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Agrément Certificate
17/5462
Product Sheet 2

VISTA WALL PRODUCTS

NEUTRAS CAVITY WALL TIES

This Agrément Certificate Product Sheet(1) relates to Neutras Cavity Wall Ties, for use in tying conventional masonry cavity walls with cavities of up to 300 mm (nominal) in width and securing insulation boards, slabs or batts in new-build or retrofit constructions up to 18 metres in height.

(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

Structural performance — depending on the wall tie specification, the ties can be used in buildings up to 18 metres in height and are comparable to ties of Type 1, 2 and 4 as defined in PD 6697 : 2010 (see section 6).

Behaviour in relation to fire — the ties are suitable for buildings requiring 60 minute fire resistance (see section 7).

Thermal performance — in situations where thermal losses through ties need to be taken into account, the products will adequately resist thermal transmittance through a wall cavity (see section 8).

Durability — the ties will have a service life of not less than 60 years (see section 11).

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

On behalf of the British Board of Agrément

Date of First issue: 2 March 2018

Paul Valentine
Technical Exellence director

Claire Curtis-Thomas
Chief Executive

Regulations

In the opinion of the BBA, Neutras Cavity Wall Ties, 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:	**A1**	**Loading**
Comment:		Where the wall ties are relied upon to contribute to the strength and stability of cavity walls, they will be satisfactory. See sections 4.5 and 6 of this Certificate.
Requirement:	**B3(1)**	**Internal fire spread (structure)**
Comment:		The ties are non-combustible and will not adversely affect the fire resistance capabilities of a cavity wall in which they are installed. See section 7 of this Certificate.
Requirement:	**C2(b)(c)**	**Resistance to moisture**
Comment:		When used in an external cavity wall, the wall ties will not adversely affect the resistance of the wall to the passage of moisture. See section 9 of this Certificate.
Requirement:	**L1(a)(i)**	**Conservation of fuel and power**
Comment:		When calculating the thermal transmittance of insulated masonry cavity walls incorporating the ties, the thermal bridging due to the ties must be taken into account. See section 8.1 of this Certificate.
Regulation:	**7**	**Materials and workmanship**
Comment:		The wall ties are acceptable. See section 11 and the *Installation* part of this Certificate.
Regulation:	**26**	**CO_2 emission rates for new buildings**
Regulation:	**26A**	**Fabric energy efficiency rates for new dwellings (applicable to England only**
Regulation:	**26A**	**Primary energy consumption rates for new buildings (applicable to Wales only)**
Regulation:	**26B**	**Fabric performance values for new dwellings (applicable to Wales only)**
Comment:		When calculating the thermal transmittance of insulated masonry cavity walls incorporating the ties, the thermal bridging due to the ties must be taken into account. See section 8.1 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Durability, workmanship and fitness of materials**
Comment:		The products are of an acceptable material and can contribute to a construction satisfying this Regulation. See section 11 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	1.1	Structure
Comment:		Where the wall ties are relied upon to contribute to the strength and stability of cavity walls, they will be satisfactory, with reference to clauses 1.1.1$^{(1)(2)}$, 1.1.2$^{(1)(2)}$ and 1.1.3$^{(1)(2)}$ of this Standard. See sections 4.5 and 6 of this Certificate.
Standard:	2.3	Structural protection
Standard:	2.4	Cavities
Comment:		The wall ties will not adversely affect the fire resistance capabilities of a cavity wall in which they are installed, with reference to clauses 2.3.1$^{(1)(2)}$ and 2.3.2$^{(1)(2)}$ of this Standard. See section 7 of this Certificate.

Standard:	2.6	Spread to neighbouring buildings
Comment:		The products, with reference to clause 2.6.1[(1)(2)] of this Standard, will not adversely affect the fire resistance of the wall. See section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		When used in an external cavity wall, the wall ties will not adversely affect the resistance of the wall to the passage of moisture, with reference to clauses 3.10.1[(1)(2)], 3.10.3[(1)(2)] and 3.10.6[(1)(2)] of this Standard. See section 9 of this Certificate.
Standard:	6.2	Building insulation envelope
Comment:		When calculating the thermal transmittance of masonry cavity walls incorporating the ties, the thermal bridging due to the ties must be taken into consideration, with reference to clauses 6.2.1[(1)(2)], 6.2.3[(1)], 6.2.5[(2)], 6.2.10[(1)] and 6.2.12[(2)] of this Standard. See section 8.1 of this Certificate.
Regulation:	**12**	**Building standards applicable to conversions**
Comment:		All comments given for the products under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1[(1)(2)] and Schedule 6[(1)(2)].

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	**23**	**Fitness of materials and workmanship**
Comment:		The products are acceptable. See section 11 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		When used in an external cavity wall, the wall ties will not adversely affect the resistance of the wall to the passage of moisture. See section 9 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		Where the wall ties are relied upon to contribute to the strength and stability of cavity walls, they will be satisfactory. See sections 4.5 and 6 of this Certificate.
Regulation:	**35**	**Internal fire spread — Structure**
Regulation:	**36**	**External fire spread**
Comment:		The ties will not adversely affect the fire resistance capabilities of a cavity wall in which they are installed. See section 7 of this Certificate.
Regulation:	**39(a)(i)**	**Conservation measures**
Comment:		When calculating the thermal transmittance of masonry cavity walls incorporating the ties, the thermal bridging due to the ties can be disregarded. See section 8.2 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.

Additional Information

NHBC Standards 2018

In the opinion of the BBA, Neutras Cavity Wall Ties, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Part 6 *Superstructure (excluding roofs)*, Chapter 6.1 *External masonry walls*.

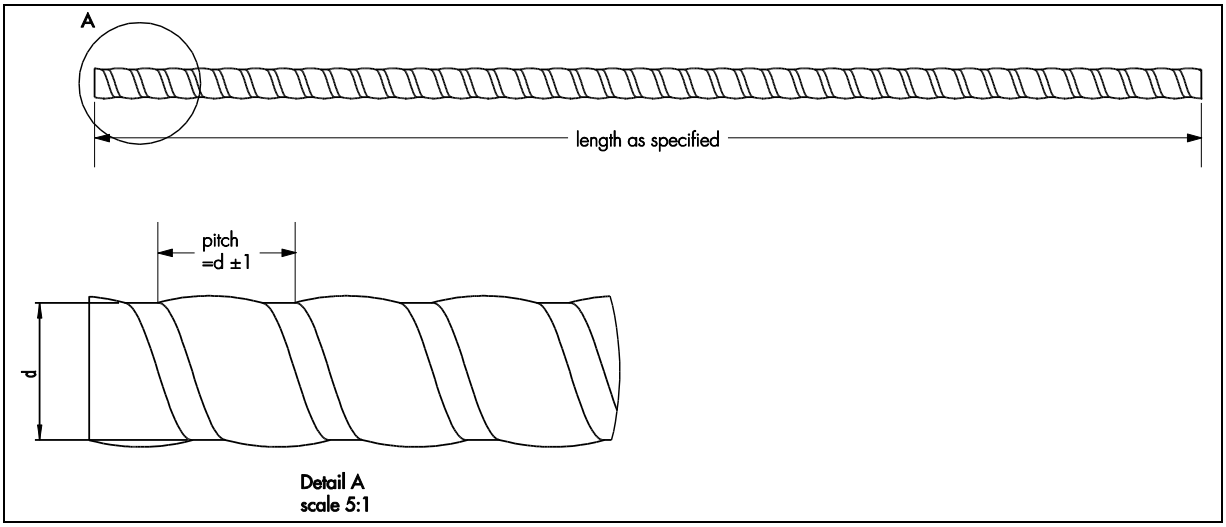
Technical Specification

1 Description

1.1 The Neutras Cavity Wall Ties are a range of composite wall ties comprising continuous basalt fibre and vinyl ester resin, used with polypropylene insulation retaining clips (see section 1.4 and Figures 1 and 2).

1.2 The range of Neutras Cavity Wall Ties comprises Neutras-1-275, Neutras-4-300, Neutras-2-325 and Neutras-2-425 ties (see Table 1).

Figure 1 Neutras Cavity Wall Ties



1.3 The tie dimensions are specified in Table 1 and the lengths are variable to suit the cavity wall width.

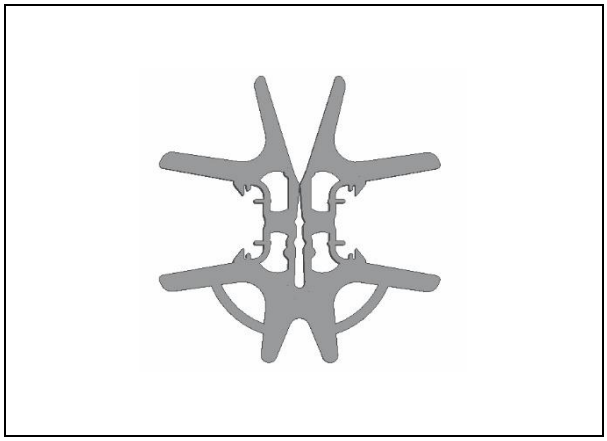
Table 1 Tie range

Tie name	Tie type(1)	Maximum Cavity widths (mm)	Tie length (mm)	Tie diameter (mm)	Maximum building height(1) (m)
Neutras-1-275	1	150	275	7.0	18
Neutras-4-300	4	175	300	4.0	10
Neutras-2-325	2	200	325	6.0	15
Neutras-2-425	2	300	425	7.0	15

(1) Type classification and maximum building height as defined in PD 6697 : 2010 and national Building Regulations based upon an evaluation of test data to BS EN 845-1 : 2013 and fire test data (see sections 6 and 8 of this Certificate).

1.4 Polypropylene insulation retaining clips with 75 mm diameter (see Figure 2) are available from the Certificate holder for retaining insulation boards, slabs or batts in partially filled cavities.

Figure 2 Polypropylene insulation retaining clip



2 Manufacture

2.1 The ties are manufactured from continuous basalt fibre and vinyl ester resin. Quality control of the ties includes visual check and inspection for chemical and mechanical properties for incoming materials and regular visual and dimensional checks during manufacture. Quality control includes a check that the clip fits securely to the ties.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Vista Engineering Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by the British Assessment Bureau (Certificate 20/5433).

3 Delivery and site handling

3.1 Neutras Cavity Wall Ties are packaged in boxes of the required quantity, and the clips in polythene bags of 250.

3.2 All containers bear the company name, product identification and the BBA logo incorporating the number of this Certificate.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Neutras Cavity Wall Ties.

Design Considerations

4 Use

4.1 Neutras Cavity Wall Ties are suitable for use across unfilled cavities or those partially filled with insulation boards, slabs or batts in conjunction with an insulation retaining clip. The ties are also suitable for use in cavities fully filled with insulation approved by the BBA, subject to the conditions specified in the relevant BBA Certificate relating to the insulation. The ties are suitable for cavity widths up to 300 mm as specified in Table 1.

4.2 The ties must be used in accordance with the requirements of BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006, BS EN 1996-3 : 2006 and their UK National Annexes, PD 6697 : 2010 and BS EN 845-1 : 2013.

4.3 The minimum design embedment of the tie in the mortar joint is 62.5 mm. The minimum embedment allowing for site tolerances in cavity width and centring of ties is 50 mm.

4.4 It is not normal practice for the ties to be installed across cavities (or residual cavities) less than 50 mm wide. Where this does occur, it is important to ensure that requirements relating to weathertightness are satisfied.

4.5 Masonry walls incorporating the ties must be constructed in accordance with the following technical specifications:

- PD 6697 : 2010
- BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006, BS EN 1996-3 : 2006 and their UK National Annexes
- the national Building Regulations:
  England and Wales — Approved Document A1/2, Section 1C
  Scotland — Technical Standards, Part C, Small Buildings Guide
  Northern Ireland — Technical Booklet D.

4.6 Ties should be evenly distributed over the wall, and for walls in which both leaves are not less than 90 mm thick, at a minimum density of 2.5 ties per square metre. To achieve this tie density it is normal practice to install at 900 mm centres horizontally and 450 mm centres vertically with successive rows staggered. In partially filled applications, alternative spacing may be appropriate to suit the size of board and to ensure that the boards are adequately restrained. However, the density of ties must not fall below 2.5 ties per square metre. At the vertical edges of openings and at vertical unreturned or unbonded edges (for example at movement joints and up the sloping verge of gable walls), additional ties should be used at a rate of one tie per 300 mm height or equivalent, placed not more than 225 mm from the edge.

4.7 Where 1200 mm boards are used with partial fill cavities, the ties should:

- be spaced closer to provide adequate support and restraint
- be spaced at 600 mm centres in rows, ie not staggered.

5 Practicability of installation

The ties are designed to be installed by a competent general builder, or a contractor, experienced with these types of products.

6 Structural performance

6.1 When tested for tension and compression load capacity, the ties were found to be suitable for the following applications defined in Table 10 of PD 6697 : 2010:

- Neutras-1-275 Type 1 (heavy duty)
- Neutras-2-325 and Neutras-2-325 Type 2 (general purpose)
- Neutras-4-300 Type 4 (light duty).

6.2 The ties are sufficiently flexible to allow in-plane differential movement of the two connected leaves of masonry in vertical direction of up to 12 mm and also to allow site adjustment for differences in height between inner and outer leaves of up to 25 mm.

7 Behaviour in relation to fire

7.1 The ties have been tested, and Type 1 and 2 ties have been approved to maintain their load bearing capacity for at least 60 minutes. Therefore, the use of the ties for buildings up to 18 m in height is acceptable. Effectiveness of the installed ties in fire is assessed as being equivalent to that of typical steel ties.

7.2 Guidance on the fire resistance of cavity walls is given in BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006, BS EN 1996-3 : 2006 and their UK National Annexes and PD 6697 : 2010.

8 Thermal performance

8.1 In England and Wales and Scotland, thermal losses through wall ties in insulated cavities need to be taken into account if, in conjunction with thermal losses through air gaps in the insulation, they amount to 3% or more of the uncorrected thermal loss through the wall. Procedures for calculating these losses for ties and air gaps are given in BS EN ISO 6946 : 2007, Annex D, [taking into account tie density, tie diameter and the thermal conductivity of the basalt fibre rod (0.81 $W \cdot m^{-2} \cdot K^{-1}$)], and in BRE report BR 443 : 2006, respectively.

8.2 In Northern Ireland, the ties can be disregarded when calculating the thermal transmittance of masonry cavity walls.

9 Weathertightness

The water shedding details of the ties are effective in preventing the transfer of water across the ties to the inner leaf (see Figure 1).

10 Maintenance

As the ties and retaining clips are confined wholly within the wall cavity for their entire service life, and have suitable durability (see section 11), maintenance is not required.

11 Durability

The ties should have a service life of not less than 60 years. Their durability will not be impaired by contact with conventional cavity insulation materials or mortar admixtures.

Installation

12 General

The ties should be installed in accordance with the requirements of PD 6697 : 2010, BS EN 845-1 : 2013, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006.

13 Procedure

13.1 The ties should be sandwiched between mortar in a nominal 10 mm horizontal bed joint, at the time the units are laid, to a minimum embedment length of 50 mm (design embedment 62.5 mm), taking care that the drip is at, or close to, the centre of the cavity (or residual cavity) and the ties are placed horizontally or with a slight fall to the outer leaf of the wall, and at right angles to the walls.

13.2 The first run of ties is to be laid as near as possible to, though not directly on, the damp-proof course.

13.3 Normal precautions must be taken to prevent mortar dropping and protrusions impairing the functioning of the drips.

In partially filled cavity applications

13.4 Insulation should be cut/notched as necessary to fit closely around the ties (and abut the adjacent board, slab or batt).

13.5 Clips should be pushed firmly onto the ties, at right angles, until securely engaged.

13.6 Clips must be pushed up against the insulation to hold it securely in place against the inner leaf.

13.7 Clips are normally positioned at the centre of the multi-drip section of the ties.

13.8 Clips should not be positioned on a sloping section of the multi-drip section of the ties.

Technical Investigations

14 Tests

Tests were conducted on the ties and the results assessed to determine:

- tensile and compressive strength characteristics
- thermal diffusivity
- fire resistance
- durability.

15 Investigations

15.1 Existing information was assessed relating to the products' durability and their compatibility with materials in contact.

15.2 Data were assessed relating to the flexibility of the ties.

15.3 An assessment was made of the products' performance in fire.

15.4 Data were assessed relating to the practicability of installation.

15.5 A thermal assessment was conducted to determine the performance of the products in relation to thermal transmittance.

15.6 Data were assessed relating to the effects of the products on the transmission of water across the ties.

15.7 Data were assessed relating to the effectiveness of the clip in retaining insulation.

15.8 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.

Bibliography

BS EN 845-1: 2013 + A1 : 2016 *Specification for ancillary components for masonry — Wall ties, tension straps, hangers and brackets*

BS EN 1996-1-1 : 2005 + A1 : 2012 *Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
NA to BS EN 1996-1-1 : 2005 + A1 : 2012 UK National Annex to *Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
BS EN 1996-1-2 : 2005 *Eurocode 6 — Design of masonry structures — General rules — Structural fire design*
NA to BS EN 1996-1-2 : 2005 UK National Annex to *Eurocode 6 — Design of masonry structures — General rules — Structural fire design*
BS EN 1996-2 : 2006 *Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*
NA to BS EN 1996-2 : 2006 UK National Annex to *Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*
BS EN 1996-3 : 2006 *Eurocode 6 — Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*
NA + A1 : 2014 to BS EN 1996-3 : 2006 UK National Annex to *Eurocode 6 — Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*

BS EN ISO 6946 : 2007 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

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

PD 6697 : 2010 *Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2*

BRE Report BR 443 : 2006 *Conventions for U-value calculations*

16 Conditions

16.1 This Certificate:

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

16.2 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.

16.3 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.

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

16.5 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.

16.6 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.

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