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Agrément Certificate
89/2153
Product Sheet 1

HARCON GRP VALLEY TROUGH AND FLASHING RANGE

HARCON GRP VALLEY TROUGHS TYPES A, D AND E

This Agrément Certificate Product Sheet⁽¹⁾ relates to Harcon GRP Valley Troughs Types A, D and E, for use in tiled roofs constructed in accordance with the relevant requirements of BS 5534 : 2014, to provide a weatherproof junction at features such as changes of direction and materials.

(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.

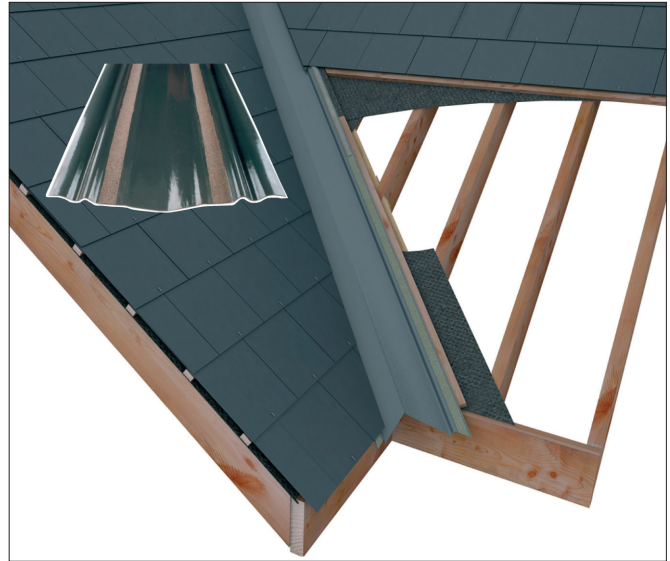
KEY FACTORS ASSESSED

Weathertightness — as part of a complete roof, the products will resist the passage of moisture into the interior of the building (see section 6).

Properties in relation to fire — the products, when used as part of a complete roof, will be unrestricted under the Building Regulations (see section 7).

Strength — the products have adequate strength to resist the loads associated with installation of the roof (see section 8).

Durability — under normal service conditions, the products will have a service life of at least 20 years (see section 10).



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 Third issue: 7 September 2016

John Albon — Head of Approvals

Claire Curtis-Thomas

Originally certificated on 2 February 1989

Construction Products

Chief Executive

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 are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Harcon GRP Valley Troughs Types A, D and E, 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(2)	External fire spread
Comment:	The products, when used as part of a complete roof, will not affect the fire rating of the roof construction. See section 7 of this Certificate.
Requirement: C2(b)	Resistance to moisture
Comment:	The products will contribute to a roof meeting this Requirement. See section 6 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The products are acceptable. See section 10 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)	Durability, workmanship and fitness of materials
Comment:	The use of the products satisfies the requirements of this Regulation. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 2.8	Spread from neighbouring buildings
Comment:	The products can be regarded as having a low vulnerability, with reference to clause 2.8.1 ⁽¹⁾⁽²⁾ , and will not affect the fire rating of the roof construction. See section 7 of this Certificate.
Standard: 3.10	Precipitation
Comment:	The products will contribute to a roof satisfying clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.8 ⁽¹⁾⁽²⁾ of this Standard. See section 6 of this Certificate.
Standard: 7.1(a)	Statement of sustainability
Comment:	The products 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:	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(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:	The products are acceptable. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation: 28(b)	Resistance to moisture and weather
Comment:	The products will contribute to a roof satisfying this Regulation. See section 6 of this Certificate.
Regulation: 36(b)	External fire spread
Comment:	The products, when used as part of a complete roof construction, will not affect the fire rating of the roof construction. See section 7 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

In the opinion of the BBA, this Certificate does not include any content which relates to the obligations of the client, CDM co-ordinator, designer and contractors under these Regulations.

Additional Information

NHBC Standards 2016

NHBC accepts the use of Harcon GRP Valley Troughs Types A, D and E, provided they are installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards, Chapter 7.2 Pitched roofs*.

1 Description

1.1 Harcon GRP Valley Troughs Types A, D and E are manufactured from glassfibre/polyester laminate to the profiles illustrated in Figures 1 and 2. Sanded strips are bonded along the upper surface of each edge to provide a key for bedding the roof tiles into mortar.

Figure 1 Harcon GRP Valley Troughs Types A or E and D

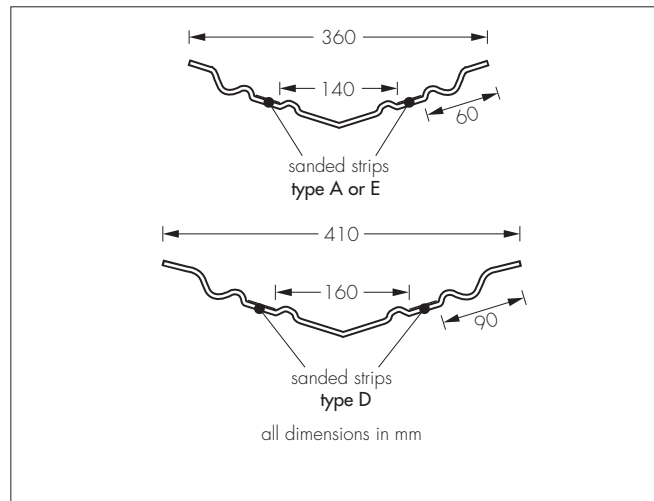
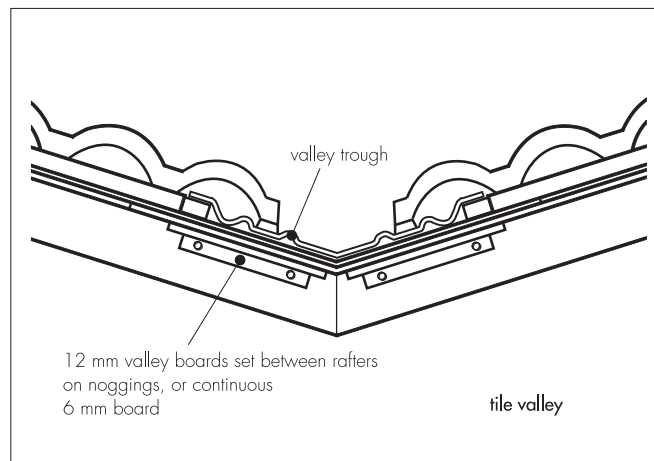


Figure 2 Tile valley trough



1.2 The products are manufactured to the following specifications:

Width (mm)	360 (Type A or E)
	410 (Type D)
Length (m)	1.8, 2.4, 3.0
Sanded strip width (mm)	40
Standard colour ⁽¹⁾	grey/blue.

(1) Other colours are available to order.

1.3 The valley troughs are produced with an angle between the two sides of 17° and can be readily adapted by bending to accommodate roof pitches. The 'A' valley type accommodates pitches of 22.5° to 49° with a maximum difference between two rafter pitches of 10°. The 'D' valley type accommodates pitches of 17.5° to 55° with a maximum difference between two rafter pitches of 15°.

2 Manufacture

2.1 The products are manufactured in a continuous process. Resin is spread across a film into which glass rovings are evenly distributed, and formed into a laminate. The required profile is shaped by wooden formers and allowed to cure.

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 Ariel Plastics Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by SGS (Certificate Q1201).

3 Delivery and site handling

The products are delivered to site in packs of ten. Each item bears the BBA logo incorporating the number of this Certificate. Packs should be stored flat on a clean, level surface.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Harcon GRP Valley Troughs Types A, D and E.

Design Considerations

4 Use

Harcon GRP Valley Troughs Types A, D and E are satisfactory for use in tiled pitched roofs constructed in accordance with the relevant clauses of BS 5534 : 2014.

5 Practicability of installation

The products are designed to be installed by a roofing contractor experienced with this type of product.

6 Weathertightness



The products will adequately resist the passage of moisture to the interior of a building and so meet the requirements of the national Building Regulations.

7 Properties in relation to fire



7.1 Samples of GRP, representative of that used in the manufacture of the products, when tested in accordance with BS 476-3 : 1958 achieved an EXT.S.AA rating.

7.2 Samples of GRP, representative of that used in the manufacture of the products, when tested in accordance with BS 476-7 : 1987 achieved a Class 3 surface spread of flame.

8 Strength

The products will resist the normal impacts associated with installation and use.

9 Maintenance

No maintenance is necessary and the smooth surface finish will inhibit the build-up of foreign matter.

10 Durability



The products, when installed in accordance with this Certificate, will have a life of at least 20 years.

Installation

11 General

11.1 Installation of Harcon GRP Valley Troughs Types A, D and E must be in accordance with the Certificate holder's instructions and the relevant recommendations of BS 5534 : 2014 and BS 8000-6 : 2013.

11.2 The sections must be cut to size with a fine-toothed saw and can accept holes being drilled using a sharp drill bit.

12 Procedure

12.1 It is recommended that valley boards (either 12 mm plywood or 19 mm softwood boards, supported on noggings between rafters, or 6 mm boards laid over rafters) are used.

12.2 The valley must be lined longitudinally with reinforced underlay 1 metre wide. A length of the trough must be pressed to a tight fit into the valley and the line of the outer edges marked.

12.3 Counterbattens of similar size to the roofing battens must be fixed along the marked line to support the edges of the trough, using nails of a quality acceptable in good roofing practice.

12.4 The adjacent main roof underlays should be laid over the counterbattens. Roofing battens should be fitted with the ends firmly located onto the valley boards, positioned close to the counterbatten, with care taken not to damage the underlay.

12.5 Commencing at the foot of the valley, troughs should be nailed, through drilled holes, at 400 mm spacings to the counterbattens through drilled holes.

12.6 Consecutive lengths of valley trough must be laid allowing a minimum overlap of 150 mm at the joints, dependent on the pitch (in accordance with the Certificate holder's instructions).

12.7 A section in the fascia board must be cut out at the end of the valley to run straight into the gutter without having to bend up over it.

12.8 A V-shaped notch must be cut out at the end of the valley to fit neatly into the gutter.

12.9 The tiles must be bedded onto mortar laid on the sanded strips, keeping the water channels clear. Tiles must not be cut in situ, and must not be laid dry and then back fill pointed.

13 Repair

Damaged areas can be repaired by following the Certificate holder's instructions prior to completing the roof covering.

14 Finishing

Tiling must be carried out in accordance with the relevant clauses of BS 5534 : 2014 and BS 8000-6 : 2013.

Technical Investigations

15 Tests

Tests were carried out by the BBA in relation to:

- density
- resin/glass ratio
- dimensions
- hardness
- tensile strength/elongation
- cross-breaking strength
- effect of elevated temperatures
- effect of water soak
- impact resistance.

16 Investigations

16.1 The results of fire tests on samples of GRP used in the manufacture of the products were assessed.

16.2 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.

16.3 A visit was made to a site in progress to assess the practicability of installation.

16.4 A visit was made to an existing site to examine the performance of the products.

Bibliography

BS 476-3 : 1958 *Fire tests on building materials and structures — External fire exposure roof test*

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

BS 5534 : 2014 *Code of practice for slating and tiling (including shingles)*

BS 8000-6 : 2013 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*

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

17 Conditions

17.1 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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.