

THE POLYPIPE UNDERGROUND DRAINAGE SYSTEM

POLYPIPE POLYRIB RIBBED FITTINGS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Polypipe Polyrib Ribbed Fittings, a range of PVC-U fittings (bends, reducers, socket couplers and branches) for use in conjunction with PVC-U pipes underground in domestic drainage of surface water or domestic waste water, as is permitted to be discharged into public sewers.

(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

Flow characteristics — the products have sufficient flow characteristics (see section 6).

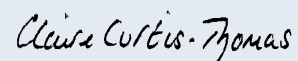
Strength — the products have adequate strength to resist the loads and impacts likely to be encountered during transport, installation and use (see section 7).

Performance of joints — the connections between the fittings and the pipes are watertight, and the trap is airtight (see section 8).

Durability — the products will have a life equivalent to that of pipes complying with BS EN 1401-1 : 2009 (see section 12).

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: 13 October 2017

Brian Chamberlain
Head of Technical Excellence

Claire Curtis-Thomas
Chief Executive

Originally certificated on 19 October 1990

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, Polypipe Polyrib Ribbed Fittings, 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 products will convey the flow of foul or surface water and minimise the risk of blockages or leakage. See sections 4.1, 6, 7 and 8 of this Certificate.	
Requirement:	H3(3)	Rainwater drainage
Comment:	The products will convey the flow of rainwater and minimise the risk of blockages or leakage. See sections 4.1, 6, 7 and 8 of this Certificate.	
Regulation:	7	Materials and workmanship
Comment:	The products are acceptable. See section 12 and the <i>Installation</i> part of this Certificate.	



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Durability, workmanship and fitness of materials
Comment:	The products satisfy the requirements of this Regulation. See sections 11 and 12 and the <i>Installation</i> part of this Certificate.	
Regulation:	9	Building standards applicable to construction
Standard:	3.6	Surface water drainage
Standard:	3.7	Waste water drainage
Comment:	The products will satisfy the relevant requirements of this Standard, with reference to clauses 3.6.4 ⁽¹⁾⁽²⁾ to 3.6.6 ⁽¹⁾⁽²⁾ and 3.7.1 ⁽¹⁾⁽²⁾ respectively. See sections 4.1, 6, 7 and 8 of this Certificate.	
Standard:	7.1(a)(b)	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)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)	The products are acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	79	Drainage systems
Comment:	The products are acceptable. See sections 4.1, 6, 7 and 8 of this Certificate.	
Regulation:	81	Underground foul drainage
Comment:	The products will convey the flow of foul or surface water and minimise the risk of blockages or leakage. See sections 4.1, 6, 7 and 8 of this Certificate.	

Regulation:	82	Rainwater drainage
Comment:	The products will convey the flow of rainwater and minimise the risk of blockages or leakage. See sections 4.1, 6, 7 and 8 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* of this Certificate.

Additional Information

NHBC Standards 2017

In the opinion of BBA, Polypipe Polyrib Ribbed Fittings, 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*.

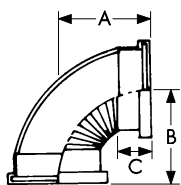
Technical Specification

1 Description

1.1 Polypipe Polyrib Ribbed Fittings comprise a PVC-U body with ring seals retained by polypropylene snap caps at each socket. The ring seals are made from EPDM to BS EN 681-1 : 1996, Type WC. The 160 mm double socket coupler (UR601), 160 mm reducer (UR621) and 15° single socket bend (UR410) have integrally-formed seal grooves (collapsing cores) and do not require snap caps to retain the seal. Each fitting is supplied assembled ready for use.

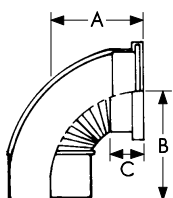
1.2 The range of fittings assessed is given in Table 1.

Table 1 Range of fittings



PVC-U Double socket 87½° short radius bend

	NS (mm)	A (mm)	B (mm)	C (mm)
UR411	110	130	125	45
UR611	160	192	187	65



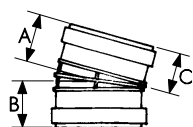
PVC-U Single socket 87½° short radius bend

	NS (mm)	A (mm)	B (mm)	C (mm)
UR412	110	130	145	45
UR612	160	192	194	65



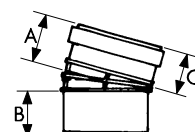
PVC-U Double/slip coupler

	NS (mm)	A (mm)	B (mm)
UR401	110	96	45
UR601	160	135	65



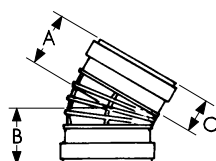
PVC-U Double socket 15° bend

	NS (mm)	A (mm)	B (mm)	C (mm)
UR409	110	55	55	45
UR609	160	83	83	65



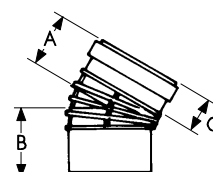
PVC-U Single socket 15° bend

	NS (mm)	A (mm)	B (mm)	C (mm)
UR410	110	55	77	45
UR610	160	83	83	65



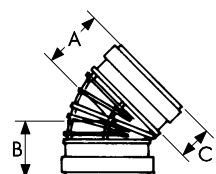
PVC-U Double socket 30° bend

	NS (mm)	A (mm)	B (mm)	C (mm)
UR467	110	65	65	45
UR667	160	95	95	65



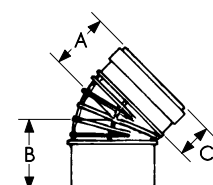
PVC-U Single socket 30° bend

	NS (mm)	A (mm)	B (mm)	C (mm)
UR468	110	65	84	45
UR668	160	95	103	65



PVC-U Double socket 45° bend

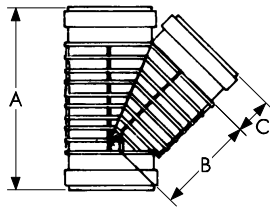
	NS (mm)	A (mm)	B (mm)	C (mm)
UR403	110	73	73	45
UR603	160	106	106	65



PVC-U Single socket 45° bend

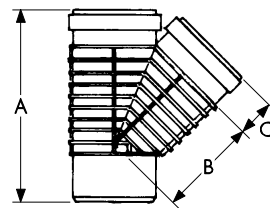
	NS (mm)	A (mm)	B (mm)	C (mm)
UR404	110	73	96	45
UR604	160	106	119	65

Table 1 Range of fittings (continued)



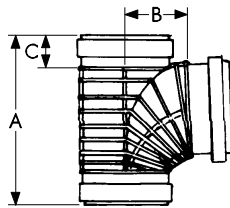
PVC-U Triple socket 45° equal branch

	NS (mm)	A (mm)	B (mm)	C (mm)
UR405	110	258	143	45
UR605	160	405	233	65



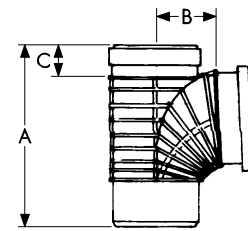
PVC-U Double socket 45° equal branch

	NS (mm)	A (mm)	B (mm)	C (mm)
UR406	110	279	143	45
UR606	160	422	233	65



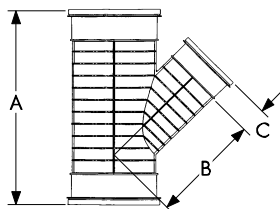
PVC-U Triple socket 87½° branch

	NS (mm)	A (mm)	B (mm)	C (mm)
UR423	110	222	92	45



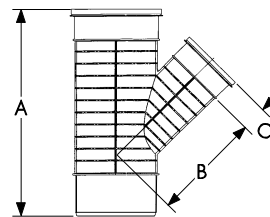
PVC-U Double socket 87½° branch

	NS (mm)	A (mm)	B (mm)	C (mm)
UR424	110	243	92	45



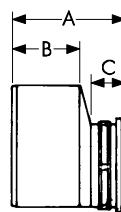
PVC-U Triple socket 45° unequal branch

	NS (mm)	A (mm)	B (mm)	C (mm)
UR635	160	405	222	45



PVC-U Double socket 45° unequal branch

	NS (mm)	A (mm)	B (mm)	C (mm)
UR636	160	422	222	45



PVC-U 110/160 Reducer

	NS (mm)	A (mm)	B (mm)	C (mm)
UR621 110/160	147	62	45	

2 Manufacture

2.1 The products are manufactured by an injection-moulding process: the bodies of the fittings are made from PVC-U and the snap caps from polypropylene.

2.2 As part of the assessment and ongoing surveillance of products 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 Polypipe Building Products has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificates FM00318).

2.4 BSI Kitemark licence Nos KM 59284, KM 06383 and KM 583143 have been issued to Polypipe Building Products Ltd, Broomhouse Lane, Edlington, Doncaster DN12 1ES, for the manufacture of pipes and fittings certified to BS 4660 : 2000, BS EN 1401-1 : 2009, WIS 4-35-01 and BS EN 13476-2 : 2007 (see Product Sheet 1 of this Certificate).

3 Delivery and site handling

3.1 Each fitting is marked with the Certificate holder's logo, the nominal size, the product code, the BBA logo and the number of this Certificate moulded into it.

3.2 The fittings are supplied in polythene bags and should not be removed until required. Where long-term storage is envisaged, the fittings must be protected from direct sunlight.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Polypipe Polyrib Ribbed Fittings.

Design Considerations

4 Use



4.1 Polypipe Polyrib Ribbed Fittings are suitable for use in domestic underground drains, and 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 and surface water and sewage as is permitted and defined by the Sewerage (Scotland) Act 1968, and the Water and Sewerage Services (Northern Ireland) Order 2006.

4.2 The fittings have not been assessed for use with untreated trade effluents and such use is outside the scope of this Certificate.

4.3 The fittings are for use with pipes complying with BS EN 1401-1 : 2009, BS EN 13476-1 : 2007 and BS EN 13476-2 : 2007, or Polycore PVC-U Pipe (see Product Sheet 3 of this Certificate).

5 Practicability of installation

The products are designed to be installed by a competent general builder, or a contractor, experienced in below-ground drainage work.

6 Flow characteristics



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

7 Strength



When installed correctly, the fittings will have adequate strength for use in situations in which pipes to WIS 4-35-01, BS EN 1401-1 : 2009 and BS EN 13476-2 : 2007 are suitable.

8 Performance of joints



8.1 When used in conjunction with underground pipes in accordance with BS EN 1401-1 : 2009, BS EN 13476-1 : 2007 and BS EN 13476-2 : 2007, or Polycore PVC-U Pipe, the joints remain watertight under conditions of pipeline movement in excess of those expected to occur in normal good drainage practice.

8.2 The performance of joints, when correctly made, will not be adversely affected by thermal expansion or contraction.

9 Resistance to chemicals

9.1 The fittings have adequate resistance to the type and quantity of chemicals likely to be found in domestic sewage.

9.2 Details of the chemical resistance of EPDM rubber are given in PD ISO/TR 7620 : 2005.

10 Resistance to elevated temperatures

The fittings have adequate resistance to the normal temperature range of domestic sewage, when used in application areas U and D defined in BS EN 1401-1 : 2009.

11 Maintenance



Drains incorporating the fittings can be rodded using conventional flexible drain rods. Toothed root cutters, as used with some mechanical cleaning systems, could damage the fittings or couplings and should not be used.

12 Durability



The fittings will have a life equivalent to that of pipes complying with BS EN 1401-1 : 2009.

13 Reuse and recyclability

The products contain PVC-U and polypropylene, which can be recycled.

14 General

14.1 Underground drain and sewer systems incorporating the products must be installed in accordance with the recommendations of this Certificate, BS EN 752 : 2008, BS 8000-0 : 2014, BS 8000-14 : 1989, BS EN 1610 : 2015 and the Certificate holder's installation instructions.

14.2 Precautions must be taken to protect the products from damage during construction.

15 Procedure — fittings

15.1 The spigot end and the inside of the socket must be clean and free from grit, dust and dirt. Lubricant should be applied evenly to the ring seal and fitting spigot/pipe ends.

15.2 Lubricant is smeared evenly to the ring seal and fitting spigot.

15.3 The chamfered pipe is inserted into the socket and pushed fully home to the correct depth.

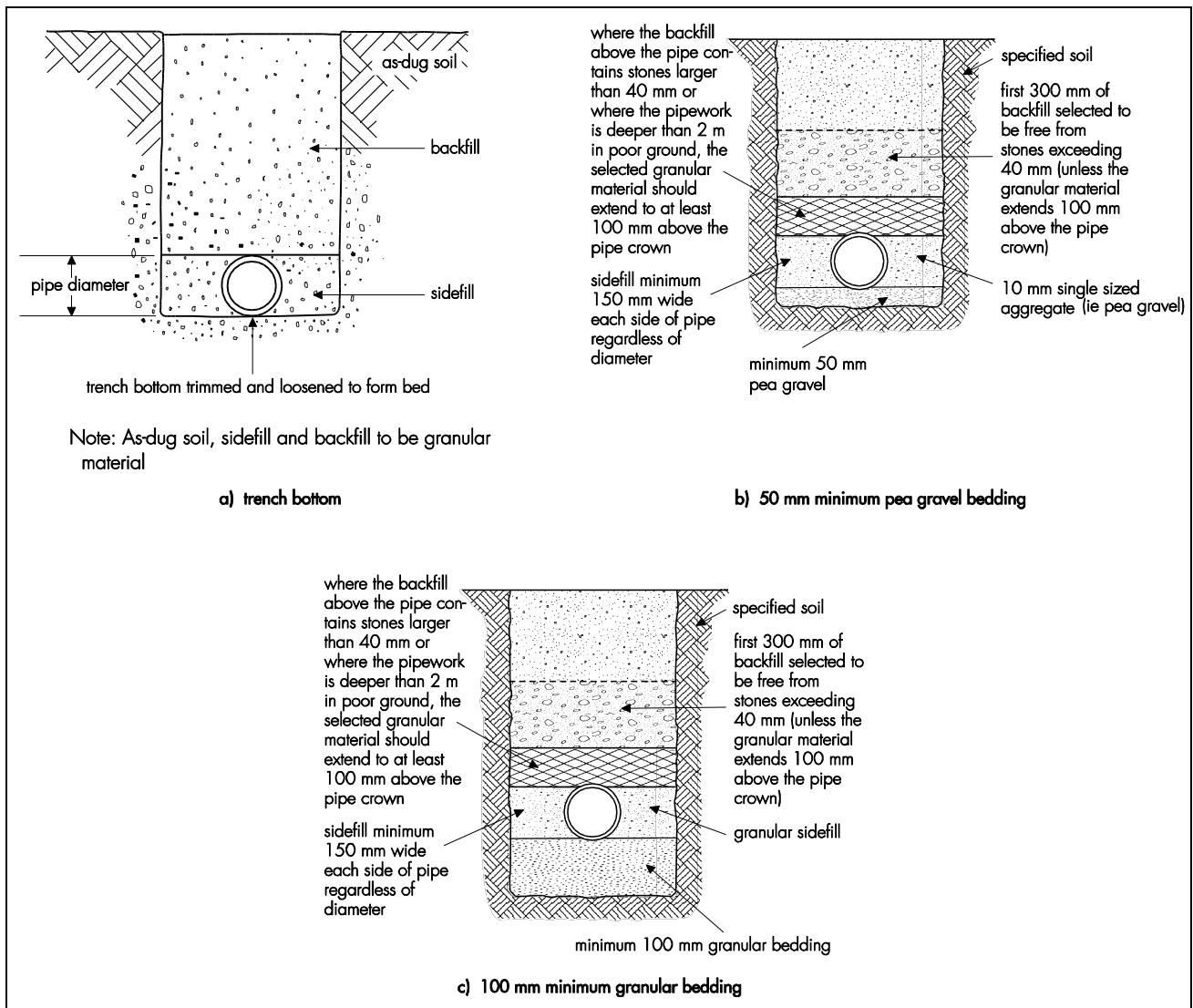
15.4 The fittings may be used on offcuts of pipe provided the ends are cut square and adequately chamfered.

15.5 The couplers can be used as slip couplers if the 'knock-out' ribs are removed from the centre of the couplers in accordance with the Certificate holder's instructions. To achieve the correct insertion depth, the pipes are marked 45 mm from the end of each length to be joined. The coupler is slipped fully onto one of the pipes, the pipes are located in their final position and the coupler is eased into its correct position so that the insertion marks are visible at each end of the coupler.

16 Procedure — pipes (see Figure 1)

16.1 Installation must be carried out in accordance with this Certificate, the Certificate holder's installation instructions, BS 8000-0 : 2014, BS 8000-14 : 1989, BS EN 1610 : 2015, and, where applicable, BS EN 752 : 2008.

Figure 1 Pipe-laying specifications



Pipe laying on trench bottom in granular material

16.2 Where the as-dug material is suitable⁽¹⁾ for use as bedding, the bottom of the trench may be trimmed to form the pipe bed.

(1) Suitable material is defined as granular material having a nominal particle size not exceeding 10 or 14 mm for 110 and 160 mm diameter pipes, respectively.

16.3 Small depressions should be made to accommodate the pipe sockets or couplings. After the pipe has been laid, these should be filled carefully to ensure that no voids remain under, or around, the socket.

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

16.5 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.

Pipe laying on granular beds

16.6 When the as-dug material is not suitable as bedding, a layer of suitable granular material (see section 16.2) must be spread evenly on the trimmed trench bottom before the pipes are installed. The trench should be excavated to allow for the thickness of granular bedding under the barrels.

16.7 The trench formation is prepared, the bedding placed and the pipes laid.

16.8 Where the as-dug material can be hand trimmed by shovel and is not puddled when walked upon, a 50 mm depth of bedding material may be used. In this case the material must be nominal 10 mm single-sized aggregate with no sharp edges, ie pea gravel.

16.9 When the pipes are to be laid on rock, compacted sand or gravel, requiring mechanical means of trimming, or in very soft or wet ground, the bedding should be a minimum of 100 mm.

Sidefill

16.10 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, and be placed and compacted.

Backfill

16.11 Specifications for backfill above the level of the crown of the pipe are shown in Figure 1.

Technical Investigations

17 Tests

Tests were carried out on the fittings and couplings, and the results assessed to determine:

- effect of combined temperature cycling and external loading
- Vicat softening point
- watertightness when subjected to pipeline deformation and hydrostatic pressure
- watertightness when subjected to angular deflection and hydrostatic pressure
- stress relief
- short-term stiffness
- dimensions
- practicability of installation.

18 Investigations

18.1 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.

18.2 A visit to a site was made to establish the ease of assembly of the fittings.

Bibliography

BS 4660 : 2000 *Thermoplastics ancillary fittings of nominal sizes 110 and 160 for below ground gravity drainage and sewerage*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

BS 8000-14 : 1989 *Workmanship on building sites — Code of practice for below ground drainage*

BS EN 681-1 : 1996 *Elastomeric seals — Material requirements for pipe joint seals used in water and drainage applications — Vulcanized rubber*

BS EN 752 : 2008 *Drain and sewer systems outside buildings*

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

BS EN 13476-1 : 2007 *Plastics piping systems for non-pressure underground drainage and sewerage — Structured-wall piping systems of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) — General requirements and performance characteristics*

BS EN 13476-2 : 2007 *Plastics piping systems for non-pressure underground drainage and sewerage — Structured-wall piping systems of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) — Specifications for pipes and fittings with smooth internal and external surface and the system, Type A*

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

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

Water Industry Specification WIS 4-35-01 *Specification for thermoplastics structured wall pipes — Supplementary test requirements*

PD ISO/TR 7620 : 2005 *Rubber materials — Chemical resistance*

19 Conditions

19.1 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.

19.2 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.

19.3 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.

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

19.5 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.

19.6 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.