



## Trespa International B.V.

P O Box 110  
6000 AC Weert  
The Netherlands  
Tel: 00 31 0495 458358 Fax: 00 31 0495 458570  
e-mail: infonederland@trespa.com  
website: www.trespa.com

**Agrément  
Certificate  
No 99/3629**  
Second Issue\*

Designated by Government  
to issue  
European Technical  
Approvals

## TRESPA METEON CLADDING SYSTEMS

Panneaux de façade  
Verkleidungsplatten

## Product




• THIS CERTIFICATE OF CONFIRMATION REPLACES CERTIFICATE No 91/2628 AND RELATES TO TRESPA METEON CLADDING SYSTEMS, INCORPORATING TRESPA METEON CLADDING PANELS AND FIXING METHODS.

- The systems have been assessed for use externally on buildings as a decorative and protective facing, fixed via timber battens or aluminium sub-frames.
- It is essential that the cladding panels are installed in accordance with the manufacturer's instructions and the requirements of this Certificate.

continued

## Regulations — Detail Sheet 1

### 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, Trespa Meteon 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:

When designed as specified in accordance with the tinted areas in the *Design Data – General and Strength and stability* sections of these Front Sheets and the tinted area in the *Strength and stability* section of Detail Sheet 3, the systems have sufficient strength and stiffness to accept wind loads and to transfer them to the supporting structure.

Requirement: B4(1)

External fire spread

Comment:

The systems are acceptable for use as dictated by the results and considerations included in the tinted areas in the *Behaviour in relation to fire* section of these Front Sheets.

Requirement: C2(b)(c)

Resistance to moisture

Comment:

The cladding panels will resist the passage of rainwater to the supporting structure. See the tinted areas in the *Air and water penetration* section of these Front Sheets.

continued

- The systems are marketed in the UK by Trespa UK Limited, Grosvenor House, Hollinswood Road, Central Park, Telford, Shropshire TF2 9TW, Tel: 01952 290707, Fax: 01952 290101.

Confirmation of a Dutch Agrément Certificate issued by Intron Certification on 17th March 2004.

Note: Detail Sheet 3 is not included in the Dutch Agrément Certificate.

These Front Sheets, which provide information common to all parts of the system together with specific information on the Trespa Meteor Panels, must be read in conjunction with the accompanying Detail Sheets, giving details of fixing methods.

# Electronic Copy

Requirement: Regulation 7 Materials and workmanship  
Comment: The systems are acceptable. See the tinted areas in the *Durability* section of these Front Sheets.

## 2 The Building (Scotland) Regulations 2004



In the opinion of the BBA, Trespa Meteor 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	Fitness and durability of materials and workmanship
Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The systems can contribute to a construction satisfying this Regulation. See the tinted areas in the <i>Durability</i> section of these Front Sheets and the <i>Installation</i> parts of this Certificate.
Regulation:	9	Building standards – construction
Standard:	1.1(a)(b)	Structure
Comment:		When designed as specified in accordance with the tinted areas in the <i>Design Data – General</i> and <i>Strength and stability</i> sections of these Front Sheets and the tinted area in the <i>Strength and stability</i> section of Detail Sheet 3, the systems have sufficient strength and stiffness to resist wind loads when calculated in accordance with clause 1.1.1 <sup>(1)(2)</sup> of this Standard, and to transfer them to the supporting structure.
Standard:	2.4	Cavities
Standard:	2.6	Spread to neighbouring buildings
Comment:		The systems are acceptable for use as dictated by the results and considerations included in the tinted areas in the <i>Behaviour in relation to fire</i> section of these Front Sheets, with reference to clauses 2.6.1 <sup>(1)(2)</sup> and 2.6.2 <sup>(1)(2)</sup> of these Standards.
Standard:	3.10	Precipitation
Comment:		The cladding panels will resist the passage of rainwater to the supporting structure, with reference to clauses 3.10.1 <sup>(1)(2)</sup> , 3.10.2 <sup>(1)(2)</sup> , 3.10.3 <sup>(1)(2)</sup> and 3.10.5 <sup>(1)(2)</sup> of this Standard. See the tinted areas in the <i>Air and water penetration</i> section of these Front Sheets.  (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).

## 3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, Trespa Meteor 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 the tinted areas in the <i>Durability</i> section of these Front Sheets.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		The cladding panels will resist the passage of rainwater to the supporting structure. See the tinted areas in the <i>Air and water penetration</i> section of these Front Sheets.
Regulation:	D1	Stability
Comment:		When designed as specified in accordance with the tinted areas in the <i>Design Data – General</i> and <i>Strength and stability</i> sections and the tinted area in the <i>Strength and stability</i> section of Detail Sheet 3, the systems have sufficient strength and stiffness to accept wind loads and to transfer them to the supporting structure.
Regulation:	E5	External fire spread
Comment:		The systems are acceptable for use as dictated by the results and considerations included in the tinted areas in the <i>Behaviour in relation to fire</i> section of these Front Sheets.

## 4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See section: 8 *Practicability of installation* of these Front Sheets.

## Technical Specification

### 5 Description

5.1 Trespa Meteon Cladding Systems comprise Trespa Meteon panels fixed to buildings, via conventional timber battens or purpose-made aluminium sub-frames and provide a protective and decorative facing for external applications.

5.2 The panels are formed under high temperature and pressure from thermosetting resins, homogeneously reinforced with cellulose fibres. During the manufacturing process a pigmented decorative surface layer is integrated into the products.

5.3 The panels are available in two grades, standard and FR (fire resistant).

5.4 The panels are available in three standard sizes (shown below) and four thicknesses (see Table 1):

- 1530 mm x 3050 mm
- 1860 mm x 2550 mm
- 1860 mm x 3650 mm.

Table 1 Panel thicknesses and weights

Nominal thickness (mm)	Weight (kgm <sup>-2</sup> )
6	8.4
8	11.2
10	14.0
13	18.2

5.5 The panels are available in a range of colours made up from approved base pigments.

5.6 Strength characteristics of the panels are:  
 modulus of elasticity  $\geq 8500 \text{ Nmm}^{-2}$   
 flexural strength  $\geq 120 \text{ Nmm}^{-2}$

5.7 The fixings and the purpose-made aluminium sub-frame system are covered in the accompanying Detail Sheets. Other sub-frame systems, trims and ancillary items are outside the scope of this Certificate.

5.8 Factory production control of the panels at the Trespa factory in Holland is monitored by Intron Certification.

### 6 Delivery and site handling

6.1 Panels are stacked on pallets, packed in plastic sheets and banded. Every full-size panel carries a label bearing the manufacturer's name and production batch number and a label bearing the BBA identification mark incorporating the number of this Certificate.

6.2 The panels and ancillary items must be stored in a dry store room away from damp areas and in normal ambient conditions.

6.3 Stacked panels should be stored horizontally on a flat surface. A protective sheet must be placed between panels and the stack covered to protect against the ingress of foreign particles between the panels.


6.4 To avoid scratching, each panel must be lifted up clear of the remaining stack, and not slid across underlying panels.

## Design Data

### 7 General

7.1 Trespa Meteon Cladding Systems panels are suitable for fixing to the studs of a timber-frame building via timber battens, and to masonry or concrete walls, via timber battens or aluminium sub-frame. The fixing of timber battens or aluminium sub-frame to the substructure is outside the scope of this Certificate.

7.2 The designer should ensure that the strength and integrity of the intended substrate is sufficient to take the full wind load, as well as any racking loads. No contribution from the cladding system may be assumed in this regard (see sections 7.3 and 7.4).

7.3  Masonry or concrete to which the support work and cladding are fixed should be structurally sound and have been constructed in the conventional manner in accordance with one or more of the following technical specifications:

- BS 5628-1 : 2005 and BS 5628-3 : 2005
- BS 8110-1 : 1997 and BS 8110-2 : 1985
- Section 1, Part C of Approved Document A1/2 to The Building Regulations (England and Wales)
- The *Small Buildings Guide*, for compliance with Part C of the Technical Booklet for compliance with The Building (Scotland) Regulations
- Technical Booklet D *Structure*, to The Building Regulations (Northern Ireland).

7.4 Timber stud walls and timber support work should be structurally sound and have been constructed in accordance with BS 5268-2 : 2002 and preservative treated in accordance with BS 5268-5 : 1989. Studding and framing should be adequately supported by noggings to ensure rigidity. Where timber stud walls or battens are preservative treated with aqueous, copper-based preservatives, care must be taken to ensure that sufficient time is allowed for complete fixation of the preservative (approximately seven days) before the cladding is secured.

7.5 Aluminium sub-frames should be constructed in accordance with BS 8118-1 : 1991.

# Electronic Copy

7.6 Panels may undergo hygrothermal movement up to 2.5 mm per metre in both length and width. A 10 mm gap between panels is recommended to accommodate any such movement.

7.7 To prevent damage to the external wall resulting from condensation in the cavity and/or rain penetration behind the cladding, ventilation should be provided as follows:

- a minimum of 5000 mm<sup>2</sup> per metre ventilation openings at the top and bottom of the installation above and below window/door openings, and cuts into any horizontal battens. At least one dimension of the ventilation openings should not be greater than 10 mm to restrict the ingress of vermin. Additional ventilation is required for vertical runs exceeding 20 m and for buildings with high internal relative humidity (see section 11.1). Particular care needs to be taken to ensure that adequate ventilation is provided behind cladding attached to horizontal timber battens fixed directly to the substrate
- further guidance on ventilation and weather resistance requirements in rainscreen cladding systems are given in the NHBC Standards Chapter 6.9-D7(b).

## 8 Practicability of installation

The systems are easy to install by competent trained operatives under normal site conditions using equipment and techniques commonly used for claddings. However, care needs to be exercised when installing cladding panels above ground-floor level.

## 9 Strength and stability

### Wind loading

9.1 The systems must be designed by suitably qualified engineers or other appropriately qualified persons.

9.2 Where increased strength and stability are required, consideration should be given to reducing the spacing of the fixings and supporting frame members.


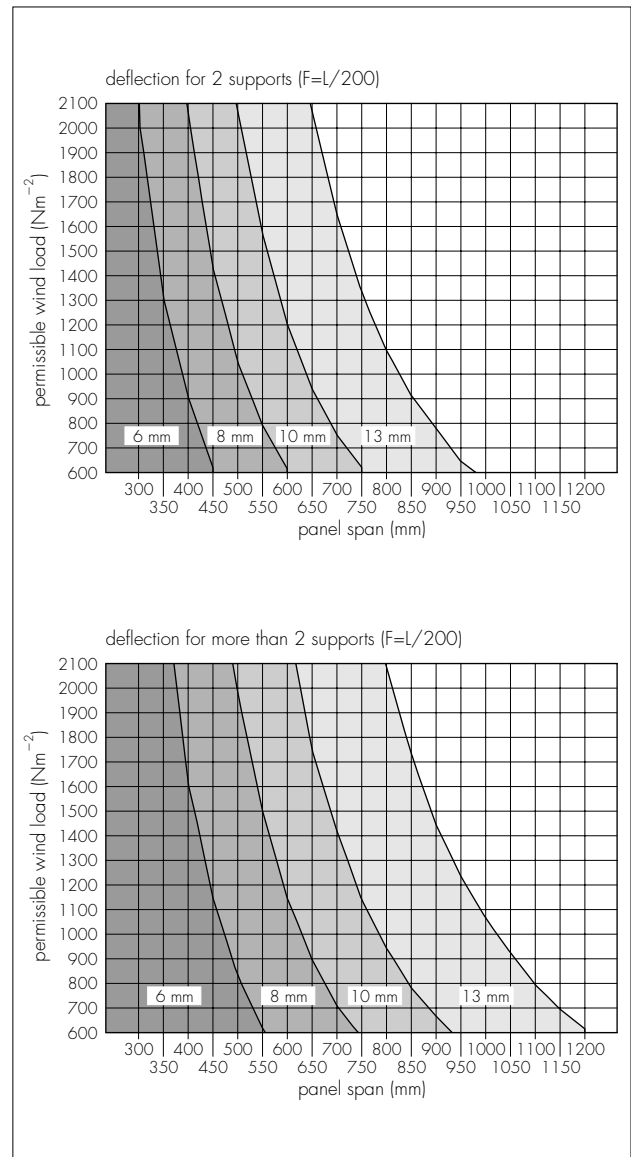
 9.3 The panels should be installed in accordance with the wind load/span graphs given in Figure 1, based on a limiting deflection of span/200 and a safety factor of 10 over ultimate panel failure. Wind loads should be calculated in accordance with BS EN 1991-1-4 : 2005 and BS 6399-2 : 1997.


Figure 1 Wind load — panel span data



9.4 Information on the fixings is given in the accompanying Detail Sheet.

9.5 The panels should not be taken into account when designing a timber stud wall to resist racking forces.

### Impact strength

 9.6 The panels have adequate resistance to the hard and soft body impacts likely to occur in practice and are satisfactory for use in the locations described in categories B to F of BS 8200 : 1985.

## 10 Behaviour in relation to fire


 10.1 When tested in accordance with BS 476-6 : 1989 for fire propagation, and BS 476-7 : 1987 for surface spread of flame, the panels achieved the results shown in Table 2.

Table 2 Fire test data

Fire test	Panel grade	
	Standard	FR
Surface spread of flame rating	2	1
Fire propagation indices		
	l	19.0
	i <sub>1</sub>	1.0
	i <sub>2</sub>	13.1
	i <sub>3</sub>	4.9
		9.8
		0.8
		4.6
		4.4

10.2 On the evidence of the results shown in Table 2, the FR panels meet the Class 0 requirements of the Approved Document B of The Building Regulations 2000 (as amended) (England and Wales) and may be taken as 'low risk' as defined in Annex 2C of The Building (Scotland) Regulations 2004.

10.3 When determining the minimum distance between the sides of a building and the relevant boundary, any area of wall (with the appropriate fire resistance) covered by a combustible cladding is counted as an unprotected area amounting to half the actual area of the cladding.

10.4 Due consideration should always be given to any combustible materials behind the cladding which may become exposed in the event of a fire. Cavity barriers should be incorporated behind the cladding as required under the relevant building regulations.

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

## 11 Air and water penetration



11.1 The systems are suitable for use as drained and back-ventilated rainscreen provided:

- adequate ventilation is allowed in accordance with BS 8200 : 1985, BS 5250 : 2002. See section 7.7 of these Front Sheets.
- vertical runs do not exceed 20 m without the addition of further ventilation points, equivalent to 5000 mm<sup>2</sup> openings per horizontal metre run
- where internal relative humidity conditions in a building exceed 65% (maximum normal domestic) and where a wall does not incorporate vapour checks, additional ventilation openings (minimum 5000 mm<sup>2</sup> per horizontal metre run) should be provided at vertical spacings of 8 m (maximum)
- provision must be made for water penetrating the cladding to drain away at the base.

11.2 The use of a vapour-permeable water barrier is recommended when the cladding is installed on a wall not fully watertight.

11.3 When insulation is incorporated behind open-jointed cladding (see section 14.3), the thermal resistance of the insulation may be reduced as it becomes wet. For these installations the use of a vapour-permeable water barrier in front of the insulation should be considered.

## 12 Maintenance

12.1 Annual maintenance inspections should be carried out to ensure that rainware is complete and in good order, that flashings, seals and fastenings are in place and are secure, and to establish whether maintenance painting is necessary.

12.2 Maintenance painting should be undertaken at appropriate intervals, or when these inspections show it to be necessary. For advice on maintenance intervals and suitable paint systems, the Certificate holder should be consulted.

## 13 Durability



13.1 The durability and service life of the system will depend upon the building location, façade aspect, immediate environment, intended use of the building and general condition of the system components.

13.2 Providing regular maintenance is carried out, as described in section 12 and in accordance with the Certificate holder's instructions, the product should have an ultimate service life in excess of 50 years.

13.3 In general, any colour change will be slight and uniform on any one elevation, and the product will have a decorative life of at least 15 years in heavily polluted areas and at least 20 years in other areas. A lower decorative life for dark colours is possible in exposed conditions.

## Installation

### 14 General

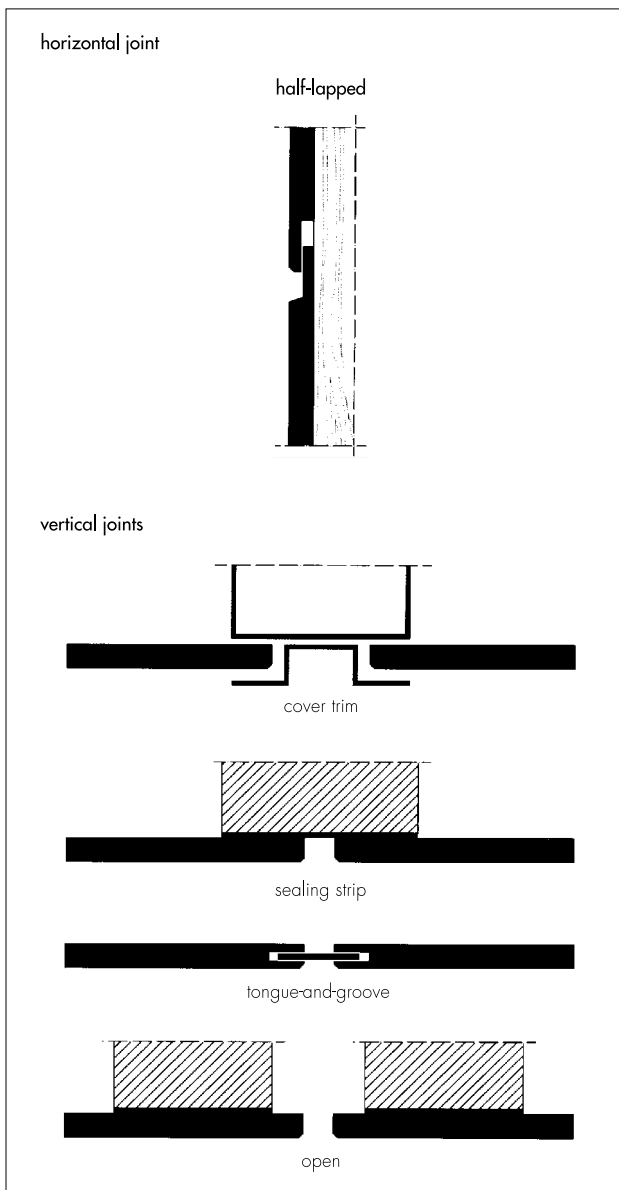
14.1 Installation of Trespa Meteor Cladding Systems must be carried out in accordance with the manufacturer's instructions.

14.2 A minimum 10 mm wide gap must be allowed between all panel edges to accommodate hygrothermal movement (see section 7.6).

14.3 Panels may be joined with open or closed joints (see Figure 2). Closed joints may be achieved by use of a metal, plastic or rubber sealing strip behind adjoining panels, a tongue-and-groove joint, a half-lapped joint (panel thickness 8 mm minimum), or a cover trim. For all joints the manufacturer's recommendations must be observed. Care must be taken to ensure that closed jointing does not restrict panel movement. The use of sealants around the joints is not recommended.

14.4 Fixing details are given in the accompanying Detail Sheets.

Figure 2 Joints



## Technical Investigations

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

### 15 Tests

15.1 An examination was made of test data relating to:

- surface spread of flame
- fire propagation.

15.2 In the assessment leading to the issue of the Dutch Agrément Certificate an examination was made of:

- hard and soft body impact strength
- UV resistance and colour fastness
- SO<sub>2</sub> resistance
- swelling and water absorption
- modulus of elasticity with four-part bending.

### 16 Investigations

16.1 An inspection of the manufacturing operation and quality control procedures was undertaken by BDA-Intron B.V.

16.2 Under the assessment leading to the issue of Certificate No 91/2628 the following investigations were carried out:

- site visits to assess performance in use and practicability of installation
- evaluation of the effectiveness of the system as a back-ventilated rainscreen with open or closed joints.

An examination was made of independent data relating to:

- hygrothermal behaviour
- emission of toxic substances
- durability.

## Bibliography

BS 476-6 : 1989 *Fire tests on building materials and structures — Method of test for fire propagation for products*

BS 476-7 : 1987 *Fire tests on building materials and structures — Method for classification of the surface spread of flame of products*

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 5268-2 : 2002 *Structural use of timber — Code of practice for permissible stress design, materials and workmanship*

BS 5268-5 : 1989 *Structural use of timber — Code of practice for the preservative treatment of structural timber*

BS 5628-1 : 2005 *Code of practice for the use of masonry — Structural use of unreinforced masonry*

BS 5628-3 : 2005 *Code of practice for the use of masonry — Materials and components, design and workmanship*

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

BS 8110-1 : 1997 *Structural use of concrete — Code of practice for design and construction*

BS 8110-2 : 1985 *Structural use of concrete — Code of practice for special circumstances*

BS 8118-1 : 1991 *Structural use of aluminium — Code of practice for design*

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*

## 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, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, 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 Dutch 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 or 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 or in the future; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any present or future 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, Trespa Meteon Cladding Systems are fit for their intended use provided they are installed, used and maintained as set out in this Certificate. Certificate No 99/3629 is accordingly awarded to Trespa International B.V.

On behalf of the British Board of Agrément

Date of Second issue: 31st October 2006

Chief Executive

*\*Original Certificate issued on 17th August 1999. This amended version includes an addition to the Certificate holder's contact details, updated Building Regulations and Standards, revised Maintenance and Durability statements and new Conditions of Certification.*

# Electronic Copy

---

**British Board of Agrément**

P O Box No 195, Bucknalls Lane  
Garston, Watford, Herts WD25 9BA  
Fax: 01923 665301

©2006

e-mail: [mail@bba.star.co.uk](mailto:mail@bba.star.co.uk)  
website: [www.bbacerfs.co.uk](http://www.bbacerfs.co.uk)



For technical or additional information,  
contact the Certificate holder (see  
front page).  
For information about the Agrément  
Certificate, including validity and  
scope, tel: Hotline 01923 665400,  
or check the BBA website.



Trespa International B.V.

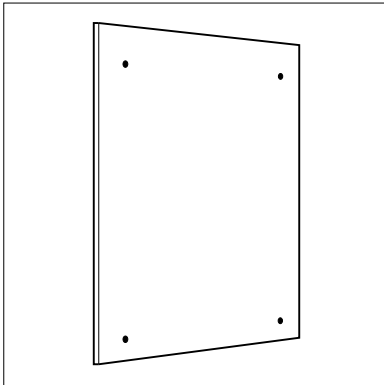
Certificate No 99/3629

**DETAIL SHEET 2**

Second issue\*

**FIXINGS**

## Product



- THIS DETAIL SHEET RELATES TO THE STANDARD FIXINGS FOR USE WITH TRESPA METEON CLADDING SYSTEMS PANELS.
- It is essential that the fixings are installed in accordance with the manufacturer's instructions and the requirements of this Certificate.
- The fixing of timber battens and aluminium sub-frames to the substrate is outside the scope of this Detail Sheet, as are the hook connections which form a part of the invisible-fix system.
- The fixings are part of a Dutch Agrément Certificate relating to Trespa Meteon panels issued by Intron Certification on 1st January 1995.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations, information common to all parts of the systems, specific information on Trespa Meteon panels, and the Conditions of Certification.

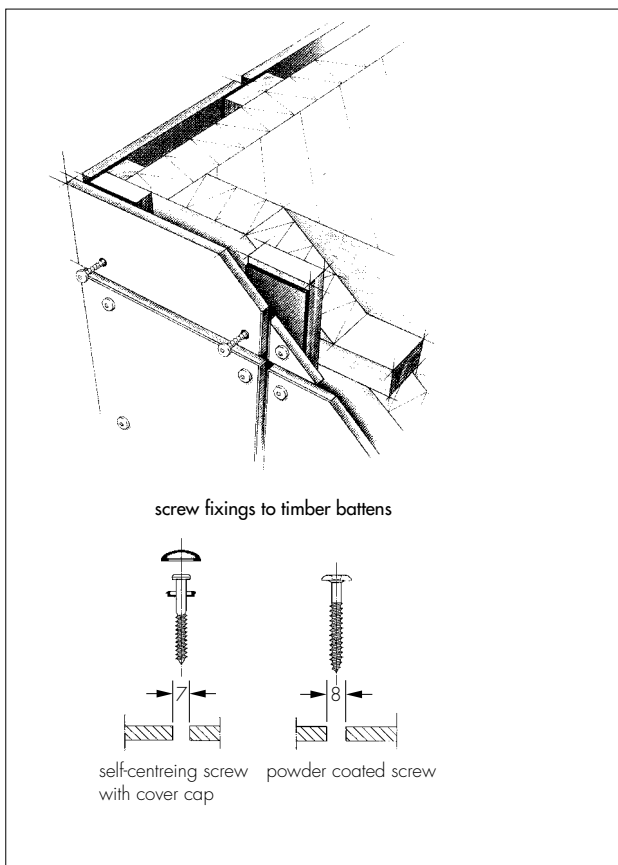
## Technical Specification

### 1 Description

1.1 Standard fixings include:

- visible screw fixings to timber battens (see Figure 1)

Figure 1 Visible screw fixings to timber battens



- visible rivet fixings to aluminium sub-frames (see Figure 2)
- invisible fixings for use where aluminium hooks locate onto aluminium rails, which are attached to the substrate by battens or an aluminium sub-frame (see Figure 3).

Figure 2 Visible rivet fixings to aluminium sub-frames

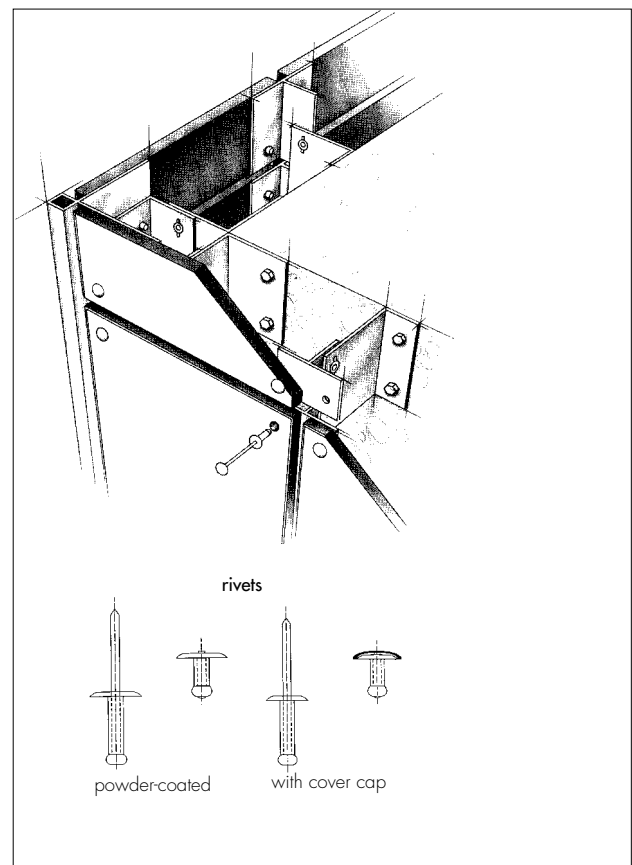
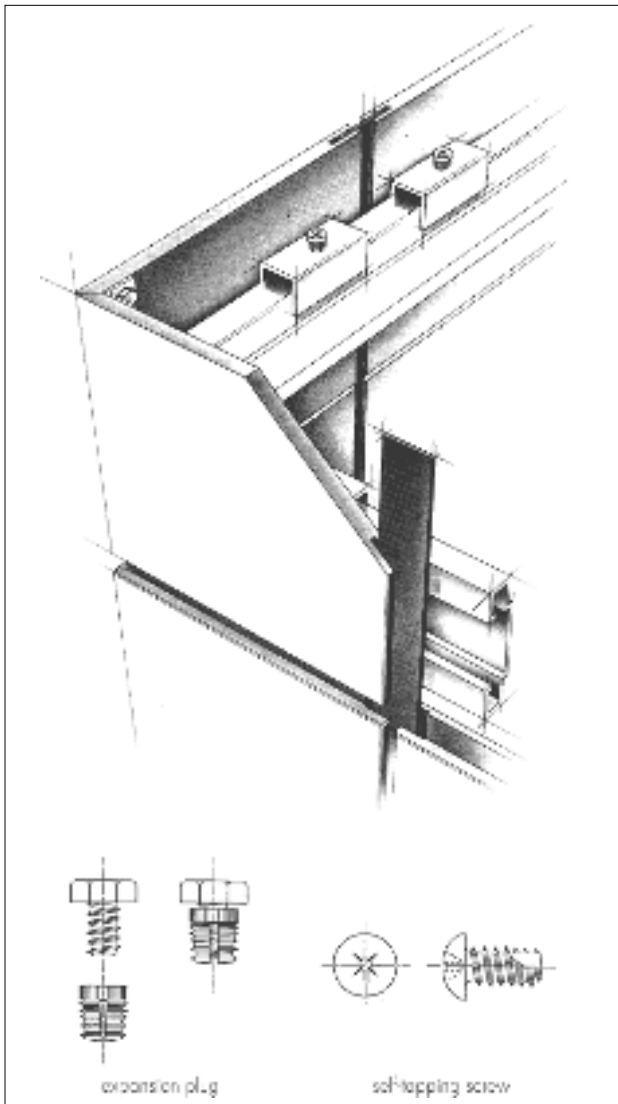


Figure 3 Invisible fixings for use where hooks locate onto aluminium rails<sup>(1)</sup>



(1) See also Figure 6 showing hook detail.

1.2 Two types of screw are approved for fixing the panels to timber battens, a powder-coated screw for quick assembly and a self-centring screw with a separate washer and cap. The cover caps and powder-coated screws are available in colours to match the panel (see Figure 1 and Table 1).

1.3 Aluminium or stainless steel rivets are available for fixing panels to an aluminium sub-frame (see Figure 2 and Table 2). Powder-coated rivets or coloured caps are available to match the colour of the panel.

1.4 Two types of invisible fixings are approved for fixing 8, 10 and 13 mm thick panels via aluminium hooks onto aluminium rails. One, an expanding plug fixing, and the other, a self-tapping screw (see Figure 3 and Table 3). The hooks and aluminium rails are outside the scope of the Certificate.

## 2 Delivery and site handling

Fixings are delivered to site in boxes of between 100 and 500 units, each box bearing a Trespa label with the product identification and colour code.

Table 1 Screws<sup>(1)</sup> for timber battens — visible fix

Characteristics (mm)	Self-centring screw with cover cap	Powder-coated screw (6, 8, 10 mm panels only)
Length	36	min 36
Screw diameter	4	4.8
Head diameter	9	12
Diameter of washer	11.4	—
Hole diameter	7	8

(1) Material: A2/A4 stainless steel to BS EN 10088-1 : 2005 grades 1.4301, 1.4401).

Table 2 Rivets<sup>(1)</sup> for aluminium sub-frame — visible fix

Characteristics (mm)	Rivet (mm)
Length	Panel thickness and metal thickness + minimum 5
Diameter	5
Head diameter	14 (with cover cap); 16 (powder coated)
Hole diameter	10 — expansion hole 5.1 — fixed hole

(1) Material: AlMg5 aluminium to BS EN 573-3 : 2003 or A2/A4 stainless steel to BS EN 10088-1 : 2005 (grades 1.4301, 1.4401).

Table 3 Fixings for aluminium sub-frame — invisible-fix

Characteristics (mm)	Expanding plug (mm)	Self-tapping screw <sup>(2)</sup> (mm)
Length		
for panel thickness 8	5.5	9.5
10	7.5	11.5
13	10.5	14.5
Diameter	plug <sup>(1)</sup> 8 screw <sup>(2)</sup> M6	6
Head diameter	10.0	12.0
Hole diameter	8	5.0
Hole depth		
for panel thickness 8	5.5	5
10	7.5	7
13	10.5	10

(1) Brass.

(2) A2/A4 stainless steel to BS EN 10088-1 : 2005 (grade 1.4301, 1.4401).

## Design Data

### 3 General

3.1 Timber battens to which panels are fixed must be a minimum size of 34 mm by 75 mm at the join of two panels and 34 mm by 45 mm at the end or mid-panel. The recommended practice is to align the battens vertically to optimise ventilation and drainage behind the panel (see Figure 1). Where the panels are attached to horizontal battens fixed directly to the substrate, ventilation slots, equivalent to a minimum 5000 mm<sup>2</sup> per metre run, must be cut into the battens (see section 7.7 of the Front Sheets).

3.2 Where panels are fixed to timber battens, the fixings must be arranged as shown in the *Installation* part of this Detail Sheet. Screws must be placed centrally in the holes, allowing 1.5 mm clearance around each screw.

3.3 Where panels are riveted to an aluminium sub-frame, the fixings must be arranged in the same

way as for timber battens. With rivets there must be at least one fixed point per panel (hole diameter 5.1 mm), others being expansion points (hole diameter 10 mm) (see the *Installation* part of this Detail Sheet). Where there are two fixed adjacent points, the hole diameter should be 6 mm.

3.4 Fixings to aluminium rails via hooks can only be used with 8 mm, 10 mm and 13 mm thick panels. Aluminium brackets are fixed onto the back of the panel with either an expanding plug or a self-tapping screw (see Figure 3). The positioning of the fixings behind the panel is shown in the *Installation* part of this Detail Sheet. The top row of fixings comprises a central bracket fixed securely to the aluminium support rail and two outer brackets incorporating screws to adjust the level of the panel. Other fixings use the standard bracket and allow movement in the panel.

3.5 Provision must be made for the thermal movement of aluminium sections behind the cladding.

## 4 Strength and stability

4.1 Permissible tensile forces on panel fixings are given in Table 4.

**Table 4 Permissible tensile forces<sup>(1)</sup> on panel fixings (N)**

Panel thickness (mm)	Visible-fix <sup>(2)</sup>			Invisible-fix	
	Fixing position			Expansion plug	Self-tapping screw
	centre	edge	corner		
6	600	450	360	—	—
8	600	600	600	350	550
10	600	600	600	500	450
13	600	600	600	800	1750

- (1) All values include a material safety factor of 2 and, for the invisible fixings, an additional factor of 2 to allow for the eccentricity of the force on the hooked fixing.  
 (2) Screws to timber, rivets to aluminium.

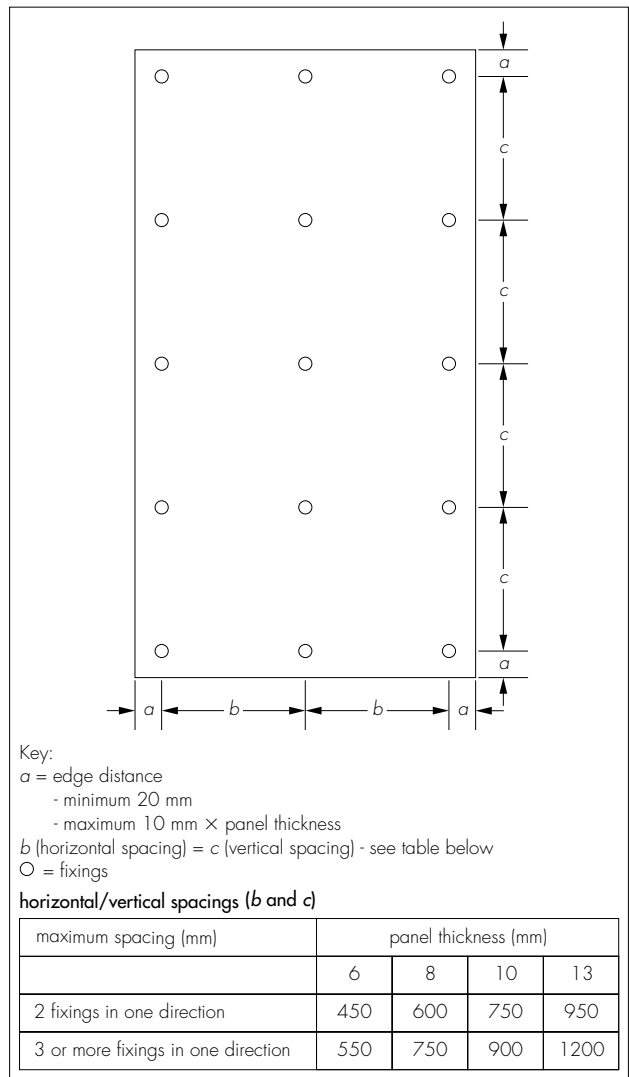
4.2 Typical fixing arrangements and details required for strength and stability and to allow for panel expansion, are shown in Figures 4, 5 and 6.

## Installation

### 5 General

- 5.1 Installation of Fixings must be carried out in accordance with the manufacturer's instructions.  
 5.2 Panels should be installed from bottom to top.  
 5.3 Screws and rivets must be placed centrally in their holes. Screws should not be over-tightened and a 0.3 mm space should be left between rivet head and panel by using a pressure plate on the blind riveter. A gun with a special nosepiece is available for this purpose.  
 5.4 When fixing a panel with rivets, a stepped drill can be used to make a 5 mm hole in the aluminium rail and a 10 mm expansion hole in the panel.

Figure 4 Fixing into timber battens



5.5 Adequate provision must be made for hygrothermal movement of panels and ventilation and drainage behind the cladding, as detailed in sections 7.6, 7.7 and 11.4 of the Front Sheets.

## Technical Investigations

The following is a summary of the technical investigations carried out on Fixings for use with Trespa Meteon Cladding Systems panels.

### 6 Tests

Under the assessment leading to the issue of Certificate No 91/2628, tests were carried out by KIWA NV to determine the strength of fixings.

### 7 Investigations

- 7.1 Under the assessment leading to the issue of Certificate No 91/2628 an evaluation was made of the durability and design strength of fixings.  
 7.2 Under the assessment leading to the issue of the Dutch Agrément Certificate an evaluation was made of the durability and design strength of fixings.

Figure 5 Rivet fixing into aluminium sub-frame

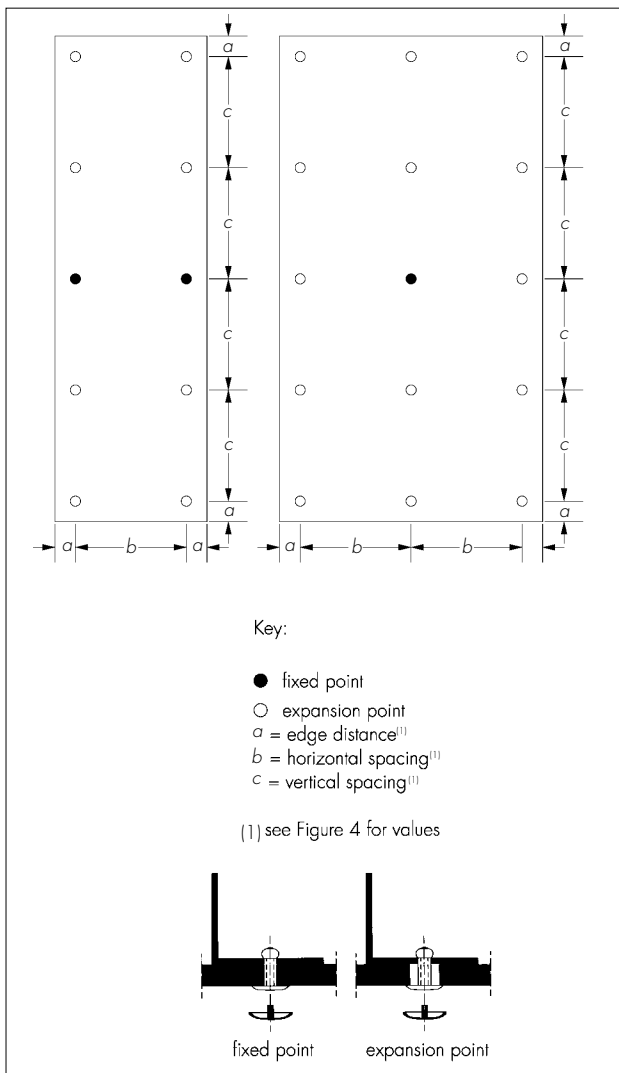
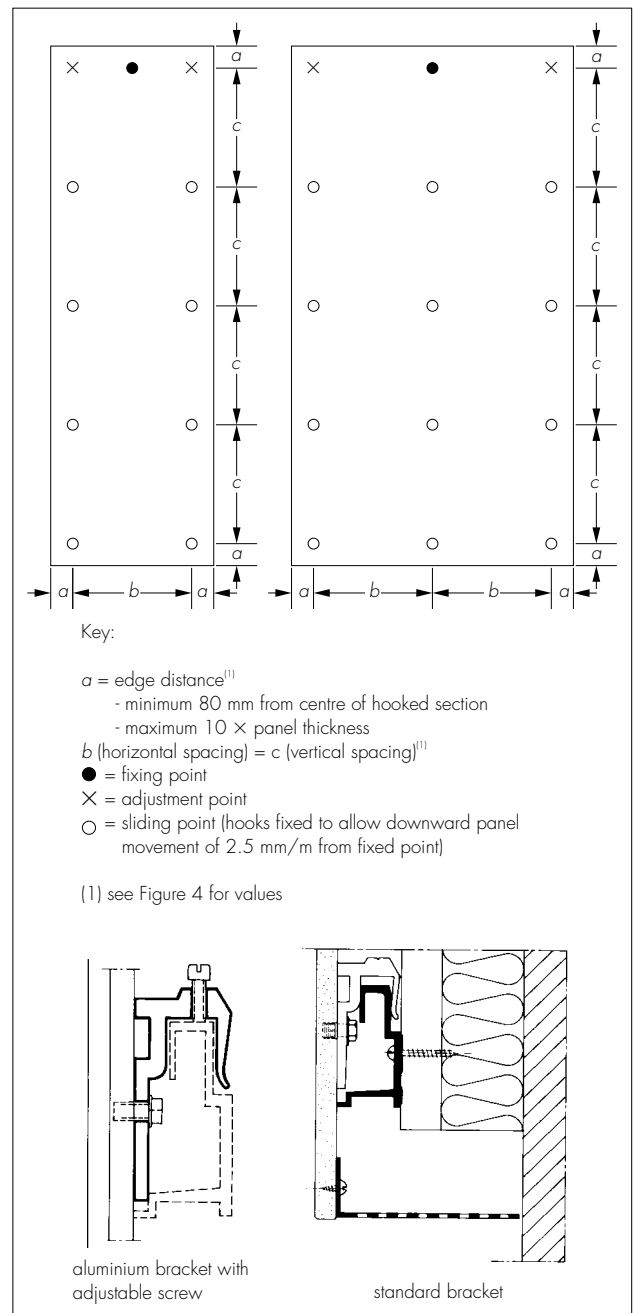


Figure 6 Invisible-fix — fixing arrangements



## Bibliography

BS EN 573-3 : 2003 *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Chemical composition*

BS EN 10088-1 : 2005 *Stainless steels — List of stainless steels*



On behalf of the British Board of Agrément

Date of Second issue: 31st October 2006

Chief Executive

\*Original Detail Sheet issued on 17th August 1999. This amended version includes revised Standards.



Trespa International B.V.

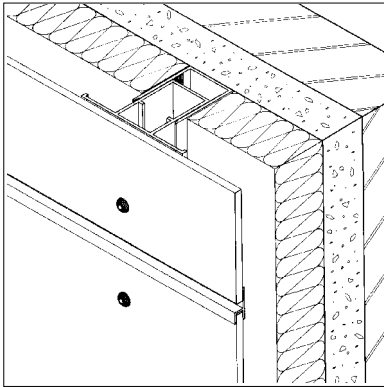
Certificate No 99/3629

**DETAIL SHEET 3**

Second issue\*

**SYSTEM 700**

## Product



• THIS DETAIL SHEET RELATES TO SYSTEM 700, AN ALUMINIUM SUB-FRAME SYSTEM TO WHICH TRESPA METEON CLADDING PANELS MAY BE FIXED.

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

This Detail Sheet must be read in conjunction with the Front Sheets, which gives the system's position regarding the Building Regulations, information common to all parts of the system, specific information on Trespa Meteon panels and the Conditions of Certification; and Detail Sheet 2, which includes information on the riveting of panels to sub-frames.

## Technical Specification

### 1 Description

1.1 System 700 is an aluminium sub-frame system for supporting Trespa Meteon panels. It is primarily intended for use in high-rise overcladding applications.

1.2 The components of the system are detailed in Table 1 and shown in Figure 1. The fixings are listed in Table 2.

Table 1 System 700 Components

Component	Dimensions (mm)			
	length	width	depth	thickness
Wall bracket <sup>(1)</sup>	100	53	72 122	3.5
Vertical T-rail <sup>(1)</sup>	variable	125 (at flange) 46.3 (at box section)	75	3
Vertical box rail (a T-rail without flange) <sup>(1)</sup>	variable	46.3	75	3
Spigot box end <sup>(1)</sup>	200	40	40	2.5
Trimmer (typical) <sup>(1)</sup>	variable	50.8	76.2	3.18
End plates <sup>(2)</sup>	150	80	—	3
PVC-U self- adhesive tape	variable	45, 125	—	3

(1) Aluminium alloy AW-6063A T6 to BS EN 755-2 : 1997.

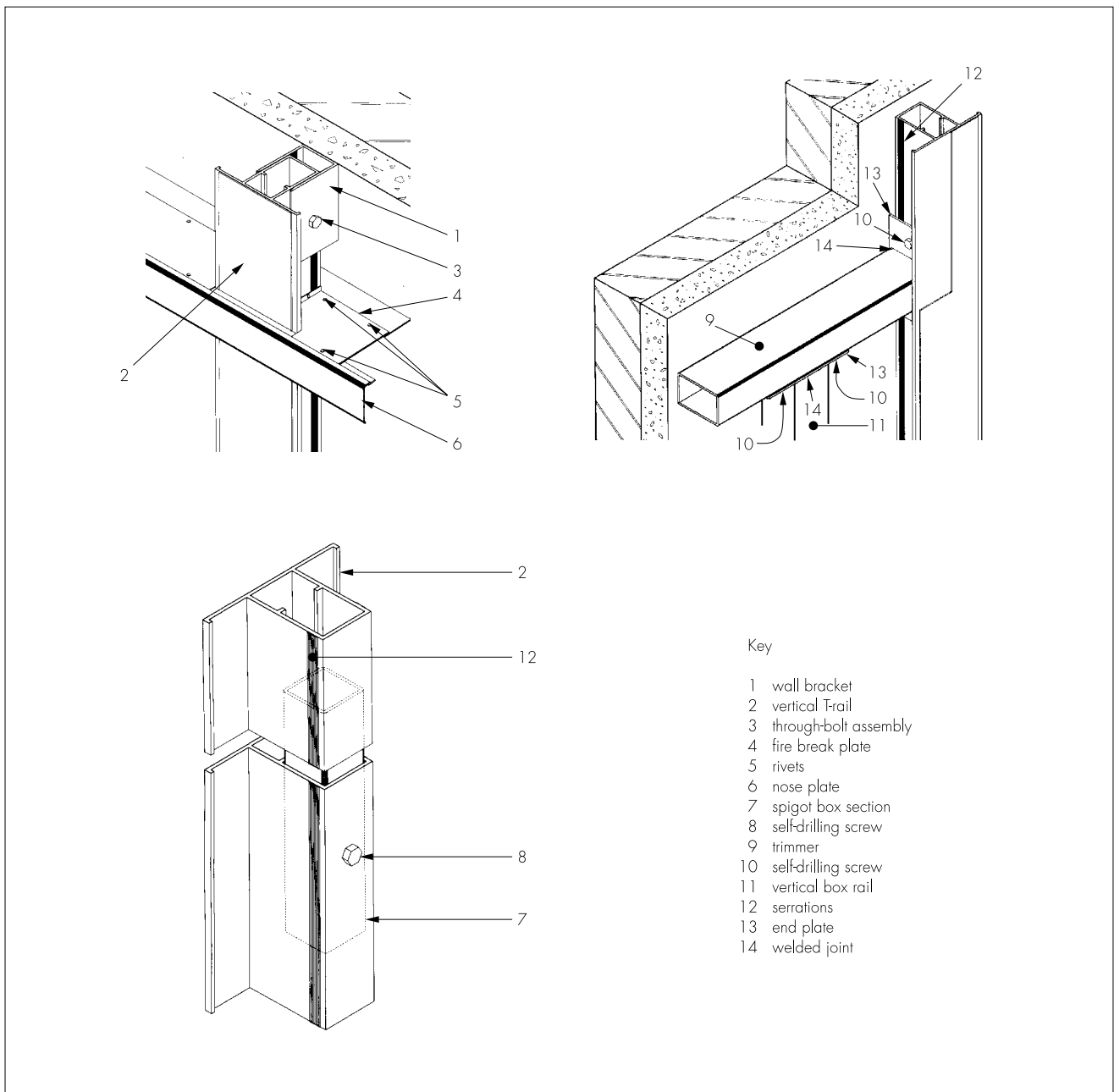
(2) Aluminium alloy AW-1200 H14 to BS EN 485-2 : 2004.

Table 2 Fixings

Fixing between	Description
Vertical T-rail — wall bracket	Stainless steel M8 x 70 mm bolt, stainless steel full nut, stainless steel washer, nylon washer.
Vertical T-rail — spigot box end	Self-drilling screw with EPDM washer
Vertical T-rail — trimmer	Self-drilling screw with EPDM washer
Vertical box rail — trimmer rail	Self-drilling screw with EPDM washer

# Electronic Copy

Figure 1 System 700 Components



1.3 Wall brackets are available:

- in two depths to accommodate varying thicknesses of insulation behind the cladding, whilst maintaining the required 20 mm ventilation pathway (see section 7.7 of the Front Sheets of this Certificate)
- with an 8 mm diameter round hole for tight fixing and an 8 mm by 28 mm elongated hole for expansion fixing.

1.4 The internal faces of the wall brackets and the external faces of the vertical rails are serrated to allow correct positioning of the rails prior to fixing.

1.5 T-rails are supplied pre-fixed to a spigot box at one end.

1.6 A frame section comprising horizontal trimmers and vertical box rails is pre-fabricated at the factory

for use between window openings. End plates are welded to the ends of both trimmers and box rails before the box rails are screwed to the trimmers through their end plates.

1.7 A range of trims (eg base plate, corner trims, window pods, H-profile for closing the horizontal joint between panels) is available for use with the system but is outside the scope of this Certificate.

1.8 Fire-break plates for use with a nose plate at the horizontal joint between panels at each floor level are also available, but are outside the scope of this Certificate.

1.9 Aluminium sections are manufactured to specification by conventional extrusion techniques. Critical dimensions are monitored regularly.

## Design Data

### 3 General

3.1 System 700 should be designed by appropriately qualified and experienced persons in accordance with the general requirements specified in the Front Sheets and Detail Sheet 2 of this Certificate. They will need to specify the method of fixing wall brackets to the substrate, which is outside the scope of this Certificate.

3.2 The coefficient of linear expansion of aluminium is  $23 \times 10^{-6}$ . A minimum 15 mm gap between vertical rails is recommended to accommodate thermal movement.

### 4 Strength and stability



The system is a suitable sub-frame support system for Trespa Meteon panels. For each application a bespoke sub-frame system must be designed in accordance with BS 8118 : 1991.

## Installation

### 5 General

5.1 Installation of System 700 must be carried out in accordance with the manufacturer's instructions.

5.2 Installation details are shown in Figure 1.

5.3 When a fire-break system is incorporated into the sub-frame, care must be taken to ensure that the ventilation run behind the cladding is not obstructed (see section 7.7 of the Front Sheets). The fire-break plate must slope slightly towards the outer face to allow water penetrating behind the cladding to drain away from the insulation or substrate wall.

### 6 Procedure

6.1 Alternate tight and elongated hole wall brackets are fixed to the substrate at each floor level.

6.2 Vertical rails (with a spigot box section fixed into an end) are slotted into the serrations in the wall bracket and fixed with a through bolt. The vertical rails normally cover two floors (5.3 m) with a tight fixing to the central bracket and expansion

fixings at the two ends. The open end of the next rail is fitted over the spigot box end of the previous rail, leaving an expansion gap of 15 mm (minimum) between rails.

6.3 A strip of the PVC-U self-adhesive compressible tape is run down the face of all vertical rails to prevent panel 'drumming'.

6.4 In between window openings in the wall, a pre-fabricated frame (see section 1.6) is fixed to vertical T-rails by screwing through the trimmer end plates.

6.5 Panels are riveted to the face of the vertical rail sections by the standard procedure described in Detail Sheet 2.

## Technical Investigations

### 7 Investigations

The following is a summary of the technical investigations carried out on System 700.

7.1 A site visit was undertaken to assess the practicability of installation.

7.2 Calculations were made to check the strength of the system.

7.3 An assessment was made of:

- factory production control
- durability.

## Bibliography

BS EN 485-2 : 2004 *Aluminium and aluminium alloys — Sheet, strip and plate — Mechanical properties*

BS 8118-1 : 1991 *Structural use of aluminium — Code of practice for design*

BS EN 755-2 : 1997 *Aluminium and aluminium alloys — Extruded rod/bar, tube and profiles — Mechanical properties*



On behalf of the British Board of Agrément

Date of Second issue: 31st October 2006

Chief Executive

# Electronic Copy

---

**British Board of Agrément**

P O Box No 195, Bucknalls Lane  
Garston, Watford, Herts WD25 9BA  
Fax: 01923 665301

©2006

e-mail: [mail@bba.star.co.uk](mailto:mail@bba.star.co.uk)  
website: [www.bbacerts.co.uk](http://www.bbacerts.co.uk)



For technical or additional information,  
contact the Certificate holder (see  
front page).  
For information about the Agrément  
Certificate, including validity and  
scope, tel: Hotline 01923 665400,  
or check the BBA website.