

Trigon Barrier Pipe System

Product and Installation Guide



*For safe transportation of potable water
through contaminated land*

FOR RESIDENTIAL, CONSTRUCTION AND
UTILITY APPLICATIONS



Trigon Pipe is Kitemarked to
WIS 4-32-19 KM 533039

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OSMA

From Wavin

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The following related publications are available for OSMA Trigon Barrier Pipe System:	
■ Trade Price List	
<i>To obtain copies, please contact:</i>	
Literature requests	
Tel: 01249 766333	
Fax: 01249 766332	
literature@wavin.co.uk	

OSMA, from Wavin Plastics Limited, is the leading name in plastic systems for building, construction and utilities. The OSMA product range is unrivalled in scope and quality, covering:

- Above Ground systems
- Plumbing and Heating systems
- Below Ground Drainage systems
- Water Management systems
- Water Distribution systems

Quality assured products

OSMA systems are the benchmark for excellence and product innovation: precision-manufactured in the UK 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.

Intelligent connections

OSMA systems offer integrated solutions. This enables specifiers and installers to assemble complete drainage, plumbing and heating, and pressure pipe systems from a single source, with complete confidence in compatibility and performance.

All systems are backed by comprehensive technical support and a nationwide distribution network to ensure availability when and where required.

Wavin is a leading European manufacturer of industrial plastic products, and one of the largest producers of plastic pipe and fittings in the world.

Wavin is credited with inventing and pioneering the use of plastic pipe for water distribution in the mid 1950s. Constant research and development has enabled Wavin to maintain its position at the forefront of plastics technology.

Environmental responsibility

Wavin Plastics Limited has BS EN ISO 9001: 2000 BSI status and was the first plastic pipe manufacturer to be accredited to BS EN ISO 14001 Environmental Management Systems.

Wavin Plastics Limited is committed to environmental responsibility, and is a leading pioneer of systems to conserve and control water. In production, the Company recycles the majority of waste materials, and sets annual targets for energy efficiency audited by the certifying body.

Passion and resourcefulness

All Wavin personnel are committed to providing a comprehensive, responsive service – and are passionate about delivering total Customer satisfaction.

Wavin Plastics Limited maintains an industry-wide dialogue and rigorous assessment of all procedures to ensure that Wavin product development and product support accurately addresses the needs of all Customers – today and into the future.

PE BARRIER PIPE SYSTEM: TRIGON

System Overview • System Benefits

System Overview

Trigon Barrier Pipe

A composite, multi-layer product for use in service pipe installations that transport potable water. Trigon is available in 25, 32 and 63mm sizes (27, 34 and 67mm outside diameters) for use at pressures up to 12.5 bar.

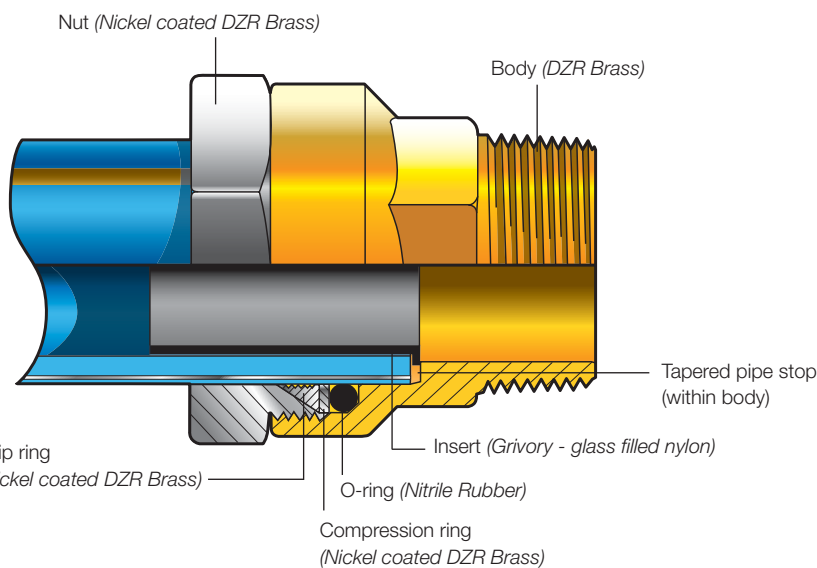
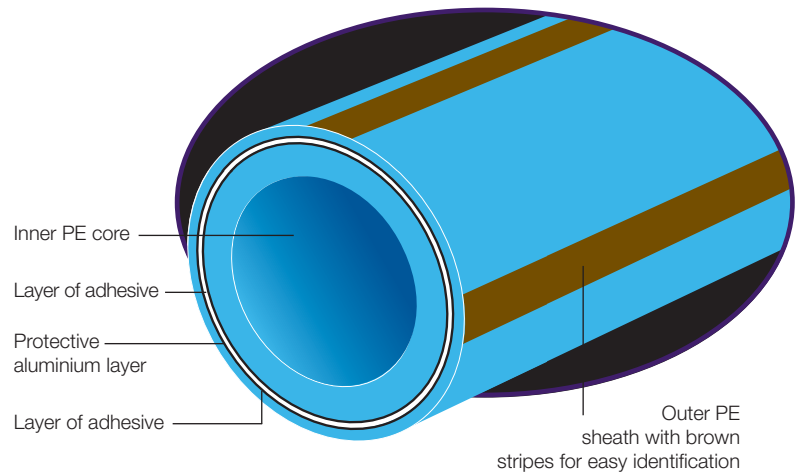
Trigon is specifically designed for use in areas of contaminated ground. These are typically urban brownfield sites under development where there are known contaminants in the ground.

Such sites would normally exclude the use of conventional plastic pipe products and require the use of specialist protected barrier products.

The Trigon Barrier Pipe is multi-layered, and incorporates an aluminium barrier layer. This is sandwiched between two layers of conventional polyethylene which

is widely used for the manufacture of potable water pipe systems.

Trigon can be installed using conventional open cut trenching methods. Where trenchless methods are being considered, please seek advice from the Wavin Technical Services Helpdesk.



Trigon Fittings

The system includes a range of fittings (see pages 5&6), which have been specifically designed for use with the Trigon pipe. Each fitting is supplied with an insert designed to maintain the integrity of the pipe.

The fitting incorporates an integral O-ring seal and grip ring, providing a fully sealed and end load resistant joint, which guarantees total impermeability to contaminant ingress.

System Benefits

■ Impermeable Barrier

Protects potable drinking water from organic and inorganic contamination

■ Flexible Construction

Easy to handle and install

■ Cost Effective

Enables the development of brownfield sites with a flexible, corrosion resistant plastic pipe system

■ Corrosion Resistant

Long term, reliable solution

■ Engineered Joint Fitting

Offering no path for the ingress of contaminants

■ Ease of Installation

Requires no pipe preparation or external wrapping

Quality Approvals and Testing

Pipe Product Approvals

- The core pipe and outer layer of Trigon are conventional MDPE (PE 80) material meeting the requirements of:
 - WIS 4-32-19 2007: Polyethylene Pressure Pipe systems with an Aluminium Barrier layer for potable water supply in contaminated land
 - BS6920 Water Quality testing
- The core pipe - standard WavinSure service pipe – is kitemarked to BS EN 12201-2 (KM 80817)
- The Trigon pipe is Kitemarked to WIS 4-32-19 (KM 533039)
- Trigon pipe is approved under Regulation 31 (England and Wales), Regulation 27 (Scotland) and Regulation 30 (Northern Ireland)
 - NB : Formally Regulation 25

Fitting Product Approvals

- Trigon fittings are WRc, DVGW and KIWA approved

System Approval



Trigon has full system approval under WRAS: - certificate no. 0409106

Independent Testing

Trigon pipes and fittings have been extensively tested by independent academic and industry research bodies, confirming complete system integrity for its design life.

Test requirements: Core pipe

Test	Method	
Tensile strength	WIS 4-32-19	8.2.1
Elongation at break	WIS 4-32-19	8.2.1
Thermal Stability (Induction Temperature)	WIS 4-32-19	8.2.2
Hydrostatic strength 80°C	WIS 4-32-19	8.2.4
Hydrostatic strength 20°C	BSEN ISO 1167	25 BAR - 1 Hour

Test requirements: Trigon pipe

Test Regime	Test Results:
Permeability Testing	Meets the requirements of WIS 4-32-19, Clause 7.7
Peel strength to outer sheath	1.5N/mm
Pullout testing of pipe and fitting	Exceeds Requirements of WIS 4-22-01
Corrosion testing and microscopy analysis	95°C salt water for 1 week – no measurable level of corrosion on aluminium
Hydrostatic testing	Integrity proven at 20°C and 80°C

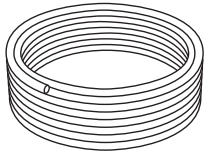

The Trigon Barrier Pipe system provides protection where there is doubt about site conditions. It is effective against:

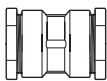
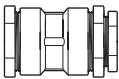
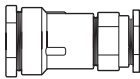
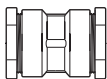


- Permeation from inorganic contaminants such as acids, alkalis, sulphates and chlorides
- Permeation from organic contaminants including petroleum hydrocarbons, ketones and aromatic hydrocarbons
- Corrosion from contaminants due to outer PE sheath



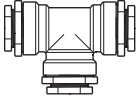
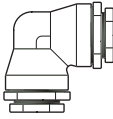

PE BARRIER PIPE SYSTEM: TRIGON

Product Range

PE Barrier / Pipe for POTABLE Water		12.5 BAR		
		Size (mm x m)	Weight (Kg/m)	Part Number
Pipe Coil		25 x 50	0.28	71021050
		32 x 50	0.41	71031050
		63 x 25	1.48	71061025
		63 x 50	1.48	71061050
Pipe Straight Length		63 x 6	1.48	7106006

DZR Brass Fittings for POTABLE Water		12.5 BAR		
		Size (mm)	Part Number	
Straight Coupling		25	71902500	
		32	71903500	
		63	71906500	
Reducer		32 x 25	71903225	
Transition Coupling to Copper		25 x 15	71902515	
		25 x 22	71902522	
Transition Coupling to PE		25 x 25	71902525	
		63 x 63	71906525	
Male Coupling		25mm x 3/4"	71902570	
		32mm x 1"	71903570	
		63mm x 2"	71906570	
Female Coupling		25mm x 3/4"	71902580	
		32mm x 1"	71903580	
		63mm x 2"	71906580	

DZR Brass Fittings for POTABLE Water
12.5 BAR

		Size (mm)	Part Number
Equal Tee		25	71902700
		32	71903700
		63	71906700
Elbow - 90°		25	71902590
		32	71903590
		63	71906590
Elbow - 45°		63	71906595

Installation

Trigon Installation

The Trigon Barrier Pipe system is constructed primarily from polyethylene and provides an effective and economic pipework solution for potentially contaminated ground.

The system has all the proven benefits of polyethylene pipe systems, including flexibility, long lengths and corrosion resistance.

As with standard polyethylene pipe systems, Trigon should be installed in accordance with:

- Relevant sections of the current WRc Manual for Polyethylene
- Any local requirement of the water company in whose area the work is being carried out

General Considerations

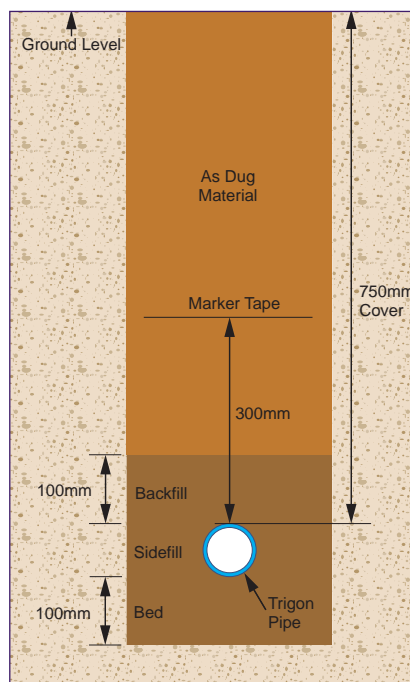
(See diagram below)

- Service pipes should be installed with a minimum cover of 750mm
- Where soil conditions permit, pipe can be laid directly onto the excavated trench bottom. The as-dug material should be free from large stones, free flowing and uniform
- In all other situations a 100mm (*min*) bed of sand, pea gravel or suitable crushed stone should be provided
- Initial trench backfilling should use similar material to that used for pipe bedding, with a minimum 100mm cover over the pipe crown
- Subsequent backfilling should follow the guidance given in the WRc Manual for Polyethylene and also the requirements of the local water company

Repairs Advice

If the Trigon system is damaged after installation, and the normal stop valve cannot be located for emergency shut-off, the standard "squeeze-off" technique for polyethylene may be adopted as a temporary repair.

It is recommended to replace the squeeze off section with a permanent repair at a later stage.



Jointing

The principal aim of the Trigon Barrier Pipe system is to prevent any contaminants in the soil or ground water getting into the water supply. Accordingly, the jointing method used must be equally robust in its design.

The Trigon barrier fitting design incorporates an integral O-ring seal and grip ring, providing a fully sealed and end load resistant joint.



Ensure the pipe is cut square and cleanly, using approved 'ratchet style' pipe cutters on the 25 and 32mm and using a fine tooth saw or wheeled cutter on the 63mm.

Important Note: If the pipe end is not cut cleanly, deburred and square prior to connection to a fitting, a satisfactory seal will not be achieved.



Check the pipe is clean, push the insert fully into the pipe end.

For 63mm the pipe end needs to be chamfered on both the inner and outer edges. The rubber o'rings on the insert should be lubricated using a suitable approved WRC lubricant. The insert on the 63mm may need to be tapped in using a soft face mallet or timber across the end.



Take the fitting and loosen the nut by one complete turn.

Do not dismantle completely, only sufficient to ensure the grip ring is loose.



Using an indelible marker pen clearly mark the depth of entry on the pipe, measured up to the pipe stop - and push the pipe fully home.

The depths of entries for a fully tightened fitting are:

25mm Trigon = 30mm

32mm Trigon = 34mm

63mm Trigon = 70mm

Important Note: A good seal is only achieved when the pipe is pushed past the 'O' ring up to the pipe stop. The 63mm fitting has 2 sets of rubber o'ring seals. Please ensure the pipe is pushed fully home up to the stop.



Fully tighten the nut until it is up against the body to ensure the fitting seals correctly.

Large pipe wrenches (min 24") will be needed for 63mm fittings

Important Note: Check that the depth of entry mark is visible and aligns with the edge of the nut once tightened fully.



A secure joint and seal should now have been achieved.

Handling, Storage and Transportation

Handling

Trigon Polyethylene Barrier Pipe system is tough, light and easy to handle and install.

However, polyethylene may be damaged by sharp objects causing scoring or gouging. To ensure both protection of the product and safety of site operatives, it is important to handle pipe with reasonable care.

Trigon pipe should not be dropped or thrown from vehicles, or dragged across rough ground, which may cause scoring.

Do not use pipe with scoring. It should be clearly marked as damaged for disposal.

Where practical, all protective packaging should be left intact for as long as possible prior to installation.

Storage

Coils

Small diameter coils, if delivered on pallets as part of a full load, should remain on the pallet and be stored on flat, level ground. The storage area should be free of large stones or sharp objects.

Individual, loose coils should similarly be stored on flat level ground.

Key Considerations

- Storage should be well away from any exhaust or heat sources and any solvents or oils
- Pipe may be stored externally for up to 12 months. For longer-term storage, pipe should be kept under cover
- Fittings should be kept under cover in their protective boxes and packaging

We would like to keep you updated about new products from Wavin Plastics Ltd. If you would like to receive additional literature or require to be removed from our database, please complete the form below. Alternately all literature is available to download from www.wavinpdfs.co.uk All valid records on the Wavin database are entered into a monthly draw for a case of wine.

First Name
 Surname
 Job Title
 Email
 Company Name

 Address

 Town/City County
 Postcode

 Phone
 Mobile
 Fax



Please tick type of organisation (One only)

- | | |
|---|---|
| <input type="checkbox"/> Architect | <input type="checkbox"/> Irrigation Contractor |
| <input type="checkbox"/> Builder | <input type="checkbox"/> Land Drainage Contractor |
| <input type="checkbox"/> Cladder | <input type="checkbox"/> Landfill & Waste Disposal |
| <input type="checkbox"/> Client Organisation | <input type="checkbox"/> Local Authority |
| <input type="checkbox"/> Civil Consulting Engineer | <input type="checkbox"/> Major Construction Company |
| <input type="checkbox"/> Civil Contractor | <input type="checkbox"/> Multi-Utility Contractor |
| <input type="checkbox"/> Design & Build | <input type="checkbox"/> M & E Contractor |
| <input type="checkbox"/> Environmental Consultant | <input type="checkbox"/> M & E Consulting Engineer |
| <input type="checkbox"/> Gas Utility Contractor | <input type="checkbox"/> Plumber |
| <input type="checkbox"/> Groundworker | <input type="checkbox"/> Quantity Surveyor |
| <input type="checkbox"/> Housing Association | <input type="checkbox"/> Roofer |
| <input type="checkbox"/> House Builder (under 20 units per annum) | <input type="checkbox"/> Utility Company |
| <input type="checkbox"/> Housing Developer | <input type="checkbox"/> Water Utility Contractor |
| <input type="checkbox"/> H & V Contractor | |

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I would like further information on:

- OSMA Rainwater systems
- OSMA Soil & Waste systems
- OSMA Flexible Plumbing systems
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- OSMA Below Ground Drainage systems
- OSMA Water Management systems
- OSMA Pressure Pipe systems

Please return to:



Wavin Plastics Limited
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 Chippenham
 Wiltshire
 SN15 5PN
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PE BARRIER PIPE SYSTEM: TRIGON

Technical Assistance • Further Information

Technical Advice and Assistance

OSMA Trigon Barrier Pipe System is backed by Wavin's comprehensive technical advisory service. This is available to provide expert assistance at every stage of a project, from planning and product selection to installation and maintenance.

Services include:

- Full technical literature, including:
 - System Product Guides
 - Design and Installation Guides
 - Trade Price Lists

Contact Wavin Technical Design Department for prompt assistance:

TECHNICAL DESIGN

Tel: 01249 766655

Fax: 01249 766653

Email: technical.design@wavin.co.uk

To request a copy of any item(s) of current literature, please contact:

LITERATURE REQUESTS

Tel: 01249 766333

Fax: 01249 766332

Email: literature@wavin.co.uk

Further Information

OSMA TRIGON BARRIER PIPE SYSTEM

The following related publications are available for OSMA Trigon Barrier Pipe System:

■ Trade Price List

ASSOCIATED OSMA SYSTEMS

OSMA systems are fully integrated to provide a total solution for above and below ground drainage, plumbing and heating. Contact Wavin Technical Design Department for further details regarding:

- OSMA Rainwater systems
- OSMA Soil & Waste systems
- OSMA Flexible Plumbing systems
- OSMA Underfloor Heating systems
- OSMA Below Ground Drainage systems
- OSMA Water Management systems
- OSMA Pressure Pipes for Water



WAVIN ONLINE

The complete OSMA product catalogue, together with design and installation guidance, is also available online at: www.wavin.co.uk

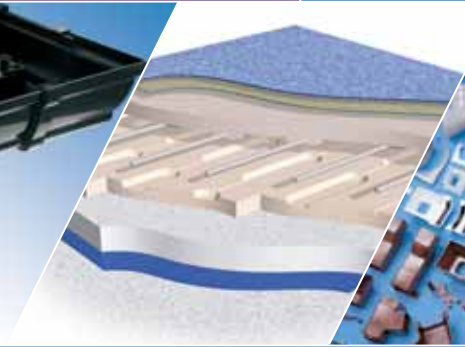
All literature can be downloaded via the searchable PDF library at: www.wavinpdfs.co.uk

Wavin images can be downloaded at different resolutions from: www.wavinimages.co.uk



Trigon Barrier Pipe System

Product and Installation Guide



Meeting your needs

OSMA Trigon Barrier Pipe system developed by Wavin Plastics Limited, forms part of a comprehensive range of systems that provide intelligent solutions for all building, construction and utilities projects.

These include:

Above Ground Projects

- OSMA Rainwater systems
- OSMA Soil & Waste systems

Plumbing & Heating Projects

- OSMA Flexible Plumbing systems
- OSMA Underfloor Heating systems

Below Ground Projects

- OSMA Below Ground Drainage systems
- OSMA Water Management systems

Pressure Pipe Projects

- OSMA Pressure Pipes for Water

All OSMA systems are backed by full technical literature and project support. See inside back cover for details.



Trigon Pipe is Kitemarked to WIS 4-32-19 KM 533039



Water UK Partner – Supporting information & learning in the water industry



ISO 9001:2000

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