15.2 The first vertical rail is levelled and fixed to the wall or horizontal sub-frame.

15.3 The next vertical rail is levelled using the hooks, not the ends, and fixed to the wall or horizontal sub-frame.

15.4 For the Classic Rail System, the rubber pads and gasket are pushed onto the rails. The gasket should preferably be continuous over the height of the installation.

15.5 The tiles are then hooked onto the vertical rails working from the bottom upwards. No gasket is required for the Adaptive Rail System and the Clinch Rail System.

## Technical Investigations

The following is a summary of the technical investigations carried out on Tonality Cladding Systems.

### 16 Investigations

16.1 Based on DIBt Certificate No Z-33.1-567, an assessment was made of the three cladding systems' mechanical resistance, durability, behaviour in relation to fire and practicability of installation.

16.2 An assessment was made of the manufacturing process, associated quality control procedures, and the system's history of use.

16.3 The Certificate holder's technical literature and drawings were examined for any inconsistencies and general content.

## Additional Information

The Quality Management System of Creaton AG has been assessed and registered as meeting the requirements of EN ISO 9001 : 2000 by TÜV SÜD Management Services GmbH (Certificate No. 12 100 32787 TMS).

The Environmental Management System of Creaton AG has been assessed and registered as meeting the requirements of EN ISO 14001 : 2004 by TÜV SÜD Management Services GmbH (Certificate No. 12 104 32787 TMS).

## Bibliography

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 ISO 9001 : 2000 *Quality management systems — Requirements*

## Conditions of Certification

### 17 Conditions

17.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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.

17.2 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

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

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- remain covered by a valid German Agrément; and
- are reviewed by the BBA as and when it considers appropriate.

17.4 In granting this Certificate, the BBA is not responsible for:

- 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
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

17.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.



In the opinion of the British Board of Agrément, Tonality Cladding Systems are fit for their intended use provided they are installed, used and maintained as set out in this Certificate. Certificate No 04/4137 is accordingly awarded to Creaton AG.

On behalf of the British Board of Agrément

Date of Second issue: 25th February 2008

Head of Approvals  
— Engineering

Chief Executive

*\*Original Certificate issued on 23rd August 2004. This amended version includes change of tile sizes, clarification of the support system, reference to revised Building Regulations and new Conditions of Certification.*

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