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Agrément Certificate
98/3472
Product Sheet 1

ULTRARIB GRAVITY SEWER SYSTEM

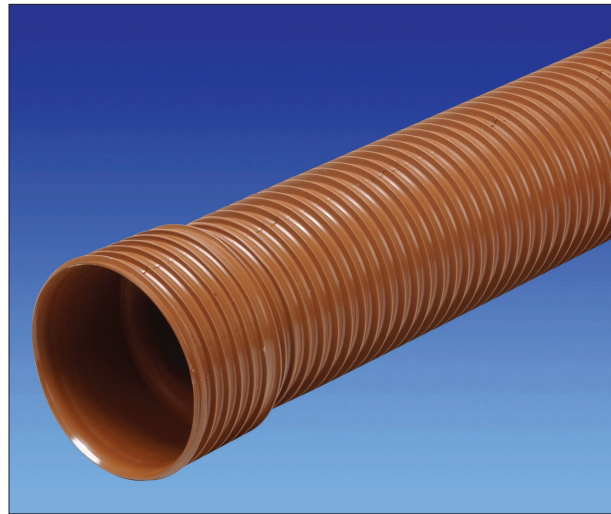
WAVIN ULTRARIB 150 mm, 225 mm AND 300 mm INTERNAL DIAMETER PIPES AND FITTINGS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Wavin UltraRib 150 mm, 225 mm and 300 mm Internal Diameter Pipes and Fittings. They are for use in domestic drains and public and private sewers at depths of up to 10 metres.

AGRÉMENT 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

Strength — the products have adequate strength to resist loads associated with installation and subsequent use (see section 5).

Performance of joints — the joints remain watertight when subjected to deflection and distortion (see section 6).

Flow characteristics — the products will have normal flow characteristics (see section 7).

Resistance to chemicals — the products have adequate resistance to the type of chemicals likely to be found in domestic sewage (see section 8).

Resistance to elevated temperatures — the products have adequate resistance to the temperatures likely to be found in domestic sewage (see section 9).

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

The BBA has awarded this Agrément 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

Brian Chamberlain
Head of Approvals — Engineering

Greg Cooper
Chief Executive

Date of First issue: 1 April 2010

Originally certificated on 13 July 1998

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, Wavin UltraRib 150 mm, 225 mm and 300 mm Internal Diameter Pipes and Fittings, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2000 (as amended) (England and Wales)

Requirement:	H1(1)	Foul water drainage
Comment:		The system will convey the flow of foul or surface water and minimise the risk of blockages or leaks. See sections 3, 4, 5.1 to 5.3, 6.1, 6.2, 7.1, 7.2, 8, 9, 10.1 and 10.2 of this Certificate
Requirement:	H3(3)	Rainwater drainage
Comment:		The system will convey the flow of rainwater and minimise the risk of blockages or leaks. See sections 3, 4, 5.1 to 5.3, 6.1, 6.2, 7.1, 7.2, 8, 9, 10.1 and 10.2 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The system is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The system is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.6(a)	Surface water drainage
Comment:		The system will meet the relevant requirements of this Standard, with reference to clauses 3.6.1 ⁽¹⁾⁽²⁾ , 3.6.2 ⁽¹⁾⁽²⁾ and 3.6.3 ⁽¹⁾⁽²⁾ . See sections 3, 4, 5.1 to 5.3, 6.1, 6.2, 7.1, 7.2, 8, 9, 10.1 and 10.2 of this Certificate.
Standard:	3.7(b)	Wastewater drainage
Comment:		The system will meet the relevant requirements of this Standard, with reference to clause 3.7.3 ⁽¹⁾⁽²⁾ . See sections 3, 4, 5.1 to 5.3, 6.1, 6.2, 7.1, 7.2, 8, 9, 10.1 and 10.2 of this Certificate. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	N4	Underground foul drainage
Comment:		See sections 3, 4, 5.1 to 5.3, 6.1, 6.2, 7.1, 7.2, 8, 9, 10.1 and 10.2 of this Certificate.
Regulation:	N5	Rain-water drainage
Comment:		See sections 3, 4, 5.1 to 5.3, 6.1, 6.2, 7.1, 7.2, 8, 9, 10.1 and 10.2 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 2 *Delivery and site handling* (2.1) and 13 *General* of this Certificate.

Non-regulatory Information

NHBC Standards 2008

NHBC accepts the use of Wavin UltraRib 150 mm, 225 mm and 300 mm Internal Diameter Pipes and Fittings, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 5.3 *Drainage below ground*.

General

This Certificate relates to the Wavin UltraRib 150 mm, 225 mm and 300 mm Internal Diameter Pipes and Fittings. The UltraRib pipes and fittings are for use in domestic drains and public and private sewers at depths of up to 10 metres. The system is for use in domestic drains and public and private sewers in accordance with WIS 4-35-01 and BS EN 13476-3 : 2007.

The system meets the relevant conditions and standards given in Water UK/WRC plc *Sewers for Adoption*, 6th edition, March 2006.

The Certificate does not cover the use of the products for untreated trade effluents

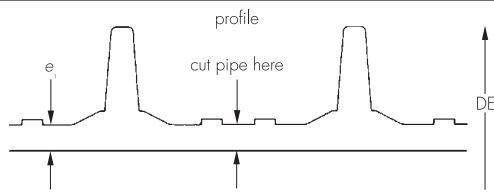
Technical Specification

1 Description

1.1 UltraRib pipes have a solid wall and a repeating pattern of radial ribs perpendicular to the axis of the pipe. The ribs provide a housing for type WC elastomeric ring seals to BS EN 681-1 : 1996.

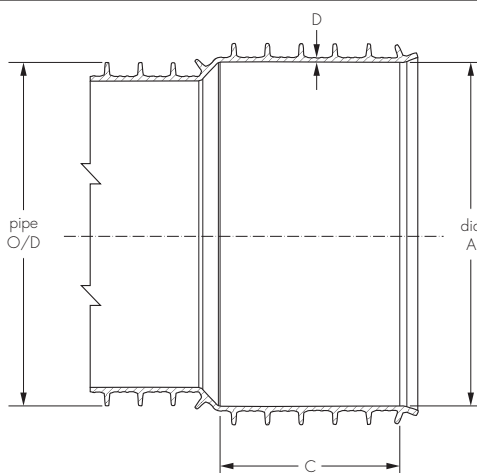
1.2 The pipes, brown in colour, are extruded in PVC-U and produced in three diameters with either plain ends (spigot x spigot) or with one end socketed (socket x spigot). The pipes are Kitemarked to WIS 4-35-01 and BS EN 13476-3 : 2007. Dimensions of the pipe and pipe sockets are given in Tables 1 and 2.

Table 1 Pipe dimensions



Nominal size (DN/ID)	Outside dia (DE) (mm)	Mean bore (mm)	Effective length (m)	Thickness (e ₁)		Mean weight (kg·m ⁻¹)
				nominal (mm)	min (mm)	
150	170	152.0	3 to 6	1.9	1.5	2.1
225	250	226.0	3 to 6	2.3	1.9	4.5
300	335	301.0	3 to 6	2.9	2.3	7.0

Table 2 Pipe socket dimensions



Nominal size (DN/ID)	Nominal pipe O/D (mm)	Socket inside dia A (mm)		Socket depth C (mm)	Min wall thickness D
		max	min		
150	170	170.5	171.6	83	1.3
225	250	250.8	252.0	100	1.6
300	335	336.1	337.6	110	1.9

1.3 UltraRib fittings are brown in colour and are either injection moulded in PVC-U or polypropylene (PP), or thermomoulded in PVC-U. The sockets of each fitting are not ribbed. The body of the fittings is ribbed where appropriate. The range of fittings covered by this Certificate is shown in Table 3.

1.4 The screw-fitted access covers are brown in colour and are injection moulded in PVC-U in two parts. The caps incorporate a type WC ring seal to BS EN 681-1 : 1996.

1.5 Continuous quality control is exercised during manufacture to maintain product quality and includes checks for dimensional accuracy, impact resistance and weight of the pipes and for dimensional accuracy, and stress relief where applicable on the fittings.

1.6 Each pipe length and fitting is engraved, marked or labelled with the Certificate holder's name, internal diameter, product code (fittings only) and the BBA identification mark and/or Certificate number.

Table 3 Fittings⁽¹⁾

S/S adaptor (to cast iron and clay spigot)



Product code	Nominal size	Dimensions (mm)				
		A	B	C	D	E
6UR128	150	310	185	95	185	215

S/S adaptor (150 mm socket x 160 mm BS EN 1401-1 spigot)



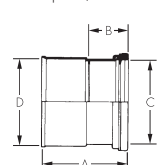
Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR141	150	180	85	160	185

D/S adaptor (to thinwall clay spigot)



Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR129	150	195	180	185

D/S adaptor (150 mm socket x 160 mm BS EN 1401-1 socket)

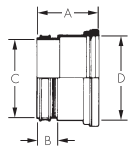


Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR142	150	175	85	160	185

continued

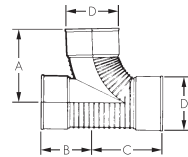
Table 3 Fittings⁽¹⁾ (continued)

S/S adaptor (150 mm spigot x 160 mm BS EN 1401-1 socket)



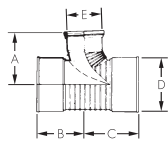
Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR143	150	120	40	160	160

D/S equal junction 87½° (to UltraRib spigot)



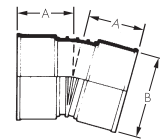
Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR193	150	245	180	230	185

D/S unequal junction 87½° (to BS EN 1401-1 spigot)



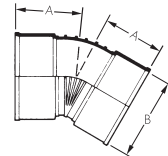
Product code	Nominal size	Dimensions (mm)				
		A	B	C	D	E
6UR199	150 x 110	180	175	160	185	130

D/S short radius bends 15°



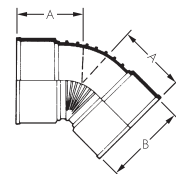
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR567	150	110	185
9UR567	225	140	275
12UR567	300	195	365

D/S short radius bends 30°



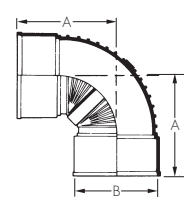
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR566	150	120	185
9UR566	225	155	275
12UR566	300	215	365

D/S short radius bends 45°



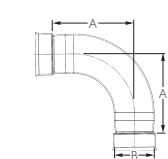
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR563	150	135	185
9UR563	225	165	275
12UR563	300	230	365

D/S short radius bends 87½°



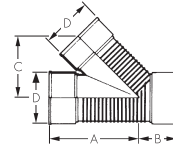
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR561	150	260	185

D/S long radius bends 87½°



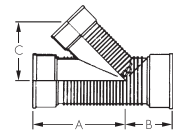
Product code	Nominal size	Dimensions (mm)	
		A	B
9UR561	225	500	275
12UR561	300	530	365

D/S equal junctions 45°



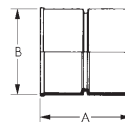
Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR213	150	185	145	230	185
9UR213	225	480	195	330	275
12UR213	300	590	280	405	365

D/S unequal junctions 45°



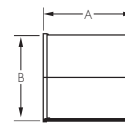
Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR219	150 x 110	265	80	175
9UR224	225 x 110	400	145	245
9UR227	225 x 150	430	110	285
9UR226	225 x 160	415	225	270
12UR236	300 x 160	490	155	300
12UR237	300 x 150	470	175	300
12UR240	300 x 225	590	280	530

D/S pipe couplers with central register



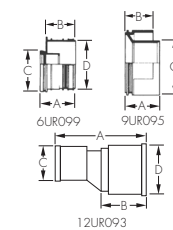
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR205	150	185	185
9UR205	225	232	280
12UR205	300	315	375

D/S slip couplers



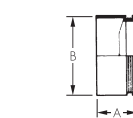
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR105	150	185	185
9UR105	225	270	275
12UR105	300	325	365

S/S reducers level invert



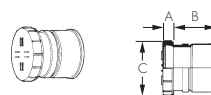
Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6URO99	150 x 110	115	95	130	170
9URO95	225 x 150	142	120	180	-
12URO93	300 x 225	400	205	275	365

Socket plugs



Product code	Nominal size	Dimensions (mm)	
		A	B
6UR296 ⁽²⁾	150	195	195
9UR296 ⁽²⁾	225	105	245
12UR296 ⁽²⁾	300	170	340

S/S screwed access cover



Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR290	150	41	153	196

P/E screwed access cover



Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR292	150	41	87	196

(1) Dimensions are for guidance only, with a tolerance of ±5 mm.
 (2) Polypropylene (PP) fittings (all others are PVC).

2 Delivery and site handling

- 2.1 Handling, storage and transportation should be in accordance with BS 8000-14 : 1989 and BS EN 1610 : 1988.
- 2.2 When long-term storage is envisaged, the pipe and 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 Wavin UltraRib 150 mm, 225 mm and 300 mm Internal Diameter Pipes and Fittings.

Design Considerations

3 General



The UltraRib pipes and fittings are for use as sewerage systems designed in accordance with BS EN 752 : 2008, 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) Order 1973.

4 Practicability of installation



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

5 Strength



5.1 The fittings have adequate strength for use in situations when pipe to WIS 4-35-01 and BS EN 13476-3 : 2007 is suitable.

5.2 For installation purposes, the pipe may be assumed to have a standard dimension ratio (SDR) equivalent of not greater than 41.

5.3 The nominal short-term stiffness is not less than 8 kN·m⁻².

6 Performance of joints



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

6.2 Joints on the pipeline remain watertight under conditions of pipeline movement in excess of those expected to occur in normal good drainage practice.

7 Flow characteristics



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

7.2 Full bore discharges and velocities are available from H R Wallingford and D I H Barr *Table for Hydraulic Design of Pipes, Sewers and Channels*, Volume 2, 8th edition. The values are based on the Colebrook-White equation.

8 Resistance to chemicals



The products are suitable for use where pipe to WIS 4-35-01 and BS EN 13476-3 : 2007 and fittings to BS EN 1401-1 : 2009 are normally used. They have adequate resistance to the type and quantities of chemicals likely to be found in domestic sewage.

9 Resistance to elevated temperatures



The products are for use where pipe to WIS 4-35-01 and BS EN 13476-3 : 2007 and fittings to BS EN 1401-1 : 2009 are normally used and have adequate resistance to the temperatures likely to be found in domestic sewage.

10 Rodding



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

10.2 The system has adequate resistance to water cleansing using pressure jetting equipment. It is recommended that low-pressure, high-volume systems are utilised in accordance with WIS 4-35-01.

11 Maintenance

As the products are confined within the soil and have suitable durability (see section 12), maintenance is not required.

12 Durability



In the opinion of the BBA, when used in the context of this Certificate, no significant deterioration of the product will take place and installations will have a life in excess of 50 years.

Installation

13 General

Installation must be in accordance with the Certificate holder's *Below Ground Drainage System Installation Guide*, Product Sheet 2 and, when appropriate, BS 8000-14 : 1989, BS EN 1610 : 1998, BS EN 752 : 2008 and Water UK/WRC plc *Sewers for Adoption*, 6th edition, March 2006.

14 Procedure

14.1 The pipe is cut midway between the ribs as shown in Figure 1.

14.2 Swarf is removed from the pipe end.

14.3 The pipe spigots and sockets are cleaned and the sealing ring is checked to ensure that it is correctly seated (not twisted) between the second and third ribs of the pipe end.

14.4 The manufacturer's lubricant is applied generously to the whole of the inside area of the socket, ensuring that it does not subsequently become contaminated with dirt.

14.5 The pipe is offered to the socket, aligned and pushed fully home.

14.6 Jointing to other materials must be carried out in accordance with the Certificate holder's *Below Ground Drainage System Installation Guide*.

14.7 The pipes and fittings must have adequate protection against damage from site traffic.

14.8 Screw-fitted access covers are for use in backdrop manholes (see Figure 2).

Figure 1 Joint details

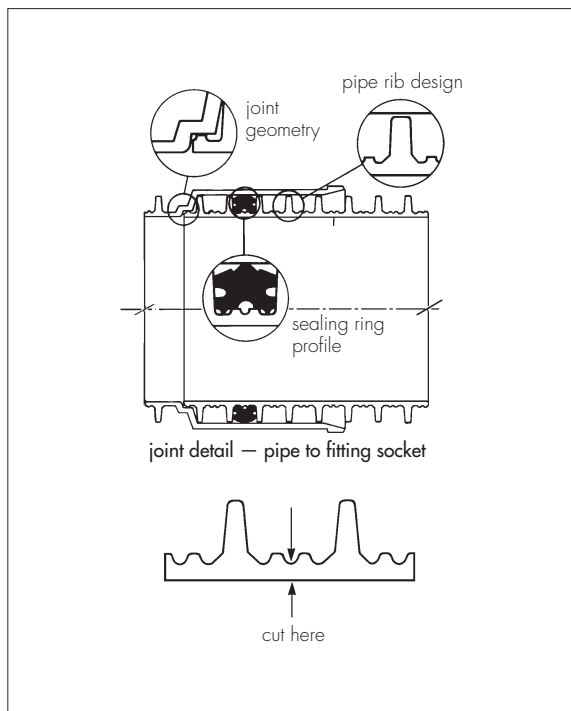
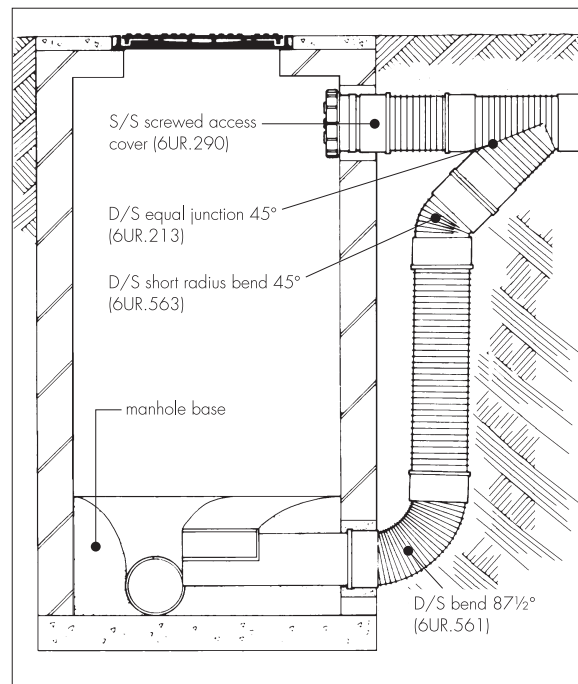


Figure 2 Manhole with backdrop — typical installation of screwed access cover



Technical Investigations

15 Tests

15.1 Tests were carried out on pipe and couplers to determine:

- flexibility and pipe ring stiffness to WIS/IGN No 4-31-05, Appendix E
- long-term stiffness to WIS/IGN No 4-31-05, Appendix D
- short-term stiffness to WIS/IGN No 4-31-05, Appendix B

- impact to WIS/IGN No 4-31-05, Appendix A
- dimensional accuracy to BS ISO 11922-1 : 1997
- stress rupture to BS 4728 : 1971
- resistance to penetration by simulated sharp aggregate
- Vicat softening temperature to BS 2782.120B : 1990
- impact resistance at 0°C to the MCHW, Volume 1, Series 500, Section 518
- longitudinal bending to the MCHW, Volume 1, Series 500, Section 518.

15.2 Pipe, socketed pipe and couplers are Kitemarked to WIS 4-35-01 and BS EN 13476-3 : 2007.

15.3 Tests were carried out on joints between pipe and fittings to determine:

- combined temperature and external load to WIS 4-35-01, Appendix A
- leaktightness whilst under angular deflection and diametric distortion to WIS 4-35-01
- ease of jointing
- dimensional accuracy to BS ISO 11922-1 : 1997
- rodding resistance to WIS 4-35-01, Appendix B short-term ring stiffness to ISO 13967 : 1998
- drop test (fabricated fittings) to BS EN 12061 : 1999
- mechanical strength and flexibility (fabricated fittings) to BS EN 12256 : 1998.

16 Investigations

16.1 An examination was made of data relating to:

- resistance to water jetting to WIS 4-35-01, Issue 2 : 2008
- practicability of installation
- chemical resistance
- design method
- flow capacities.

16.2 A user survey was carried out to evaluate the performance of the products in use.

16.3 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BS 2782-1.120B : 1990 *Methods of testing plastics — Thermal properties — Determination of Vicat softening temperature of thermoplastics*

BS 4728 : 1971 *Method for determination of the resistance to constant internal pressure of thermoplastics pipe*

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 *Plastic piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinyl chloride) (PVC-U) — Specifications for pipes, fittings and the system*

BS EN 1610 : 1998 *Construction and testing of drains and sewers*

BS EN 12061 : 1999 *Plastics piping systems — Thermoplastics fittings — Test method for impact resistance*

BS EN 12256 : 1998 *Plastics piping systems — Thermoplastics fittings — Test method for mechanical strength or flexibility of fabricated fittings*

BS EN 13476-3 : 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 profiled external surface and the system, Type B*

BS ISO 11922-1 : 1997 *Thermoplastics pipes for the conveyance of fluids — Dimensions and tolerances — Metric series*

CP 312-1 : 1973 *Code of practice for plastics pipework (thermoplastics material) — General principles and choice of material*

ISO 13967 : 1998 *Thermoplastic fittings — Determination of ring stiffness*

WIS 4-35-01, Issue 1 : 2000 *Specification for thermoplastic structured wall pipes, joints and couplers with a smooth bore for gravity sewers for the size range 150 to 900 inclusive*

WIS 4-35-01, Issue 2 : 2008 *Specification for thermoplastic structured wall pipes — Supplementary test requirements*

WIS/IGN No 4-31-05 *Specification for solid wall concentric external rib-reinforced uPVC sewer pipe*

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 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

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
- 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 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/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; 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. 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.