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Agrément Certificate
87/1898
Product Sheet 2

THE BRETT DRAINAGE SYSTEM

BRETT 110 MM DIAMETER PVC-U SOCKETED PIPE FOR DRAINAGE AND SEWERAGE

This Agrément Certificate Product Sheet(1) relates to Brett 110 mm Diameter PVC-U Socketed Pipe for Drainage and Sewerage, for forming an underground drainage or sewerage system for domestic, private and public buildings.

(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 and maintenance guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Strength — the product has adequate strength to resist the loads and impacts likely to be encountered during transport, installation and use (see section 6).

Performance of joints — satisfactory joints can be made when using the socketed pipe, as defined in this Certificate (see section 7).

Flow characteristics — the pipe will have the normal flow characteristics associated with PVC-U underground drain pipes to BS EN 1401-1 : 2009 (see section 8).

Resistance to chemicals — the pipe will be unaffected by the types and quantities of chemicals which are likely to be found in domestic sewage (see section 9).

Resistance to elevated temperature — the pipe has adequate resistance to elevated temperatures likely to be found in domestic sewerage (see section 10).

Durability — the material from which the pipe is manufactured will not deteriorate significantly and the anticipated life of the product will be in excess of 50 years (see section 12).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 10 December 2018

Paul Valentine
Head of Technical Excellence

Claire Curtis-Thomas
Chief Executive

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

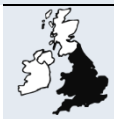
The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

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.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

Regulations

In the opinion of the BBA, Brett 110 mm Diameter PVC-U Socketed Pipe for Drainage and Sewerage, 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:	**H1(1)**	**Foul water drainage**
Comment:		The product will convey the flow of foul water and minimise the risk of blockages or leaks. See sections 4.1, 6, 7, 8 and 9 of this Certificate.
Requirement:	**H3(3)**	**Rainwater drainage**
Comment:		The product can satisfy the relevant sections of this Requirement. See sections 4.1, 6, 7, 8, and 9 of this Certificate.
Regulation:	**7**	**Materials and workmanship**
Comment:		The product is acceptable. See section 12 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Durability, workmanship and fitness of materials**
Comment:		The product complies with the requirements of this Regulation. See sections 11 and 12 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	3.6(a)	Surface water drainage
Comment:		The product can satisfy the relevant requirements of this Standard, with reference to clause 3.6.4[(1)(2)] to 3.6.6[(1)(2)]. See sections 4.1, 6, 7, 8, and 9 of this Certificate.
Standard:	3.7	Wastewater drainage
Comment:		The product will satisfy the relevant requirements of this Standard, with reference to clauses 3.7.3[(1)(2)], 3.7.4[(1)(2)], 3.7.10[(1)] and 3.7.11[(2)]. See sections 4.1, 6, 7, 8 and 9 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	**12**	**Building standards applicable to conversions**
Comment:		All comments given for the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1[(1)(2)] and Schedule 6[(1)(2)].

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

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

Regulation:	**23(a)(i)(iii) (b)(i)**	**Fitness of materials and workmanship**
Comment:		The product is acceptable. See section 12 and the *Installation* part of this Certificate.
Regulation:	**81(a)(i)(b)**	**Underground foul drainage**
Comment:		The product will convey the flow of foul or surface water and minimise the risk of blockages or leaks. See sections 4.1, 6, 7, 8 and 9 of this Certificate.

Regulation:	**82(a)(i)(b)**	**Rainwater drainage**
Comment:		The product will convey the flow of rainwater and minimise the risk of blockages or leaks. See sections 4.1, 6, 7, 8, and 9 of this Certificate.

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.1) and 5 *Practicability of installation* (5.2) of this Certificate.

Additional Information

NHBC Standards 2018

In the opinion of the BBA, Brett 110 mm Diameter PVC-U Socketed Pipe for Drainage and Sewerage, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 5.3 *Drainage below ground.*

Technical Specification

1 Description

1.1 Brett 110 mm Diameter PVC-U Socketed Pipe for Drainage and Sewerage (socket end and spigot end) is manufactured from virgin unplasticised polyvinyl chloride (PVC-U), comprises solid PVC-U smooth internal and external surfaces. The pipe end details are shown in Figure 1 and Table 1.

1.2 The pipe has a minimum wall thickness of 2.7 mm, is available in 3 or 6 m lengths, and is terracotta in colour.

Figure 1 Pipe details

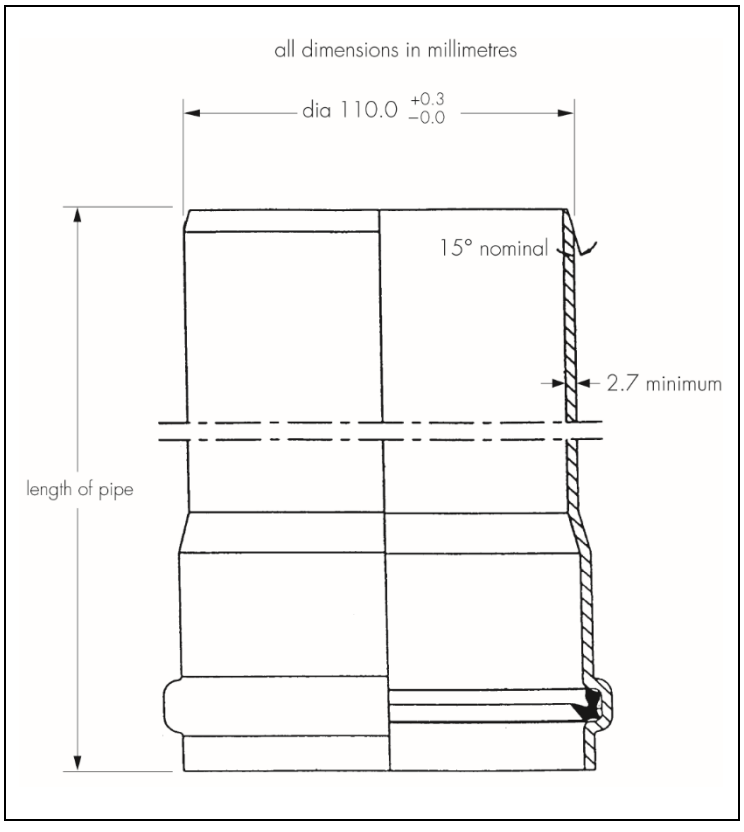


Table 1 Dimensions

Nominal pipe size (mm)	Mean outside diameter (DN) (mm)	Wall thickness (t) (mm)	End type	Length (m)
110	110 + 0.3/– 0.0	2.7	Socketed	3 + 10.0/– 0mm 6 + 10.0/– 0mm

1.3 Rubber ring seals manufactured to BS EN 681-2 : 2000, type WH/WT are provided with each socket end, see Figure 1.

2 Manufacture

2.1 The pipe is extruded in PVC-U using a conventional extrusion process.

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 Brett Martin Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate Q 09125).

2.4 BSI Kite mark Licence No KM 57368 has been issued to the Certificate holder and covers a range of 110 mm and 160 mm diameter fittings and 110 mm to 400 mm diameter socketed and plain ended pipes in accordance with BS EN 1401-1 : 2009.

3 Delivery and site handling

3.1 Handling, storage and transportation must be in accordance with BS EN 752 : 2017 and BS EN 1610 : 2015, and the pipe should not be stacked more than six high.

3.2 The pipe is stamped with the legend: Brett Martin 110 mm Drainage x 2.7 mm. The legend also includes day number, week number, year of manufacture, shift code and the number of this Certificate.

3.3 When long-term storage is envisaged, the pipe must be protected from direct sunlight.

3.4 The pipes are resistant to damage likely to be caused during normal handling. However, they should be stored in locations where impacts from vehicles and other construction plant will be avoided.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Brett 110 mm Diameter socketed PVC-U Pipe for Drainage and Sewerage.

Design Considerations

4 Use

4.1 Brett 110 mm Diameter PVC-U Socketed Pipe for Drainage and Sewerage has been assessed for use in underground drains, public and private sewers for the conveyance, by combined or separate systems, of surface water and domestic sewage as is permitted to be discharged into public sewers by the Water Industry Act 1991: Chapter 56, and surface water and sewage as is permitted and defined by the Sewerage (Scotland) Act 1968, and the Water and Sewerage Services (Northern Ireland) 2006.

4.2 The product has not been assessed for use with untreated effluents and is not intended to be used in areas where installation takes place at temperatures of -10°C or below. Such uses are outside the scope of this Certificate.

5 Practicability of installation

5.1 The product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

5.2 The correct personal protection equipment must be used when cutting PVC-U pipe using mechanically powered cutters.

6 Strength

The product has adequate strength to resist the forms of loading and impacts associated with installation and normal service conditions.

7 Performance of joints

Satisfactory joints can be made using the socketed pipe in accordance with BS EN 1401-1 : 2009, and will remain watertight under conditions of pipe deformation, side or vertical displacement, pipeline deflection and thermal movement.

8 Flow characteristics

The product will have the normal flow characteristics associated with PVC-U underground drainage and sewerage systems.

9 Resistance to chemicals

The product is satisfactory for use where pipes to BS EN 1401-1 : 2009 are normally used. It has adequate resistance to the type and quantities of chemicals usually found in domestic sewage.

10 Resistance to elevated temperatures

The pipe has adequate resistance to normal temperatures likely to occur in domestic surface water and sewage.

11 Maintenance

Drains incorporating the product can be maintained using water jetting equipment or conventional flexible drain rods. Toothed root cutters, as used with some mechanical cleaning systems could damage the pipe and should not be used.

12 Durability

In the opinion of the BBA, no significant deterioration of the product will take place when the product is installed in accordance with this Certificate, and installations will have a design life in excess of 50 years.

13 Reuse and recyclability

The product is manufactured from PVC-U, which is readily recyclable.

Installation

14 General

Underground drain and sewer systems incorporating the pipe should be installed in accordance with the recommendations of BS EN 1295-1 : 1997, BS EN 1610 : 2015 and BS EN 752 : 2017, where appropriate.

15 Jointing procedure

15.1 The spigot end and the inside of the socket must be clean and free from grit, dust or dirt, and the sealing ring should be seated evenly in the socket groove.

15.2 The pipe, if cut, must be chamfered to approximately 15° for half the pipe wall thickness, and deburred with a sharp tool.

15.3 Lubricant should be smeared evenly on the chamfered spigot end and on the sealing ring in the socket.

15.4 The spigot is inserted into the socket and pushed fully home.

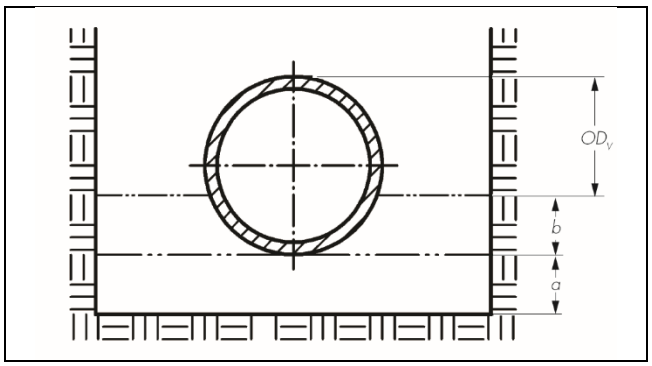
16 Laying pipes

16.1 Trench for the pipe laying is designed in accordance with BS EN 1295-1 : 1997 and excavated to the correct line and level to ensure correct and safe installation of the pipeline, as per BS EN 1610 : 2015.

16.2 The trench formation should be prepared; the bedding is placed and the pipe laid in accordance with BS EN 1610 : 2015.

On trench bottom in hard soil material

Figure 2 Pipe laid in rock or hard soil conditions



Note:
a – lower bedding
b – upper bedding.

16.3 When the as-dug material is not suitable as a bedding, a layer of suitable granular material as defined in

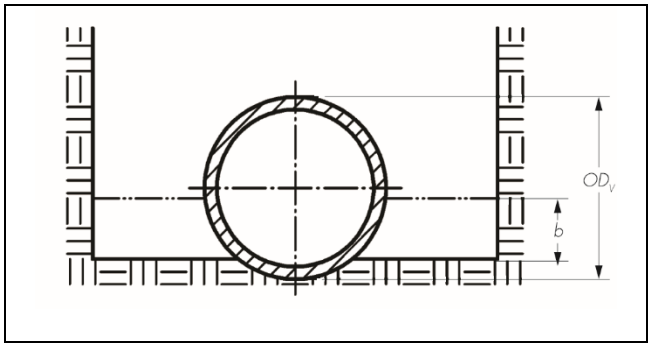
BS EN 1610 : 2015, section 5.2.3.1, must be spread evenly on the trimmed trench bottom before the pipe is installed. The trench should be excavated to allow for a minimum thickness of 100 mm granular bedding under the pipe (see Figure 2).

16.4 Where the as-dug material can be hand trimmed by shovel and is not puddled when walked upon, a 100 mm depth of bedding material may be used. In this case the material must be nominal 10 mm single-sized aggregate without sharp edges, ie pea gravel (see Figure 2).

16.5 When the pipe is to be laid on hard rock formation, a minimum of 150 mm depth of bedding material is provided and compacted in accordance with BS EN 1610 : 2015.

On granular beds (see Figures 3 and 4)

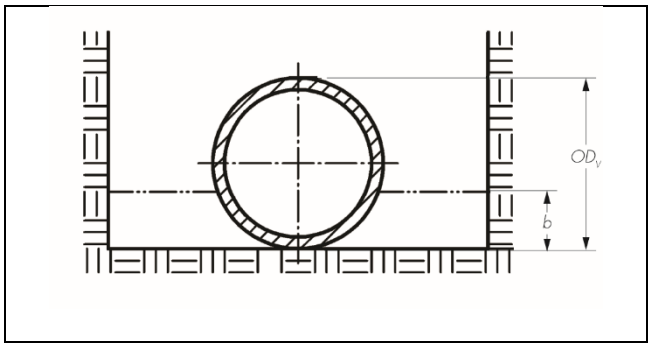
Figure 3 Pipe laid on soft fine grained soil



16.6 Where the as-dug material is suitable for use as bedding, the pipes are laid directly on the shaped, trimmed bottom of the trench.

16.7 Small depressions should be made to accommodate the pipe sockets. After the pipe has been laid these should be filled carefully to remove all voids under the socket (see Figure 3).

Figure 4 Pipe laid on soft fine grained soil



16.8 Where the as-dug material is suitable for use as bedding, the pipe is laid directly on the trimmed bottom of the trench. After the pipe has been laid these should be filled carefully to remove all voids under the socket (see Figure 4).

16.9 When the formation is prepared, the pipe should be laid upon it true to line and level within the specified tolerances. Each pipe should be checked and adjustments made to level by raising or lowering the formation, ensuring that the pipe finally rests evenly on the adjusted formation throughout the length of the pipe. Adjustment should never be made by local packing.

16.10 Where the formation is low and does not provide continuous support, it should be brought up to the correct level by placing and compacting suitable material.

17 Sidefill

In all cases, the sidefill must be of the same specification as the bedding material and extend to the level of the crown of the pipe, placed and compacted in accordance with BS EN 1610 : 2015.

18 Backfill

Backfill above the level of the crown of the pipe must be in accordance with BS EN 1610 : 2015, section 5.3

Technical Investigations

19 Tests

Tests were carried out and the results assessed to determine:

- resistance to internal pressure
- dimensional accuracy
- impact resistance
- Vicat softening temperature
- longitudinal reversion
- resistance to dichloromethane at a specified temperature
- leaktightness of elastomeric sealing joints (angular deflection and diametric distortion)
- elevated temperature cycling with box loading
- short term ring stiffness.

20 Investigations

20.1 An examination was made of data relating to:

- resistance to chemicals
- flow characteristics
- resistance to high pressure jetting
- resistance to rodding.

20.2 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

Bibliography

BS EN 681-2 : 2000 *Elastomeric seals — Material requirements for pipe joint seals used in water and drainage applications — Thermoplastic elastomers*

BS EN 752 : 2017 *Drain and sewer systems outside buildings*

BS EN 1295-1 : 1997 *Structural design of buried pipelines under various conditions of loading — General requirements*

BS EN 1401-1 : 2009 *Plastic piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinylchloride) (PVC-U) — Specifications for pipes, fittings and the system*

BS EN 1610 : 2015 *Construction and testing of drains and sewers*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

21 Conditions

21.1 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.

21.2 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.

21.3 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.

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

21.5 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.

21.6 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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