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Product guide

TwinWall

Surface and Stormwater Drainage

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Building & Infrastructure

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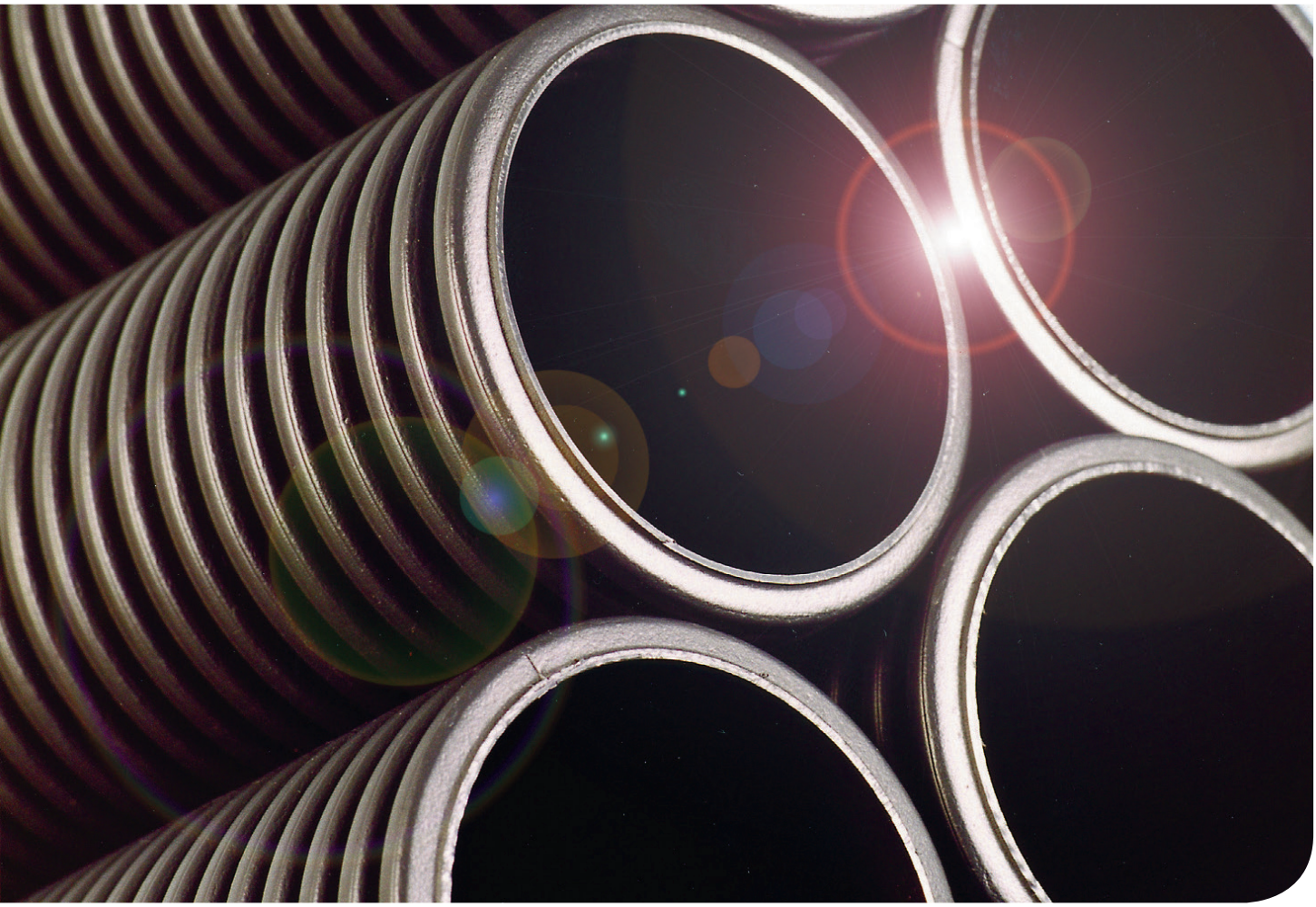
Contents
TwinWall



Introduction
TwinWall

TwinWall Surface and Stormwater Drainage System

Range Introduction

TwinWall is a cost effective pipe system intended for use as a direct alternative to all non-pressurised gravity drain systems other than where Local Authority adoption is necessary. Smaller diameters are manufactured from high density polyethylene and larger diameters manufactured from polypropylene.

Typical applications include highway filter and carrier drains, rail track drainage, and unadoptable surface water drains, for example, on industrial or commercial developments.

TwinWall is manufactured by a twin extrusion process in which the two layers are extruded simultaneously, one inside the other, and heat welded together in one continuous process.

The pipe is available in nominal diameters of 100, 150, 225, 300, 375, 450, 500 and 600mm in standard 6m lengths. It may be supplied either plain for use as a carrier drain, and either half or fully perforated for use as filter drains. Perforated pipe has 4 slots equally spaced around its circumference. Half perforated pipe has either 2 or 3 slots per dwell according to diameter with the permeable area reduced proportionally.

TwinWall when slotted exceeds the Department of Transport's minimum requirement of 1000mm^2 per metre length.

The pipes are black in colour, the outer wall being corrugated and the inner wall having a smooth finish to assist the hydraulic flow.

The twin wall construction helps to maintain flexibility and reduce the possibility of impact damage on site.

A comprehensive range of push fit components are also available for each diameter.

Road gullies and non-entry inspection chambers for use with TwinWall also available.

System Overview

TwinWall is classed as a flexible pipe and as such it is recognised that it is designed to deform under loading.

The predicted 50 year ultimate stiffness of the pipe exceeds the minimum requirement of the Department of the Environment, Transport and the Regions and the Highways Agency requirements.

TwinWall can be used as an alternative to those listed for surface water drainage in Table 5/1 of the Manual of Contract Documents for Highways Works (MCHW), Volume 5.

The pipe will perform within the required design limits under main traffic loading.

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Application

The TwinWall range is designed for use in gravity surface and stormwater drainage applications. Adaptors and Reducers are available for connection to traditional materials.

Uses Include: Highways Filter Drains, Carrier Drains, Golf Course Land Drainage, Surface Water / Main Culverts, Catchpits, Landfill / Land Reclamation, Methane Gas Venting, Leachate Drainage.

System Benefits

- TwinWall is lightweight, making installation quicker with reduced Health and Safety risks
- Ease of installation and the elimination of wastage reduces labour and plant costs
- Longer lengths and fewer joints assist in both flow capacity and self cleansing velocity
- The flexibility of TwinWall eliminates the need for rocker pipes, and the pipe can be cut on site
- TwinWall is resistant to most naturally occurring chemical and is therefore suitable for use in the majority of soil conditions

Quality Assurance

The following Agrément Certificates have been awarded to the Wavin TwinWall (150, 225, 300, 375, 450, 500 and 600mm) range of pipes, ring seals and fittings:

- 02/H070 HAPAS Roads and Bridges Wavin TwinWall Highway Drainage System
- 02/3940 Wavin TwinWall Drainage System

BBA BRITISH BOARD OF AGRÉMENT
CERTIFICATE No 02/3940
CERTIFICATE No 02/H070

Product Details
TwinWall

Pipe

P/E Pipe 6.0m Unperforated

Material: PE

Nominal Size (mm) ID	OD	Part Number	Nº. of Slots Per Dwell	Permeable Area mm^2 m^{-1}
100	118	4TW076	–	–
150	178	6TW076	–	–
225	268	9TW076	–	–
300	355	12TW076	–	–
375	429	375TW076	–	–
450	514	450TW076	–	–
500	572	500TW076	–	–
600	683	600TW076	–	–

P/E Pipe 6.0m Perforated

Material: PE

Nominal Size (mm) ID	OD	Part Number	Nº. of Slots Per Dwell	Permeable Area mm^2 m^{-1}
100	118	4TW176	6	2952
150	178	6TW176	4	6120-10200
225	268	9TW176	4	4680-11700
300	355	12TW176	4	5120-12800
375	429	375TW086	4	6266-10935
450	514	450TW086	4	6327-10333
500	572	500TW086	4	6687-10402
600	683	600TW086	4	6747-10121

P/E Pipe 6.0m Half Perforated

Material: PE-HD

Nominal Size (mm) ID	OD	Part Number	Nº. of Slots Per Dwell	Permeable Area mm^2 m^{-1}
150	178	6TW276	3	4590-7650
225	268	9TW276	3	3510-8775
300	355	12TW276	3	3840-9600
375	429	375TW096	2	3133-5468
450	514	450TW096	2	3164-5167
500	572	500TW096	2	3344-5201
600	683	600TW096	2	3374-5061

S/S Pipe 6.0m Unperforated

Material: PP

Nominal Size (mm) ID	OD	Part Number	Nº. of Slots Per Dwell	Permeable Area mm² m-¹
375	429	375TW046	–	–
450	514	450TW046	–	–
500	572	500TW046	–	–
600	683	600TW046	–	–

S/S Pipe 6.0m Perforated

Material: PP

Nominal Size (mm) ID	OD	Part Number	Nº. of Slots Per Dwell	Permeable Area mm² m-¹
375	429	375TW066	4	6266-10935
450	514	450TW066	4	6327-10333
500	572	500TW066	4	6687-10402
600	683	600TW066	4	6747-10121

S/S Pipe 6.0m Half Perforated

Material: PP

Nominal Size (mm) ID	OD	Part Number	Nº. of Slots Per Dwell	Permeable Area mm² m-¹
375	429	375TW056	2	3133-5468
450	514	450TW056	2	3164-5167
500	572	500TW056	2	3344-5201
600	683	600TW056	2	3374-5061

Couplers

D/S Pipe Coupler

- For joining TwinWall Pipe

Material: PE, PVC-U, PE-HD, PP

Nominal Size (mm)	Part Number	Material
100	4TW205	PE
150	6TW205	PVC-U
225	9TW205	PE-HD
300	12TW205	PE-HD
375	375TW205	PP
450	450TW205	PP
500	500TW205	PP
600	600TW205	PP

Product Details
TwinWall

Adaptors

S/S Adaptor

- Connector to BS EN 295 thinwall clay spigot

Material: PVC-U

Nominal Size (mm)	Part Number
150	6TW129

S/S Adaptor

- 6TW socket x 160mm BS EN 1401 spigot

Material: PVC-U

Nominal Size (mm)	Part Number
150	6TW141

D/S Adaptor

- 6TW socket x 160mm BS EN 1401 socket

Material: PVC-U

Nominal Size (mm)	Part Number
150	6TW142

S/S Adaptor

Material: PVC-U

Nominal Size (mm)	Part Number	Description
150	6TW145	6UR spigot x 6TW socket
225	9TW145	9UR spigot x 9TW socket
300	12TW145	12UR spigot x 12TW socket

Reducers

D/S Level Invert Reducer

- 6TW socket x 4TW socket

Material: PP

Nominal Size (mm)	Part Number
150	6TW097

S/S Level Invert Reducer

- 6TW spigot x 110mm BS EN 1401 socket

Material: PVC-U

Nominal Size (mm)	Part Number
150	6TW099

S/S Level Invert Reducer

Material: PP

Nominal Size (mm)	Part Number	Description
225	9TW095	9TW spigot x 6TW socket
300	12TW093	12TW spigot x 9TW socket
375	375TW099	375TW spigot x 12TW socket
450	450TW099	450TW spigot x 375TW socket
500	500TW099	500TW spigot x 450TW socket
600	600TW099	600TW spigot x 500TW socket

Product Details
TwinWall

Short Radius Bends

D/S Bend – 87.5°

Material: PP

Nominal Size (mm)	Part Number
150	6TW561
225	9TW561
300	12TW561
375	375TW561
450	450TW561
500	500TW561
600	600TW561

D/S Bend – 45°

Material: PP

Nominal Size (mm)	Part Number
150	6TW563
225	9TW563
300	12TW563
375	375TW563
450	450TW563
500	500TW563
600	600TW563

D/S Bend – 30°

Material: PP

Nominal Size (mm)	Part Number
150	6TW566
225	9TW566
300	12TW566
375	375TW566
450	450TW566
500	500TW566
600	600TW566

D/S Bend – 15°

Material: PP

Nominal Size (mm)	Part Number
150	6TW567
225	9TW567
300	12TW567
375	375TW567
450	450TW567
500	500TW567
600	600TW567

Junctions

Equal Junction – 45°

- D/S Junction to TwinWall spigot

Material: PP

Nominal Size (mm)	Part Number
150	6TW213
225	9TW213
300	12TW213
375	375TW375x45
450	450TW450x45
500	500TW500x45
600	600TW600x45

Equal Junction – 90°

- D/S Junction to TwinWall spigot

Material: PP

Nominal Size (mm)	Part Number
150	6TW193
225	9TW193
300	12TW193

Product Details
TwinWall

S/S Junction to TwinWall spigot

Material: PP

Nominal Size (mm)	Part Number
375	375TW375x90
450	450TW450x90
500	500TW500x90
600	600TW600x90

Unequal Junction – 45°

- D/S Junction to TwinWall spigot

Material: PP

Nominal Size (mm)	Part Number
225 x 150	9TW227
300 x 150	12TW237
300 x 225	12TW240
375 x 150	375TW150x45
450 x 150	450TW150x45
500 x 150	500TW150x45
600 x 150	600TW150x45

S/S Junction to TwinWall spigot – 45°

Material: PP

Nominal Size (mm)	Part Number
375 x 225	375TW225x45
375 x 300	375TW300x45
450 x 225	450TW225x45
450 x 300	450TW300x45
450 x 375	450TW375x45
500 x 225	500TW225x45
500 x 300	500TW300x45
500 x 375	500TW375x45
500 x 450	500TW450x45
600 x 225	600TW225x45
600 x 300	600TW300x45
600 x 375	600TW375x45
600 x 450	600TW450x45
600 x 500	600TW500x45

Unequal Junction – 90°

- S/S Junction to TwinWall spigot

Material: PP

Nominal Size (mm)	Part Number
375 x 150	375TW150x90
375 x 225	375TW225x90
450 x 150	450TW150x90
450 x 225	450TW225x90
500 x 150	500TW150x90
600 x 150	600TW150x90

End Caps

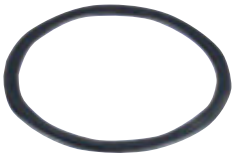
End Cap

- For TwinWall spigot

Material: PP

Nominal Size (mm)	Part Number
150	6TW750
225	9TW750
300	12TW750
375	375TW750
450	450TW750
500	500TW750
600	600TW750

Ring Seal



Ring Seal

- For TwinWall socket

Material: Rubber

Nominal Size (mm)	Part Number
100	4TW117
150	6TW117
225	9TW117
300	12TW117
375	375TW117
450	450TW117
500	500TW117
600	600TW117

Product Details
TwinWall

Road Gullies

P/E Road Gully

Material: PE

Nominal Size (mm)	Part Number	Dimensions (mm) Diameter	Depth
150	6TW650	450	900
150	6TW651	450	750

Jointing TwinWall

Unlike traditional methods jointing PVC-U systems, the TwinWall method is unique and innovative, since the ring seal is positioned over the pipe spigot rather than being retained within a pipe or fitting socket.

The major advantages of the TwinWall jointing method are:

- There is no need to chamfer pipe ends
- The ring seal cannot be displaced during jointing

Preparation

Ensure that the two ribs that retain the sealing ring are sound.

Cutting

Pipes must be cut midway between the ribs. The design of the ribs allows the pipe to be cut square using a coarse toothed saw (see Figure 1).

Jointing Sequence

1. Clean pipe spigots and sockets. All dust, dirt and grit which could prevent an effective seal must be removed from pipe ends and sockets.
2. The correct position for the sealing ring is indicated in Figure 2 and 5 i.e. between the first and second ribs from the pipe end.
3. Lubricant should be applied to the whole of the inside of the socket.
4. To make the joint, offer up the pipe to the socket, align pipe and push home. Alignment is important to facilitate jointing.

The force required to push the pipe home will vary according to pipe size and ambient temperature. Whatever method is used to apply the necessary force, care must be taken to ensure that there is no risk of damaging the pipe ends. The most convenient method is to use a lever ensuring the pipe end is protected.

A good technique is to lift the pipe up by passing a rope underneath. This makes it easier to align the spigot into the socket.

Figure 1: Correct cutting position

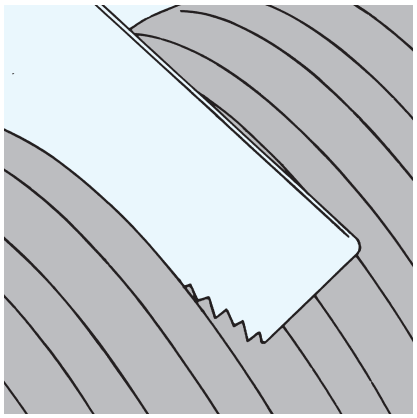


Figure 2: TwinWall Sealing Ring

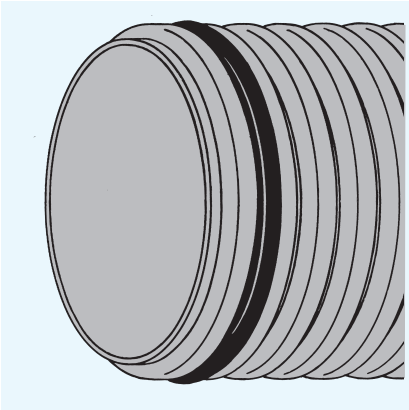


Figure 3: Applying the lubricant

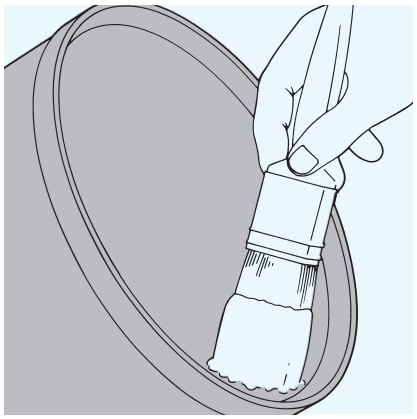


Figure 4: Protecting the pipe end

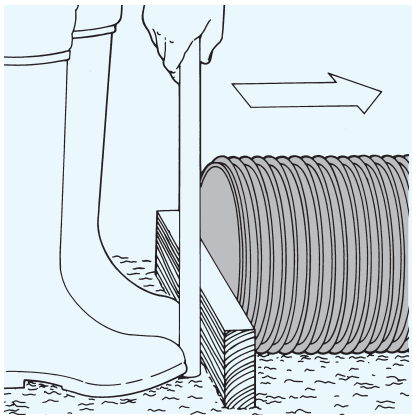
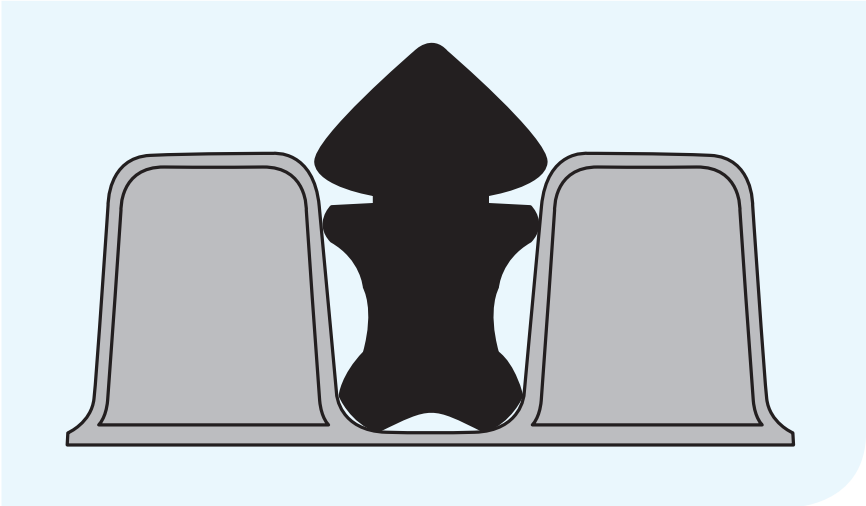


Figure 5: Placement of Ring Seal, between 1st and 2nd ribs



General Information
TwinWall

Materials

Pipes and most fittings in TwinWall system range are manufactured from the following materials, as individually denoted in the product listings in this Guide.

Material	Product
PVC-U Unplasticised Polyvinyl Chloride	Fittings only
PP Polypropylene	Pipe and Fittings
PE Polyethylene	Pipe and Fittings
PE-HD Polyethylene	Pipe and Fittings

Quality, Standards and Approvals

The British Standards Institution has issued certificates registering Wavin as a firm of assessed capability, with a quality management system which meets the requirements of BS EN ISO 9001.

Wavin systems are the benchmark for excellence and product innovation: precision-manufactured using the most advanced injection moulding and extrusion machines. All products comply with or exceed relevant British and European standards to ensure reliability and long-lasting service.

Acceptance

The following Agrément Certificates have been awarded to the Wavin TwinWall (150, 225, 300, 375, 450, 500 and 600mm) range of pipes, ring seals and fittings:

- 02/H070 HAPAS Roads and Bridges Wavin TwinWall Highway Drainage System
- 02/3940 Wavin TwinWall Drainage System

BBA BRITISH BOARD OF AGREMENT
CERTIFICATE No 02/3940
CERTIFICATE No 02/H070

Environment

All Wavin manufacturing sites operate Environmental Management Systems which comply with the requirements of and are certified to ISO 14001: 2004.

Health and Safety

The relevant provisions of the following legislation should be adhered to on site:

- Construction (Design and Management) Regulations 1994
- Control of Substances Hazardous to Health Regulations 1988
- Health and Safety at Work Act 1974
- Management of Health and Safety at Work Regulations 1999
- Manual Handling Operations Regulations 1992

Hazards associated with PVC-U, PVC-C, Polypropylene and Polyethylene

There are no particular hazards associated with handling, cutting or working with the materials mentioned above, and protective clothing or equipment is not normally required.

Safety Data Sheets covering PVC-U, PVC-C, PP, PE, lubricant, solvent cements and cleaners are available from the Wavin Technical Design Department, please call Technical Enquiries to obtain a copy.

Abbreviations

Key	
P/E:	Pipe and fittings with both ends plain or with one plain end and one special end
S/S:	Pipe and fittings with one or more ring-seal or push-fit sockets, but always one plain or special end
D/S:	Fittings with ring-seal or push-fit sockets at all ends

Supply

All systems are supplied through a nationwide network of merchant distributors. For details of your nearest merchant, contact Wavin Customer Services.

Sealing Rings

Sealing Rings are not supplied with pipe or fittings and need to be ordered separately.

Conditions of Sale

Wavin will not accept responsibility for the malfunction of any installation which includes components not supplied by Wavin. Goods are sold subject to Company conditions of sale.

Technical advice

Wavin TwinWall is backed by Wavin's comprehensive technical advise service. This is available to provide expert assistance at every stage of a project, from planning and product selection to installation and maintenance.

Contact Wavin Technical Design Department:

Tel: 0844 856 5165

Email: technical.design@wavin.co.uk or via online enquiry at wavin.co.uk

Literature

The following Wavin publications are also available from the Literature Department at Chippenham.

General
- Wavin Below Ground & Civils System: Trade Price List

Stormwater Management Systems
- Wavin AquaCell System:
  Product and Installation Manual
- Wavin Flow Control Range:
  Product and Installation Manual
- Wavin Commercial Rainwater Re-use System:
  Product Guide
- Wavin Civils Channel Systems:
  Product and Installation Manual
- Wavin Quickstream Siphonic Roof Drainage Systems:
  Product and Installation Manual

Gravity Drain and Sewer Systems
- OsmaDrain System:
  Product and Installation Manual
- Osma UltraRib System:
  Product and Installation Manual
- Osma and Wavin Inspection Chamber Range:
  Product and Installation Manual

To request details with regards to any of the above components and/or for any technical enquires please contact:

Literature Request
Tel: 01249 766333
Email: literature@wavin.co.uk

Technical Design
Tel: 0844 856 5165
Email: technical.design@wavin.co.uk

Wavin Online
The complete range of Wavin/Osma product and installation guides are also available online at: wavin.co.uk

Notes
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www.wavin.co.uk

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