

**Polypipe Ltd**  
**t/a Polypipe Civils**  
Charnwood Business Park  
North Road  
Loughborough  
Leicestershire LE11 1LE

Tel: 01509 615100 Fax: 01509 265945  
e-mail: [civilssales@polypipe.com](mailto:civilssales@polypipe.com)  
website: [www.polypipe.com](http://www.polypipe.com)



**Agrément Certificate**  
**00/3678**  
Product Sheet 3

## RIDGIDRAIN ADVANCED DRAINAGE SYSTEM

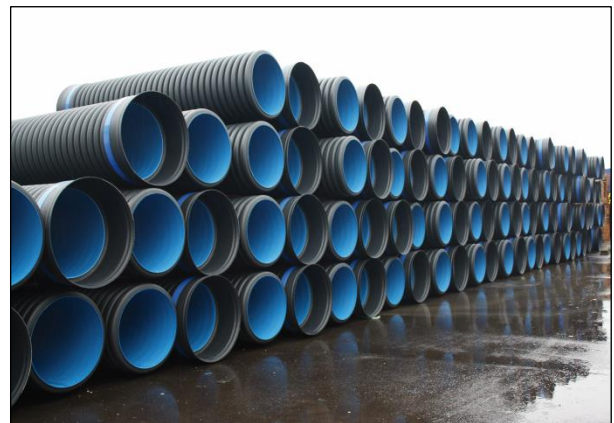
### RIDGIDRAIN (HDPE) 100 MM TO 900 MM PIPES AND COUPLERS

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Ridgidrain (HDPE) 100 mm to 900 mm Pipes and Couplers, a range of high density polyethylene (HDPE) pipes (perforated or unperforated) and couplers for use as filter and carrier drain pipes in surface water drainage systems.

(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

**Strength** — the products have adequate strength to resist the loads associated with installation and service (see section 6).

**Performance of joints** — the products will remain watertight under normal service conditions (see section 7).

**Maintenance** — the products may be cleaned using standard techniques (see section 10).

**Durability** — the products will have a service life in excess of 50 years (see section 11).



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

On behalf of the British Board of Agrément

Paul Valentine  
Technical Excellence Director

Claire Curtis-Thomas  
Chief Executive

Date of Fourth issue: 13 February 2019

Originally certificated on 23 October 2012

*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](http://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.*

#### British Board of Agrément

Bucknalls Lane  
Watford  
Herts WD25 9BA

©2019

tel: 01923 665300  
[clientservices@bbacerts.co.uk](mailto:clientservices@bbacerts.co.uk)  
[www.bbacerts.co.uk](http://www.bbacerts.co.uk)

## Regulations

In the opinion of the BBA, Ridgidrain (HDPE) 100 mm to 900 mm Pipes and Couplers, 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)

<b>Requirement:</b>	<b>H3(3)</b>	<b>Rainwater drainage</b>
Comment:		The products will convey the flow of rainwater and minimise the risk of blockages or leaks. See section 8 of this Certificate.
<b>Regulation:</b>	<b>7</b>	<b>Materials and workmanship (applicable in Wales only)</b>
<b>Regulation:</b>	<b>7(1)</b>	<b>Materials and workmanship (applicable in England only)</b>
Comment:		The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



### The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b>	<b>8(1)(2)</b>	<b>Durability, workmanship and fitness of materials</b>
Comment:		Use of the products can contribute to a construction satisfying this Regulation. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>9</b>	<b>Building standards applicable to construction</b>
Standard:	3.6(a)(b)	Surface water drainage
Comment:		The system will satisfy the relevant requirements of this Standard, with reference to clauses 3.6.1 <sup>(1)(2)</sup> and 3.6.2 <sup>(1)(2)</sup> . See section 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.
<b>Regulation:</b>	<b>12</b>	<b>Building standards applicable to conversions</b>
Comment:		Comments in relation to the products under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> .
		(1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



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

<b>Regulation:</b>	<b>23(a)(i)</b>	<b>Fitness of materials and workmanship</b>
Comment:	<b>(iii)(b)(i)</b>	The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>82(a)</b>	<b>Rainwater drainage</b>
Comment:		The products will convey the flow of rainwater and minimise the risk of blockages or leaks. See section 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: 1 *Description* (1.3 to 1.6), 3 *Delivery and site handling* (3.5) and 14 *Procedure* (14.1) of this Certificate.

## Additional Information

### NHBC Standards 2019

In the opinion of the BBA, Ridgidrain (HDPE) 100 mm to 900 mm Pipes and Couplers, 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*, Clause 5.3.4 *Foul and surface water disposal*.

### CE marking

The Certificate holder has taken the responsibility of CE marking the elastomeric sealing rings, in accordance with harmonised European Standard BS EN 681-1 : 1996. An asterisk (\*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

## Technical Specification

### 1 Description

1.1 The range of Ridgidrain (HDPE) 100 mm to 900 mm Pipes and Couplers comprises:

- Ridgidrain (HDPE) 100 mm to 900 mm filter and carrier Pipes (perforated and/or unperforated) and 400 to 600 mm Couplers — manufactured from HDPE to material specifications given in Tables 1 and 3 respectively
- Ridgidrain (PP) 100 to 375 mm couplers — manufactured from polypropylene with the specifications given in Table 2
- Ridgidrain 750 to 900 mm double couplers — manufactured from HDPE to the material specifications given in Table 4.

*Table 1 Material properties/specification for pipes 100 mm – 900 mm diameter (polyethylene)*

Property	Test method reference	Specification
Tensile properties	BS EN ISO 527-2	Sample 1B at 50 mm·m <sup>-1</sup> ≥ 18 MPa
Thermal stability (OIT)	BS EN 728	≥ 4 min
Melt mass-flow rate	BS EN ISO 1133	≤ 1.0 g (10 min) <sup>-1</sup> 2.16 kg at 190°C
Reference density	BS EN ISO 1183-1	≥ 935 kg·m <sup>-3</sup>
Heat reversion	ISO 12091	110°C ± 2°C (pass)

*Table 2 Material properties/specification for couplers 100 mm – 375 mm diameter (polypropylene)*

Property	Test method reference	Specification
Tensile properties	BS EN ISO 527-2	Sample 1B at 50 mm·m <sup>-1</sup> ≥ 18 MPa
Thermal stability (OIT)	BS EN 728	≥ 4 min
Melt mass-flow rate	BS EN ISO 1133	≤ 7 g (10 min) <sup>-1</sup> 2.16 kg at 230°C
Reference density	BS EN ISO 1183-1	≥ 890 kg·m <sup>-3</sup>
Effects of heating	BS EN ISO 580	150°C ± 2°C (pass)

*Table 3 Material properties/specification for couplers 400 mm – 600 mm diameter (polyethylene)*

Property	Test method reference	Specification
Tensile properties	BS EN ISO 527-2	Sample 1B at 50 mm·m <sup>-1</sup> ≥ 18 MPa
Thermal stability (OIT)	BS EN 728	≥ 4 min
Melt mass-flow rate	BS EN ISO 1133	≤ 8 g (10 min) <sup>-1</sup> 2.16 kg at 190 °C
Reference density	BS EN ISO 1183-1	≥ 935 kg·m <sup>-3</sup>
Effects of heating	BS EN ISO 580	110°C ± 2°C (pass)

**Table 4 Material properties/specification for rotationally moulded double couplers 750 mm – 900 mm diameter (polyethylene)**

Property	Test method reference	Specification
Tensile properties	BS EN ISO 527-2	Sample 1B at 50 mm·m <sup>-1</sup> ≥ 18 MPa
Thermal stability (OIT)	BS EN 728	≥ 1 min
Melt mass-flow rate	BS EN ISO 1133	≤ 20 g (10 min) <sup>-1</sup> 5 kg at 190 °C
Reference density	BS EN ISO 1183-1	≥ 925 kg·m <sup>-3</sup>

1.2 The pipes are structured-wall constructions and have a corrugated outer wall and smooth inner wall. The outer wall is coloured black and the inner wall blue, as standard, although other internal colours are available on request<sup>(1)</sup>.

(1) Further information can be obtained from the Certificate holder.

1.3 The 100 to 900 mm pipes can be manufactured either perforated or unperforated. Perforated pipes are available with the slots in the dwell between corrugations, equally spaced around the circumference and offset symmetrically for alternate dwells along the pipe length (see Tables 5 to 8 and Figure 1). Alternatively, the slots are located on one half of the pipe only, and thus the permeable areas are approximately halved.

**Table 5 Perforated pipe details — fully perforated (production line A)**

Nominal internal pipe diameter (mm)	Number of slots per dwell	Number of rows of slots	Number of dwells per metre	Slot length (range) (mm)	Slot width (range) (mm)	Permeable area (minimum) (mm <sup>2</sup> ·m <sup>-1</sup> )
100	4	8	60	15 - 25	1.5 - 2.0	5400
150	3	6	45	15 - 25	1.5 - 3.0	3040
225	3	6	30	15 - 35	1.5 - 3.0	2025
300	6	6	25	15 - 35	1.5 - 3.0	3375
375	10	10	20	20 - 45	1.5 - 3.6	6000
400	2	4	20	70 - 90	3 - 4	8400
450	2	4	13	70 - 90	3 - 4	5460
500	2	4	22	70 - 90	3 - 4	9240
600	2	4	10	80 - 100	3 - 4	4800
750 (SN4 & SN6)	3	3	8	120 - 170	2 - 4	5760
900 (SN4 & SN6)	3	3	10	120 - 170	2 - 4	7200

**Table 6 Perforated pipe details — fully perforated (production line B)**

Nominal internal pipe diameter (mm)	Number of slots per dwell	Number of rows of slots	Number of dwells per metre	Slot length (range) (mm)	Slot width (range) (mm)	Permeable area (minimum) (mm <sup>2</sup> ·m <sup>-1</sup> )
150	6	6	45	20 - 52	1.0 - 2.0	5400
225	3	6	30	25 - 60	1.0 - 2.0	2250
300	6	6	25	25 - 75	1.0 - 2.0	3750
375	10	10	20	20 - 45	1.5 - 3.6	6000

**Table 7 Perforated pipe details — half perforated (production line A)**

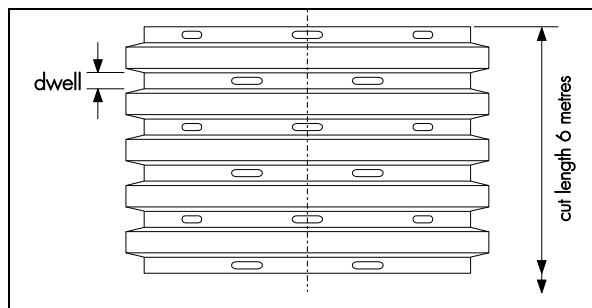
Nominal internal pipe diameter (mm)	Number of slots per dwell	Number of rows of slots	Number of dwells per metre	Slot length (range) (mm)	Slot width (range) (mm)	Permeable area (minimum) (mm <sup>2</sup> ·m <sup>-1</sup> )
100	2	3	60	15 - 25	1.5 - 2.0	2700
150	2/1 <sup>(1)</sup>	3	45	15 - 25	1.5 - 3.0	1520
225	2/1 <sup>(1)</sup>	3	30	15 - 35	1.5 - 3.0	1015
300	3	3	25	15 - 35	1.5 - 3.0	1685
375	5	5	20	20 - 45	1.5 - 3.6	3000
400	1	2	20	70 - 90	3 - 4	4200
450	1	2	13	70 - 90	3 - 4	2730
500	1	2	33	70 - 90	3 - 4	4620
600	1	2	20	80 - 100	3 - 4	2400
750 (SN4 & SN6)	2	2	8	120 - 170	2 - 4	3840
900 (SN4 & SN6)	2	2	10	120 - 170	2 - 4	4800

(1) Two slots or one slot in alternating dwells.

**Table 8 Perforated pipe details — half perforated (production line B)**

Nominal internal pipe diameter (mm)	Number of slots per dwell	Number of rows of slots	Number of dwells per metre	Slot length (range) (mm)	Slot width (range) (mm)	Permeable area (minimum) (mm <sup>2</sup> ·m <sup>-1</sup> )
150	4	4	45	20–52	1.0–2.0	3600
225	2	4	30	25–60	1.0–2.0	1500
300	4	4	25	25–75	1.0–2.0	2500
375	5	5	20	20–45	1.5–3.6	3000

**Figure 1 Details of perforations**

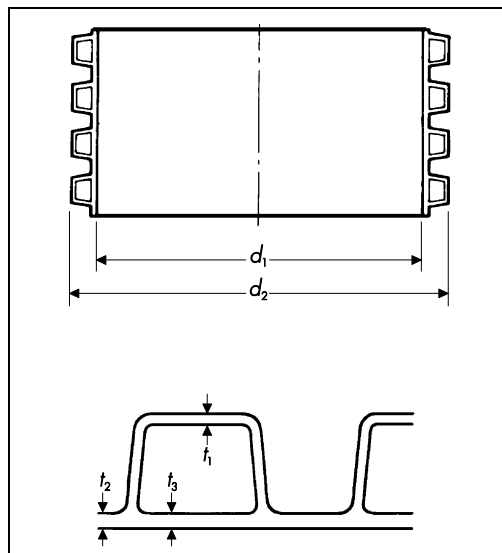


1.4 The pipes are manufactured in nominal internal diameters of 100 to 900 mm, and to the dimensions shown in Table 9 and Figure 2.

**Table 9 Ridgidrain (HDPE) 100 mm to 900 mm Pipe – dimensions**

Nominal internal pipe diameter, $d_1$ (mm)	Minimum internal pipe diameter (mm)	Nominal external pipe diameter, $d_2$ (mm)	$t_1$ minimum (mm)	$t_2$ minimum (mm)	$t_3$ minimum (mm)	Nominal length (m)	Nominal weight ( $\text{kg}\cdot\text{m}^{-1}$ )
100	98	118.75	0.8	1.5	0.7	6	0.80
150	145	176.35	0.7	1.0	0.8	6	1.35
225	220	266.5	1.3	1.8	0.8	6	3.0
300	294	353.75	1.3	2.1	1.0	6	5.0
375	372	435.5	1.6	2.9	1.5	6	6.7
400	392	458	1.4	2.8	1.2	6	8.0
450	441	523	1.5	3.9	1.4	6	9.0
500	490	576	1.6	3.0	1.5	6	12.0
600	588	700	2.0	5.0	1.7	6	14.0
750 (SN4)	744	852	2.9	2.1	2.1	3	20
750 (SN6)	735.9	852	3.8	4.1	4.1	3	30
900 (SN4)	893.8	1022	3.6	2.6	2.6	3	29
900 (SN6)	884	1022	4.2	4.8	4.8	3	40

**Figure 2 Ridgidrain (HDPE) pipe**

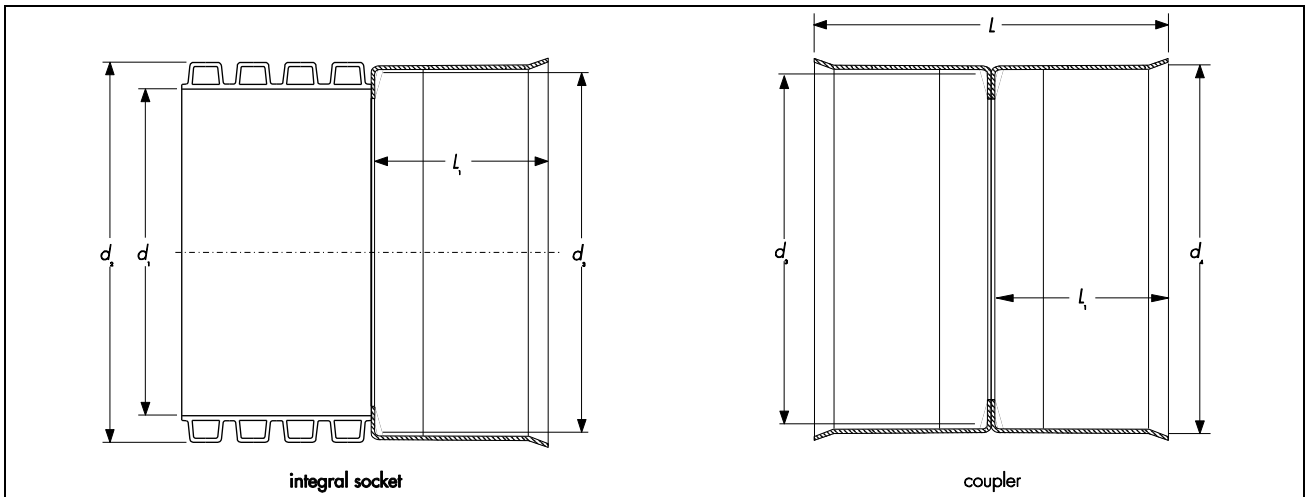


1.5 The pipes are supplied with either two plain ends, or with one plain end and a welded integral socket. The integral socket is to the same profile as that of half a coupler for integral sockets of 400 to 600 mm diameter. For the 750 to 900 mm diameters, the integral socket is formed as part of the corrugation process. Dimensions of integral sockets are given in Table 10 and details are shown in Figure 3.

**Table 10 Integral socket dimensions**

Nominal internal pipe diameter, $d_1$ (mm)	Nominal internal socket diameter, $d_3$ (mm)	Nominal socket depth $L_1$ (mm)	Nominal seal height, $h$ (mm)
400	463	200	40
450	528	225	51 / 49.7
500	577	251	49
600	707	281	75
750 (SN4)	858	320	72.8
750 (SN6)	858	320	72.8
900 (SN4)	1030	405	86.7
900 (SN6)	1030	405	86.7

Figure 3 Welded integral socket and couplers



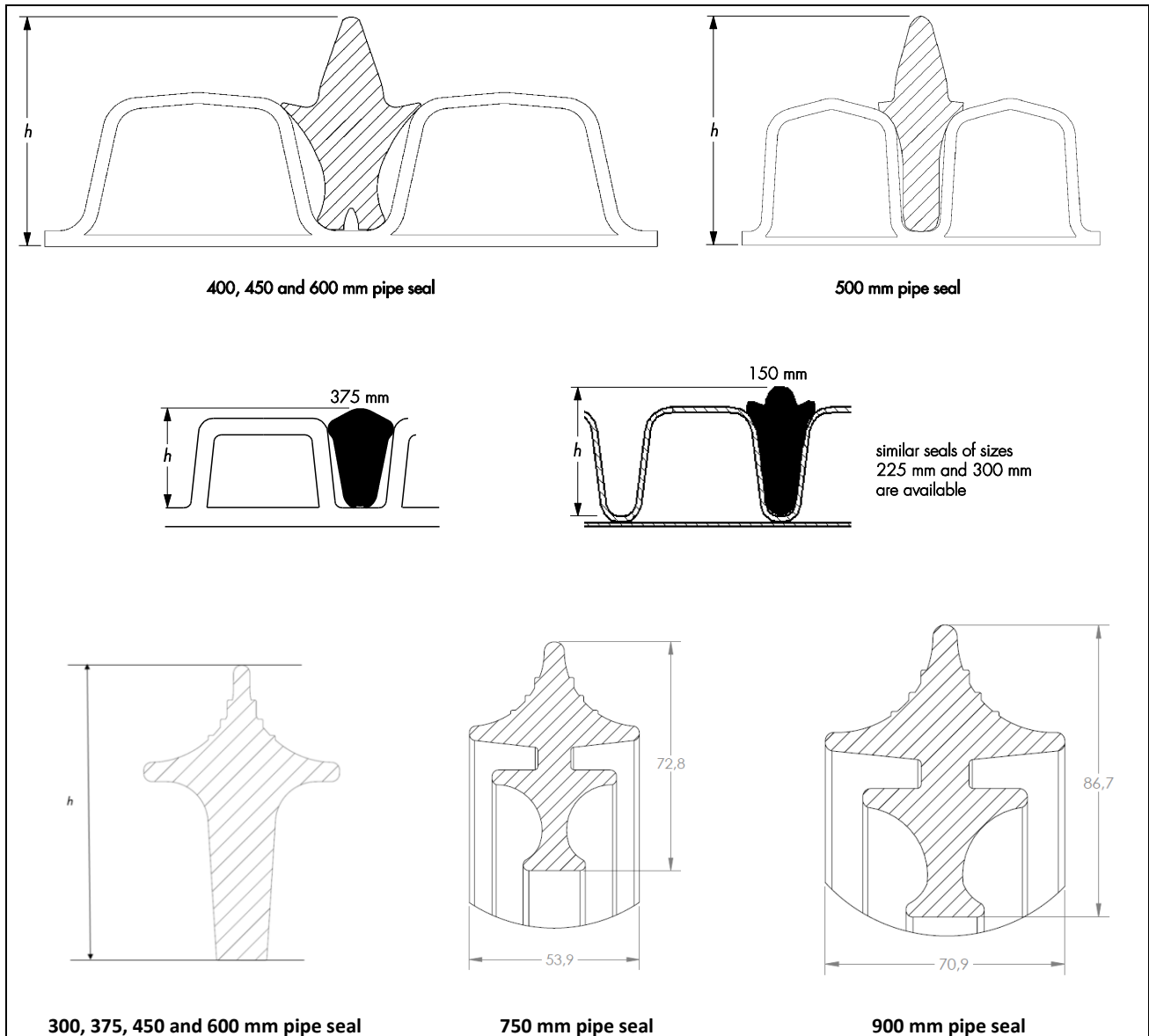
1.6 The black polyethylene couplers, manufactured by the Certificate holder, are used for joining the plain ended Ridgidrain (HDPE) 100 to 600 mm pipes. The rotationally moulded HDPE double couplers are externally bought-in for 750 and 900 mm pipes (see Table 11 for coupler dimensions and Figure 3).

Table 11 Coupler dimensions

Nominal internal pipe diameter, $d_1$ (mm)	Nominal internal socket diameter, $d_3$ (mm)	Nominal external diameter, $d_4$ (mm)	Nominal length (L) (mm)	Nominal seal height, $h$ (mm)
100	119	127	195	9.8
150	176	182	183	16.4
225	265	275	260	24
300	353	365	280	31.5/35.6
375	433	447	333	33/40.8
400	463	475	400	40
450	528	540	435	51/49.7
500	577	589	489	49
600	707	719	560	75
750	857.6	873.8	660	72.8
900	1029	1047	800	86.7

1.7 Sealing of the integral socket joints, and joints formed using couplers, requires rubber sealing rings supplied by the Certificate holder (see Figure 4). The rings are manufactured to BS EN 681-1 : 1996\*. The seals must be fitted in accordance with the Certificate holder's installation instructions to ensure a watertight joint.

Figure 4 Seals



## 2 Manufacture

2.1 The pipes are manufactured by a twin extrusion process, with the inner and outer skins extruded simultaneously one inside the other, and heat-welded together in one continuous process. The moulded pipes are cooled, perforated if required and cut to length. Two production lines, A and B, are used to manufacture the pipes.

2.2 The 100 to 375 mm double couplers are injection moulded. The 400 to 600 mm couplers are made from two injection moulded half couplers, which are then welded together to form the completed coupler. The 750 and 900 mm couplers are rotationally moulded.

2.3 The integral sockets are made using one half coupler, which is spin welded on to the end of the pipe for pipes of 400 to 600 mm diameter. For the 750 and 900 mm integral sockets, these are formed as part of the corrugation process.

2.4 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 being operated by the manufacturer are being maintained.

2.5 The management system of Polypipe Ltd t/a Polypipe Civils has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 and BS EN ISO 14001 : 2015 by BSI (Certificates Q06225 and EMS 535794 respectively).

### 3 Delivery and site handling

3.1 Pipes with diameters up to 400 mm are delivered to site packaged on wooden support frames, with five pipe lengths to the pack. Pipes with diameters of 450 mm and greater can be supplied loose or packed as required.

3.2 Each pipe bears a label showing the:

- name of the manufacturer
- company name
- product code<sup>(1)</sup>
- type of product — pipes unperforated, perforated, half perforated
- job/pack number
- operator
- length
- BBA logo incorporating the number of this Certificate.

(1) The Ridgidrain (HDPE) product range has '/1' at the end of the product code.

3.3 When long-term storage is envisaged, the products must be protected from direct sunlight. If protection cannot be provided, consideration must be given to the effects of daily exposure to direct sunlight:

- up to 3 months — negligible UV degradation but possible extreme surface temperatures of up to 80°C may cause some localised distortion
- 3 to 12 months — may have significant effect on the impact resistance and physical properties
- over 12 months — damage will occur unless protection is provided.

3.4 The Certificate holder has the option of adding chemicals to provide enhanced UV stability on request.

3.5 The pipes should be stored on a flat surface. Where they are delivered as loose lengths, they should not be stacked more than 4 m high. Care should be taken not to drop pipes or couplers on their ends, particularly during cold weather conditions.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Ridgidrain (HDPE) 100 mm to 900 mm Pipes and Couplers.

## Design Considerations

### 4 Use

4.1 Ridgidrain (HDPE) 100 mm to 900 mm Pipes and Couplers, when installed in accordance with the recommendations given in this Certificate, are suitable for the collection and disposal of surface and sub-surface water.

4.2 This Certificate does not cover the use of the pipes for domestic sewage, combined sewerage systems or untreated trade effluent.

## 5 Practicability of installation

The products are designed to be installed by a competent contractor experienced with these types of products, in accordance with BS EN 1610 : 2015.

## 6 Strength

6.1 The products have adequate robustness to resist the loads associated with installation, and with subsequent use in the situations defined in section 4.1.

6.2 For installation purposes, the pipes may be assumed to have a standard dimension ratio (SDR) equivalent of not greater than 26. The pipes have adequate resistance to the impact loads to which they may be subjected during installation and in service.

6.3 The pipes have a ring stiffness in excess of  $6 \text{ kN}\cdot\text{m}^{-2}$  in accordance with BS EN ISO 9969 : 2016 and a creep ratio of less than  $4 \text{ kN}\cdot\text{m}^{-2}$  in accordance with BS EN ISO 9967 : 2016, and have adequate resistance to static loads. Pipes of sizes 750 and 900 mm are also available in stiffness class SN4.

## 7 Performance of joints

The joints are satisfactory and will remain watertight under normal service conditions of pipe deformation, side or vertical displacement, pipeline deflection and thermal movement.

## 8 Flow characteristics



8.1 The pipe will have the normal flow characteristics associated with polyethylene pipes.

8.2 Full-bore velocities are available from the *Tables for the Hydraulic Design of Pipes, Sewers and Channels*, Volume 2, 8th Edition by H R Wallingford and D I H Barr. The values are based on the Colebrook-White equation. An appropriate value of roughness coefficient should be selected when designing the drainage system. For new pipes, a value of 0.006 mm is applicable, but for designs, a value of 0.6 mm is generally used.

## 9 Resistance to chemicals

The products will be unaffected by the types and quantities of chemicals likely to be found in surface water drainage.

## 10 Maintenance



10.1 Access to the products for cleaning should be provided by conventional methods.

10.2 In common with other standard plastic drainage systems, toothed root cutters and rods with metal ferrules, as used with some mechanical clearing systems, could damage the pipes and couplers and should not be used.

10.3 Results of tests indicate that the pipes have adequate resistance to water jetting systems. However, it is recommended that low pressure, high volume systems are used in accordance with BS EN 13476-1 : 2018, Annex D.

## 11 Durability



In the opinion of the BBA, when used in the context of this Certificate, the material from which the pipes and couplers are manufactured will not significantly deteriorate and the anticipated life of the products will be in excess of 50 years.

## 12 Reuse and recyclability

The products are manufactured from polyethylene and polypropylene, which are recyclable.

### Installation

## 13 General

13.1 Ridgidrain (HDPE) 100 mm to 900 mm Pipes and Couplers must be installed in accordance with BS EN 752 : 2017 and BS EN 1610 : 2015, as appropriate.

13.2 The pipes are installed using traditional drain laying methods. The lengths in which the pipes are available, and their lightness in weight, are a significant advantage in handling and installation. Jointing of the pipes is achieved easily.

13.3 The products must be protected against damage from construction traffic.

13.4 Completed drainage systems should be tested in accordance with BS EN 1610 : 2015 to ensure they are functioning correctly.

## 14 Procedure

14.1 The pipes are cut easily using conventional hand tools, and should be cut square between the corrugations.

14.2 For a watertight joint, the pipe ends and socket/coupler should be cleaned and a rubber seal fitted externally between the first and second corrugation in the pipe. The seal and inside of the socket/coupler should be lubricated and the pipe pushed fully home to the central register, either by hand or using a lever if necessary.

14.3 Care should be taken during backfill to maintain the line and level of the pipelines. If necessary, the pipe should be restrained to prevent uplift.

### Technical Investigations

## 15 Tests

Tests were carried out and the results assessed to determine:

- dimensional accuracy
- ring stiffness to BS EN ISO 9969 : 2016
- creep ratio to BS EN ISO 9967 : 2016
- impact strength at 0 and 23°C to BS EN ISO 11173 : 2017 with a d25 striker of 1.0 kg mass
- leaktightness of joints to BS EN ISO 13259 : 2018, when subjected to diameter deflection and angular deflection
- resistance to longitudinal bending
- resistance to rodding
- insertion force (ease of jointing).

## 16 Investigations

16.1 An assessment was made of data relating to:

- chemical resistance
- flow capacity
- practicability of installation
- material properties
- resistance to rodding and jetting
- resistance to cyclic loading.

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.

## Bibliography

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

BS EN 728 : 1997 *Plastics piping and ducting systems — Polyolefin pipes and fittings — Determination of oxidation induction time*

BS EN 752 : 2017 *Drain and sewer systems outside buildings — Sewer system management*

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

BS EN ISO 11173 : 2017 *Thermoplastics pipes — Determination of resistance to external blows — Staircase method*

BS EN ISO 13259 : 2018 *Thermoplastics piping systems for underground non-pressure applications - Test method for leaktightness of elastomeric sealing ring type joints*

BS EN 13476-1 : 2018 *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 ISO 527-2 : 2012 *Plastics — Determination of tensile properties — Test conditions for moulding and extrusion plastics*

BS EN ISO 580 : 2005 *Plastics piping and ducting systems — Injection-moulded thermoplastics fittings — Methods for visually assessing the effects of heating*

BS EN ISO 1133 : 2005 *Plastics — Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics*

BS EN ISO 1183-1 : 2012 *Plastics — Methods for determining the density of non-cellular plastics — Immersion method, liquid pycnometer method and titration method*

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

BS EN ISO 14001 : 2015 *Environmental management system — Requirements*

BS EN ISO 9967 : 2016 *Thermoplastics pipes — Determination of creep ratio*

BS EN ISO 9969 : 2016 *Thermoplastics pipes — Determination of ring stiffness*

ISO 12091 : 1995 *Structural wall thermoplastics pipes — Oven test*

### 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.