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**Agrément Certificate**  
**91/2673**  
**Product Sheet 3**

**POLYPIPE RAINWATER SYSTEMS**

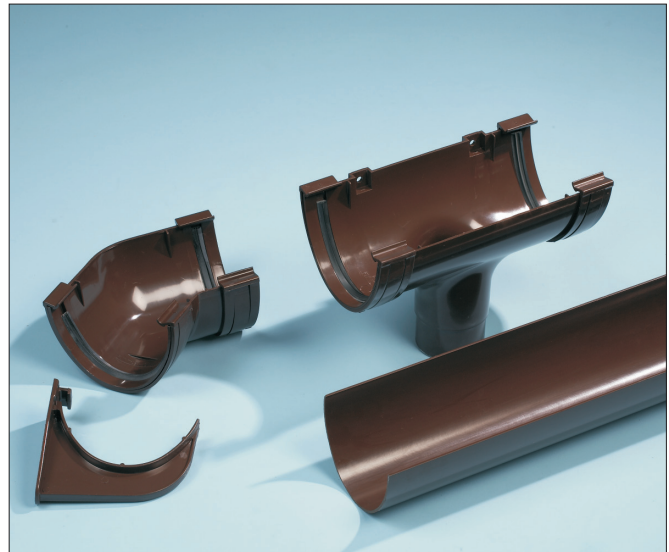
**POLYPIPE POLYFLOW DEEP CAPACITY GUTTER SYSTEM AND ACCESSORIES**

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to the Polypipe Polyflow Deep Capacity Gutter System and Accessories, for the collection and discharge of rainwater from roofs.

(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**

**Performance of joints** — joints between gutter sections and fittings are watertight under conditions of thermal movement in excess of those expected to occur in practice (see section 6).

**Resistance to loading** — gutters have adequate resistance to snow loading (see section 7).

**Durability** — the system will have a life expectancy of at least 20 years (see section 10).



The BBA has awarded this Certificate to the company named above for the system described herein. This system 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

Paul Valentine  
Technical Excellence Director

Claire Curtis-Thomas  
Chief Executive

Date of Third issue: 17 August 2018

Originally certificated on 30 July 1991

*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.*

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# Regulations

In the opinion of the BBA, the Polypipe Polyflow Deep Capacity Gutter System and Accessories, 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:	H3	Rainwater drainage
Comment:		The system will carry the flow of rainwater from the roof to an outfall and minimise the risk of blockage or leakage. See section 8.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The system is acceptable. See section 10 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 use of the system satisfies the requirements of this Regulation. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	3.6	Surface water drainage
Comment:		The system satisfies the relevant requirement of this Standard, with reference to clause 3.6.1 <sup>(1)</sup> . See section 8.1 of this Certificate. (1) Technical Handbook (Domestic).



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

Regulation:	23	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation:	82	Rainwater drainage
Comment:		The system will contribute to satisfying the relevant requirements of this Regulation. See section 8.1 of this Certificate.

## Construction (Design and Management) Regulations 2015

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

In the opinion of the BBA, there is no information in this Certificate which relates to the obligations of the client, designer (including Principal Designer) and contractor (including Principal Contractor) under these Regulations.

# Additional Information

## NHBC Standards 2018

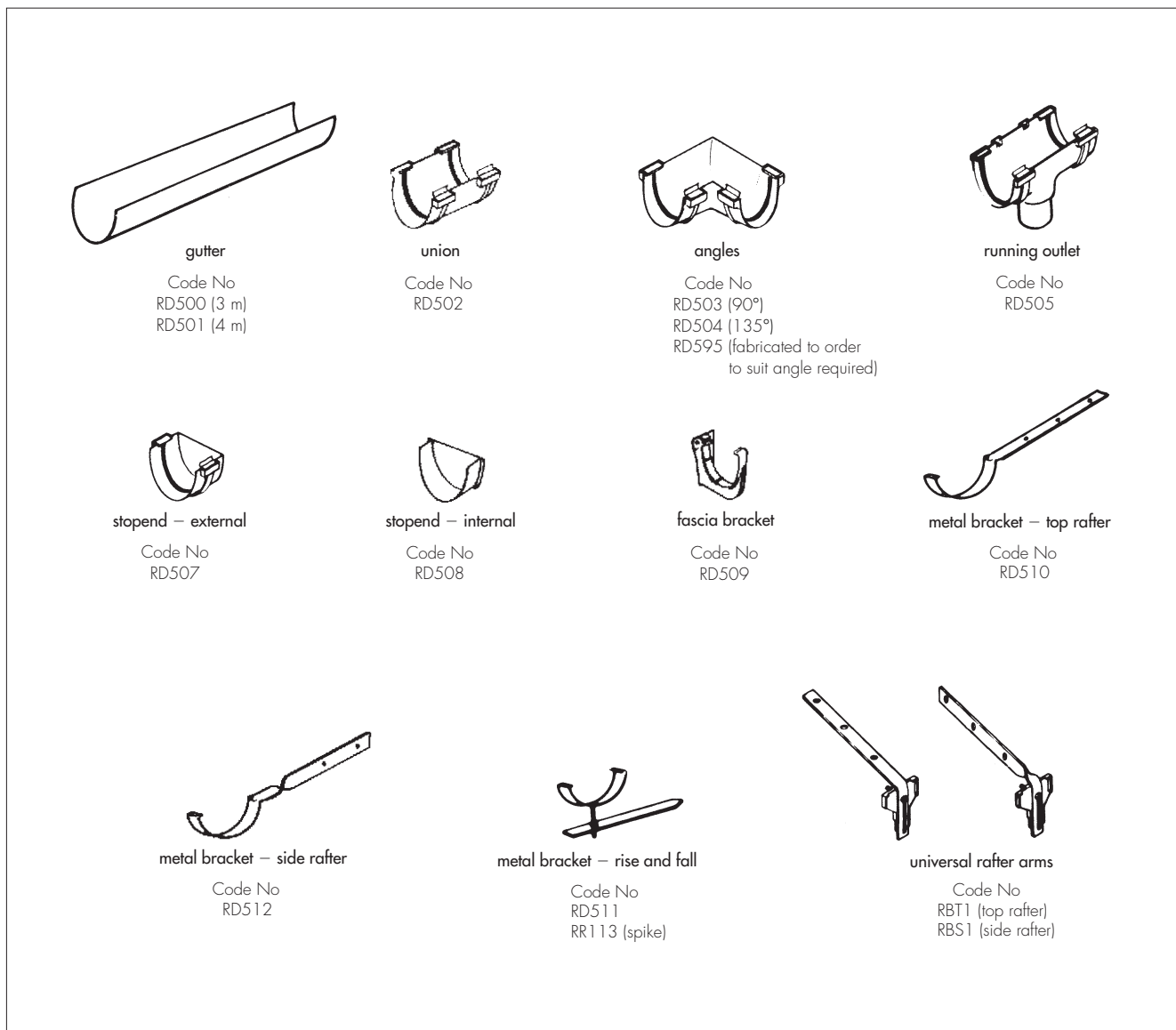
In the opinion of the BBA, the Polypipe Polyflow Deep Capacity Gutter System and Accessories, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 7.1 *Flat roofs and balconies* and 7.2 *Pitched roofs*.

# Technical Specification

## 1 Description

1.1 The components of the Polypipe Polyflow Deep Capacity Gutter System and Accessories covered by this Certificate are shown in Figure 1. The capacity of the system can reduce the number of rainwater downpipes required to drain a roof in comparison with half-round gutters of the same nominal size. The semi-elliptical shape leads to an improvement in self-cleansing action.

Figure 1 Components



1.2 The gutters and accessories are manufactured from PVC-U and are available in black, anthracite, chestnut brown, grey and white.

1.3 The gutter section is semi-elliptical, 117 mm nominal width by approximately 75 mm depth. Each fitting incorporates flexible clips for fixing to the gutter. The joints are sealed with elastomeric gaskets.

1.4 The gutters and accessories are used with the 68 mm diameter downpipes and accessories listed in Product Sheet 4 of this Certificate.

1.5 Gutter sections are extruded and cut to lengths of 3 or 4 m. Fittings are produced by injection moulding.

1.6 The metal rafter brackets are manufactured from carbon steel and galvanized to BS EN ISO 1461 : 2009.

1.7 Continuous quality control is exercised during manufacture to maintain product quality. Checks include dimensional accuracy and visual examination.

## 2 Manufacture

2.1 The Polypipe Polyflow Deep Capacity Gutter System is manufactured from unplasticised polyvinyl chloride and is produced by conventional extrusion and injection moulding techniques.

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 the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate FM00318).

### 3 Delivery and site handling

3.1 Gutters are delivered to site in bundles of five protected by white polyethylene sleeving which should not be removed until the components are used.

3.2 Each bundle of gutters or downpipes is packed in a sleeve printed with the Certificate holder's logo. The BBA Certificate number is printed on each gutter and downpipe at every metre. Fittings are marked with the Certificate holder's logo and the product code. Components covered by the Kitemark licence also bear the Kitemark logo.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Polypipe Polyflow Deep Capacity Gutter System and Accessories.

### Design Considerations

#### 4 General

The Polypipe Polyflow Deep Capacity Gutter System and Accessories, when used in conjunction with the downpipe and accessories listed in Product Sheet 4, are suitable for use as eaves guttering for the collection of rainwater from roofs.

#### 5 Practicability of installation

Installation of the system can be carried out under normal site conditions without undue difficulty.

#### 6 Performance of joints

Correctly made joints between gutter sections and fittings are watertight under conditions of thermal movement in excess of those expected to occur in practice.

#### 7 Resistance to loading

The gutter will have adequate resistance to snow loading under normal conditions. Care must be exercised in placing ladders for roof maintenance; the use of ladder stays is recommended.

#### 8 Flow characteristics



8.1 Flow capacities associated with the system, when calculated in accordance with BS EN 12056-3 : 2000, are given in Tables 1 to 3.

Table 1 Flow capacity<sup>(1)</sup> — outlet at one end of gutter

Gutter type	Length (m)	Capacity (l·s <sup>-1</sup> )	Maximum effective area served <sup>(2)</sup> (m <sup>2</sup> )
Short <sup>(3)</sup>	3.50	1.10	50
Long	6.00	1.05	48
Long	12.00	0.93	42

(1) Reduced capacities apply where bends are incorporated (see BS EN 12056-3 : 2000).

(2) The maximum effective area is based on the national Building Regulation maximum value of rainfall intensity of 0.022 l·s<sup>-1</sup>·m<sup>-2</sup> for a flat roof, and should be calculated in accordance with BS EN 12056-3 : 2000 for other values of rainfall intensity or roof types other than flat.

(3) A short gutter is defined as less than 50 times its design water depth.

Table 2 Flow capacity<sup>(1)</sup> — outlet in centre of two gutters

Gutter type	Length (m)	Capacity (l·s <sup>-1</sup> )	Maximum effective area served <sup>(2)</sup> (m <sup>2</sup> )
Short <sup>(3)</sup>	3.50	2.20	100
Long	6.00	2.10	95
Long	12.00	1.86	85

(1) Reduced capacities apply where bends are incorporated (see BS EN 12056-3 : 2000).

(2) The maximum effective area is based on the national Building Regulation maximum value of rainfall intensity of 0.022 l·s<sup>-1</sup>·m<sup>-2</sup> for a flat roof, and should be calculated in accordance with BS EN 12056-3 : 2000 for other values of rainfall intensity or roof types other than flat.

(3) A short gutter is defined as less than 50 times its design water depth.

Table 3 Outlet capacity<sup>(1)(2)</sup> of circular downpipe

Equivalent bore (mm)	Capacity (l·s <sup>-1</sup> )
60	3.40

(1) Based on BS EN 12056-3 : 2000, Table 8.

(2) Assumes the outlet is tapered with a plan area of double the area of the outlet pipe.

8.2 Under normal conditions of rainfall, where the gutter flows partially full, the depth of flow in the semi-elliptical Polyflow gutter will be greater than that of half-round section. This, with the steeply sloping gutter sides, can lead to an improvement in self-cleansing action.

## 9 Maintenance

9.1 The gutter and accessories are manufactured from self-coloured material which does not require painting. To maintain the appearance, the system should be washed periodically with water and detergent.

9.2 Damaged sections may be removed by unclipping from brackets and unions. Adjoining sections should not be damaged by this action, but unions and brackets may need to be replaced.

## 10 Durability



The gutter system is made from a conventional material as used in gutter systems conforming to BS EN 607 : 2004, BS EN 12200-1 : 2016 and BS EN 1462 : 2004. The material is acceptable and will have a life expectancy of at least 20 years.

## 11 Reuse and recyclability

The system is manufactured from PVC, which can be recycled.

# Installation

## 12 Procedure

12.1 Installation must be in accordance with the Certificate holder's instructions *Polypipe Above Ground Drainage Systems* and BS EN 12056-3 : 2000, where relevant.

12.2 Under normal conditions, brackets are secured to the fascia with one No 10, 25 by 5 mm, zinc-plated or sherardized roundhead screw, at centres of one metre (maximum). In areas likely to experience heavy snow loading, three screws per bracket should be used.

12.3 External and internal angles should have close supporting brackets fitted each side.

12.4 Unions do not incorporate a bracket and should have a supporting bracket fixed at the centre. Running outlets are secured to the fascia with two No 10 roundhead screws.

12.5 Joints are made by locating the gutter under the rear clip of the flexible clip on the fitting. The gutter is pulled forward and down until the front edge fits under the front clip and snaps into position. The elastomeric gasket in the fitting will seal the joint.

12.6 At gutter joints, the ends of the gutter should be fitted to the 'insert to here' line incorporated into the fitting to ensure that the correct provision for expansion and contraction is made.

12.7 The gutter may be fixed either level on the fascia board or to a fall of 1:600. It is important that the distance between the gutter and the roof tiles is not excessive and that roofing felt is allowed to project slightly into the gutter to prevent water splash onto the fascia board behind the gutter.

# Technical Investigations

## 13 Tests

13.1 Tests were conducted and the results assessed to determine:

- resistance of fascia and rafter brackets to deadweight loading (BS 4576-1 : 1989, Appendix D)
- impact resistance of gutter assemblies (BS 2782-11 : 1989, Method 1108A) subject to modifications detailed in BS 4576-1 : 1989
- leaktightness of joints/thermal cycling (BS 4576-1 : 1989, Appendix C)
- tensile strength and elongation
- Vicat softening temperature
- dimensional accuracy.

13.2 An examination of data was made relating to:

- flow capacity
- practicability of installation
- thermal movement
- durability.
- efficiency of self-cleansing action

## 14 Investigations

14.1 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.

14.2 A site visit was carried out to assess the practicability of installation and the performance in use.

## Bibliography

BS 2782-11 : Method 1108A : 1989 *Methods of testing plastics — Thermoplastics pipes, fittings and valves — True impact rate (TIR) boundaries of pipes*

BS 4576-1 : 1989 *Unplasticized polyvinyl chloride (PVC-U) rainwater goods and accessories — Half-round gutters and pipes of circular cross-section*

BS EN 607 : 2004 *Eaves gutters and fittings made of PVC-U — Definitions, requirements and testing*

BS EN 1462 : 2004 *Brackets for eaves gutters — Requirements and testing*

BS EN 12056-3 : 2000 *Gravity Drainage Systems inside Buildings — Roof drainage, layout and calculation*

BS EN 12200-1 : 2016 *Plastics rainwater piping systems for above ground external use — Unplasticized poly(vinyl chloride) (PVC-U) — Specifications for pipes, fittings and the system*

BS EN ISO 1461 : 2009 *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods*

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

## 15 Conditions

15.1 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.

15.2 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.

15.3 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.

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

15.5 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.

15.6 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.