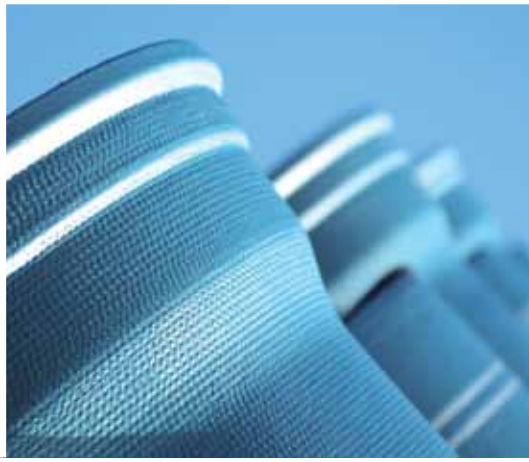
Product Guide Water and Sewer

Pipes and Fittings



PAM
SAINT-GOBAIN

A World of Choice

Saint-Gobain PAM UK is the UK's leading supplier of ductile iron pipe systems for potable water and sewerage applications.

Saint-Gobain PAM UK is part of the Saint-Gobain Pipe Division, a global company with a presence in Europe, Asia, South America and the Far East. The pipe division has over 10600 employees and sells products in 120 different countries with over 40,000km of ductile iron pipes being installed worldwide per year.

The Saint-Gobain Pipe Division is part of the Saint-Gobain Group, one of the world's leading multi-nationals, which currently employs over 209,000 people in 59 countries and over 1200 consolidated companies.

Everyone at Saint-Gobain PAM UK is dedicated to meeting customer expectations. We encourage open communication between staff, customers and related organisations to make a positive impact on the future of the marketplace and help improve the quality of life for people worldwide.

UK customers benefit from the global network of the Pipe Division through our long term commitment to improve and develop innovative products and processes. We achieve this through continual investment in Research and Development on a global scale. In excess of £10million per annum is spent on R&D programmes worldwide, meaning an unrivalled product range of next-generation, ductile iron pipe systems being constantly developed and delivered to the UK market.

Sustainable development lies at the heart of Saint-Gobain's corporate culture.

Its state-of-the art technologies and focus on research and development have enabled us to consistently provide our customers with quality, sustainable, reliable and ergonomic solutions.

Water and sewerage pipelines are infrastructures created to last for several generations. Sustainable development depends on 'long lasting' rather that 'disposable' installations.

Saint-Gobain PAM UK has taken on board these principles and works to provide effective solutions for the environment

For further information on Saint-Gobain PAM UK visit
www.saint-gobain-pam.co.uk

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Ordering Information

Terms & Conditions
In all cases the Saint-Gobain PAM UK 'Standard Conditions Of Sale (Home)' or Saint-Gobain PAM UK 'Standard Conditions Of Sale (Export)' apply.

Technical Information
For any technical queries please contact Saint-Gobain PAM UK Technical Sales Department
Tel: 0115 930 0700.

Contact the brochure hotline:
Tel: 0800 028 2134
Fax: 0115 932 9513
Email: brochures.uk.pam@saint-gobain.com

The products illustrated within this guide are directly available from Saint-Gobain PAM UK or from a network of distributors and stockists across the UK and Ireland.

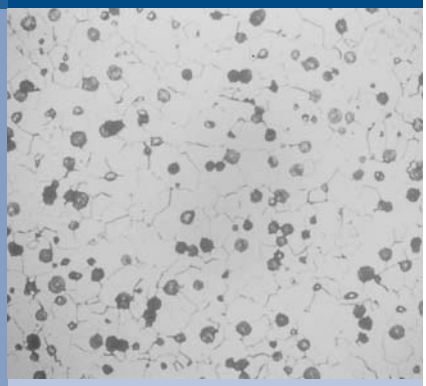
Quotations and order information within the UK and Ireland can be obtained from the following number:

Sales Enquiries:	Tel: 0115 930 0630
	Fax: 0115 930 0648

Overseas
For quotations and order information outside the UK and Ireland please contact:

	Tel: +44 115 930 0645
	Fax: +44 115 989 8011

Ductile Iron The Material of Choice



Deflection of a small DN pipe under external loading.

Saint-Gobain PAM UK offers the most comprehensive range of ductile iron pipe systems for use in both potable water and sewerage application in the UK. Being at the forefront of innovation means that its customers continuously receive state-of-the-art products and top class services. At the same time all products and facilities are subject to stringent quality controls and conform to relevant BS, EN and ISO standards.

What is Ductile Iron?

Ductile Iron is an iron/carbon/silicon alloy. When magnesium is added to the molten iron the graphite forms in spheres rather than in flakes. This transformation virtually eliminates brittleness and produces a strong, ductile material.

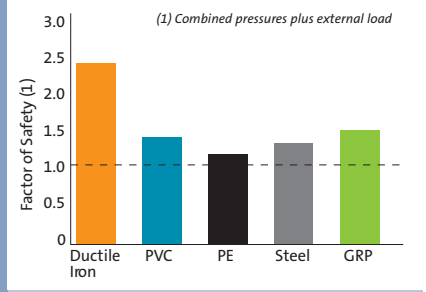
Strength of Ductile Iron

Mechanical Properties

Ductile iron displays excellent mechanical properties, such as high resistance to tensile stresses and impact loads, high elongation and high yield strength. These properties make the material the most universally applicable pipeline material today.

Minimum elongation :	Pipes: uti DN1000 10% >DN1000 7% Fittings: 5%
Minimum ultimate Tensile Strength:	420 MN/m²
Modulus of Elasticity:	170 GN/m²

Why Choose Ductile Iron?

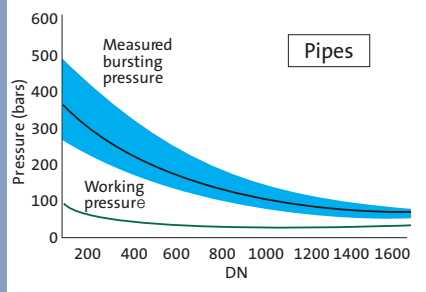


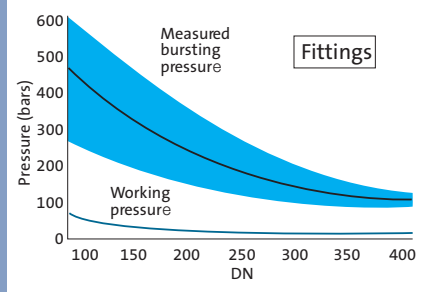
Ductile Iron is the most versatile pipe material today offering solutions to specific pipeline demands whether determined by the application or the installation requirements . Ductile iron can be used above or below ground, is safe to specify even if future demands change from specifications today.

Structural Design: Ductile Iron Guarantees Safety

As a result of the ductility of the material, which gives a high capacity for absorbing work or energy, Saint-Gobain ductile iron pipes and fittings have a high safety margin, allowing the opportunity to operate at up-rated pressures in the future.

- The inherent structural strength of the pipe guarantees durability and reliability for long term service.
- The high factor of safety of ductile iron gives continued performance even if future demands change, for example through increased usage from housing developments.
- The inherent material strength of ductile iron compensates for unforeseen environmental changes, for example change of land use or ground settlement.
- Easy to design and specify
- Excellent resistance to second comer damage
- No long term reduction in pipe stiffness
- Ductile iron takes the risk out of pipeline design

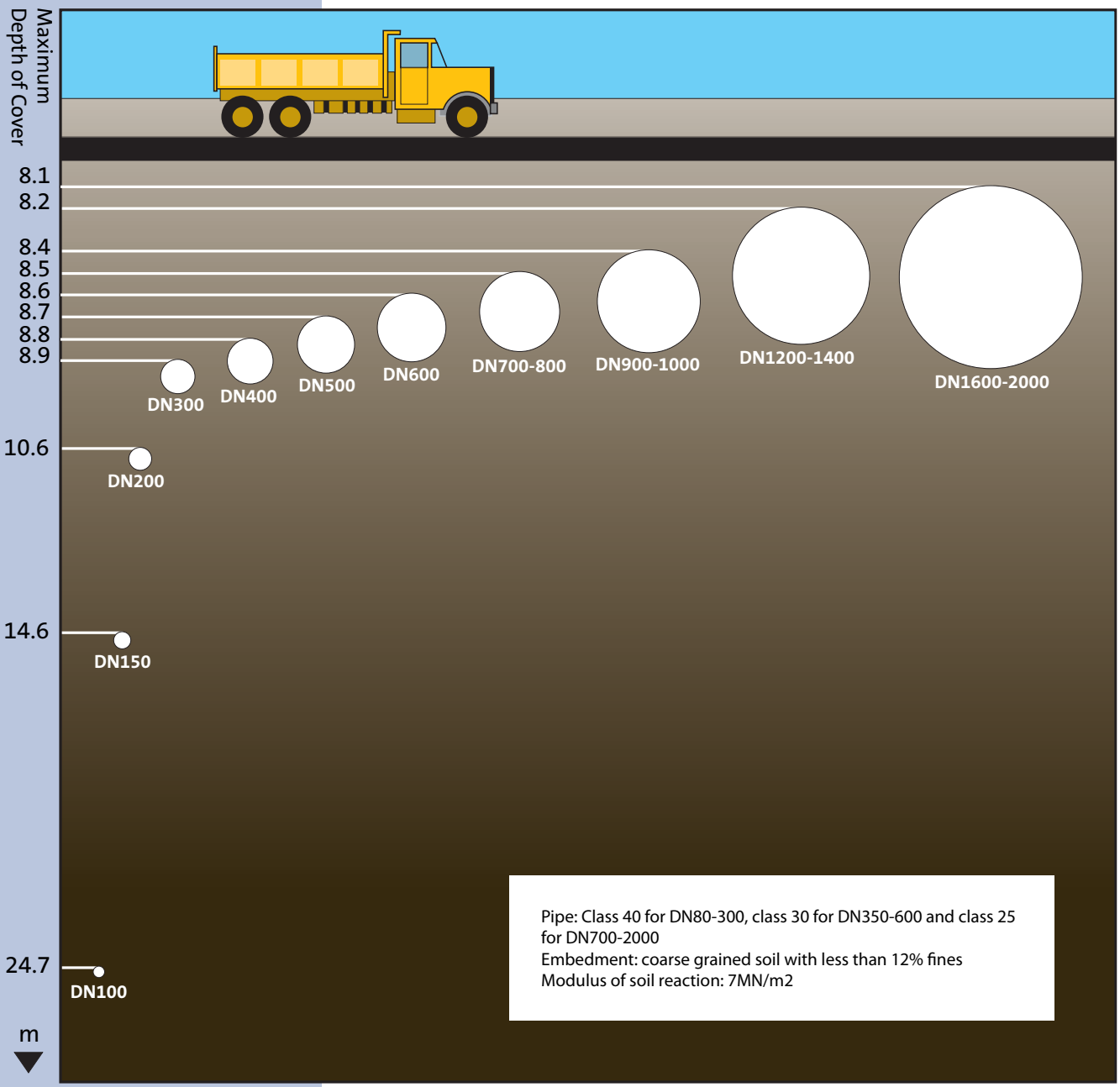




High strength and stiffness

Ductile iron is suitable for installation in open fields or high traffic load areas and can be laid at a variety of depths. The high material strength minimises the need for imported bedding and surround, hence minimising the impact on the environment.

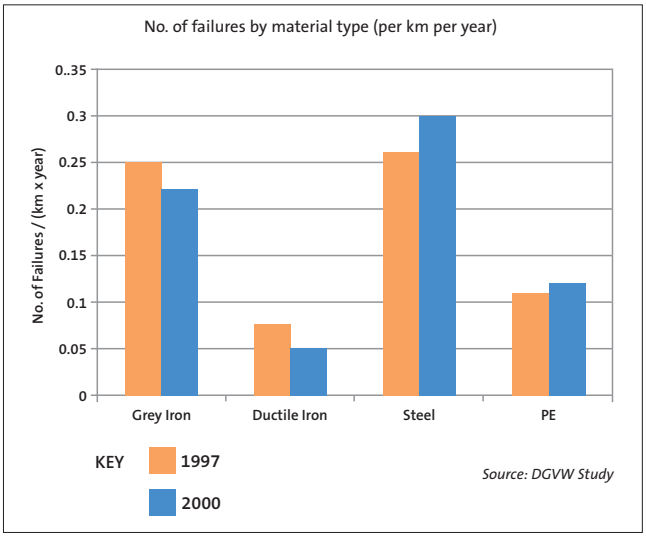
- Can be laid in narrow and/or shallow trenches
- Can be laid at a wide range of depths with no detrimental effect on the performance of the pipe
- Minimises risk due to unforeseen site hazards, such as second-comer damage

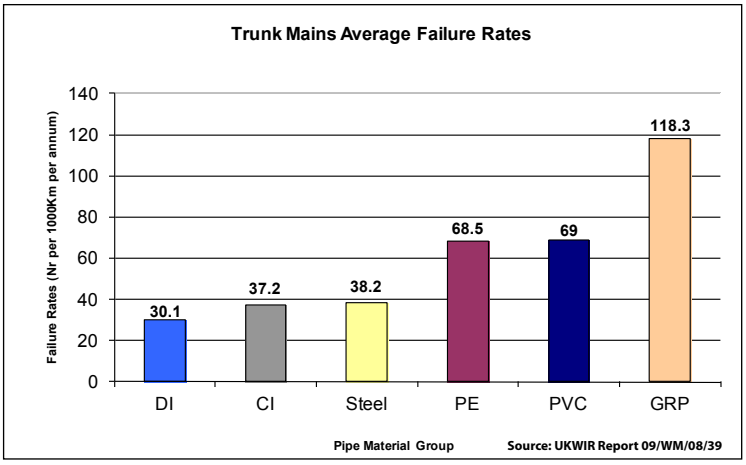


Reducing Failure Rates: Ductile Iron assured long term reliability

Through a continual programme of developments and innovations the failure rates of ductile iron systems consistently reduce compared to alternative materials.

- Reliable long term solution
- Can adapt to future changes in external load





Installation & Testing: Install,Test and Forget

Saint-Gobain PAM UK offers pipe systems which have well proven and highly engineered jointing solutions. These jointing solutions are able to withstand the rigours of installation, testing and provide long term reliability once in service.

- The Rapid push-fit joint is simple and robust and provides high flexibility in both application and installation
- Simple jointing techniques, for easy installation
- Testing ductile iron pipe systems is simple, once passed there is no need to repeat test at a later time. Install, Test and Forget, requires less supervision on-site.
- Jointing solutions which allows installation whatever the weather conditions
- No specialist equipment required
- Capable of angular deflection and axial withdrawal, providing opportunity to reduce the number of fittings required.
- Caters for unforeseen ground movements

Hydraulic Flow: Ductile Iron gives constant performance

The nominal bore of ductile iron pipe remains constant regardless of pressure requirements. Ductile iron pipe internal bore is clear: for example DN200 = 200mm internal bore, regardless of pressure required.

- Hydraulic flow characteristics are not altered by pressure increases or decreases
- An increase in working pressure does not mean an increase in diameter requirement

Pressure Capability: Ductile Iron offers the solution whatever the pressure

Saint-Gobain PAM UK water & sewer pipe systems are designed to give long term performance whatever the pressure requirements.

- Ductile Iron systems cover a wide spectrum of pressure requirements
- Ability to cope with increases in main pressure requirement
- Simple to specify

Soil Conditions: Ductile Iron offers advance technical solutions

Saint-Gobain pipe systems are designed to cope with the most aggressive of soil conditions whilst offering cost effective solutions.

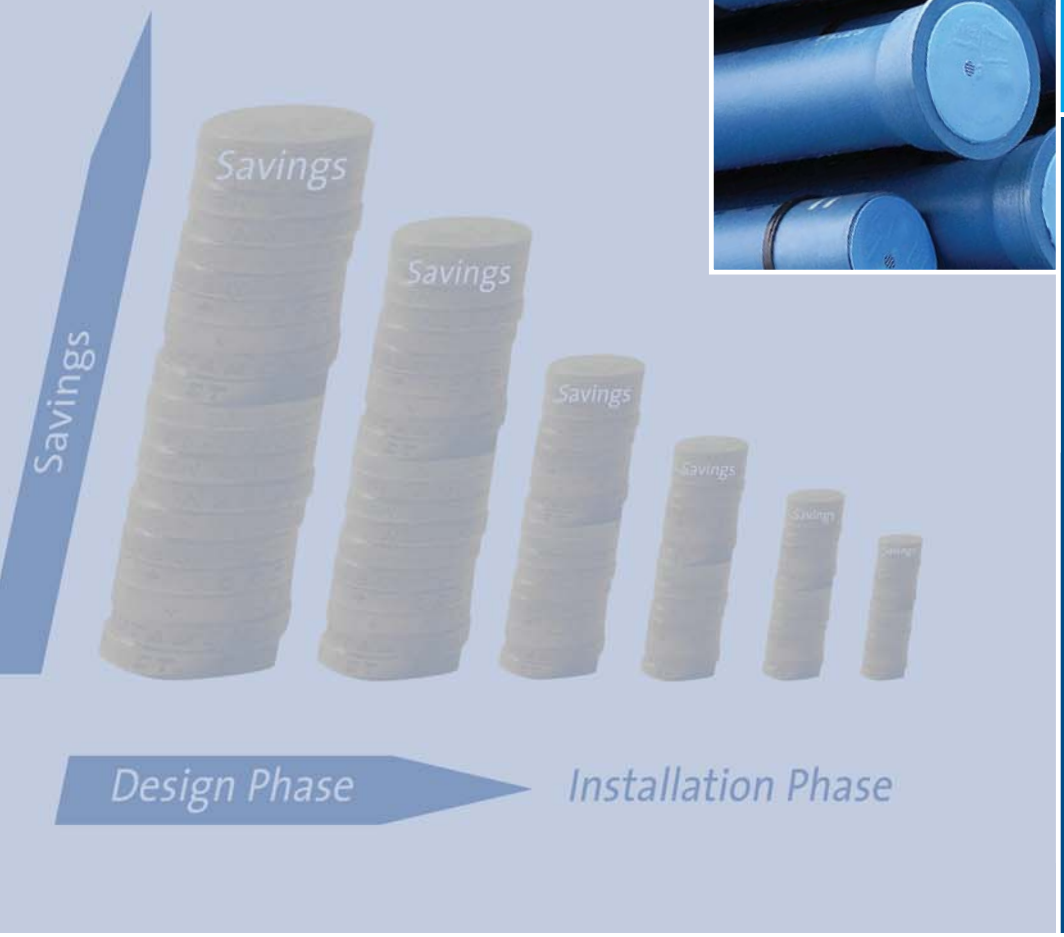
- Revolutionary zinc/aluminium alloy coating system, available on PAM Blutop, Natural and Integral Plus: ***can be used in over 90% of UK soils.***
- For very aggressive ground conditions Saint-Gobain PAM UK offers solutions which are optimised for Brownfield or contaminated sites.
- Complete range of Epoxy coated fittings, suitable for use in all conditions

- Easy to specify, design, lay and test
- Simple to joint, means high speed of installation
- Difficult to get wrong, due to high safety factors
- Corrosion not an issue
- Versatile: solutions to meet any requirements
- INSTALL, TEST & FORGET

Software Support Tools:
- PipeSpec
- PAMCad

Onsite-Support:
- Induct Plus
- Logistics

Technical Support:
- Drawing Take-Off
- Optimisation of Design
- Soil Surveys
- Telephone Help-line



Section 1

Full Project Life Support

PAM SAINT-GOBAIN

Technical Services

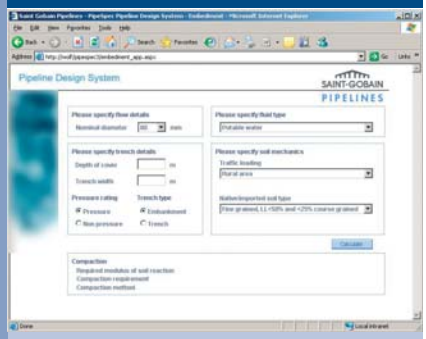
To ensure cost effective solutions Saint-Gobain PAM UK offers full project support from early design advice, soil surveys and drawing take-offs to on-site support and installation certification for contractors and engineers.

Software Support Tools:
- PipeSpec
- PAMCAD

Technical Support:
- Drawing Take-Off
- Optimisation of Design
- Soil Surveys
- Telephone Help-line

Onsite-Support:
- Induct Plus
- Logistics

PipeSpec Design Software

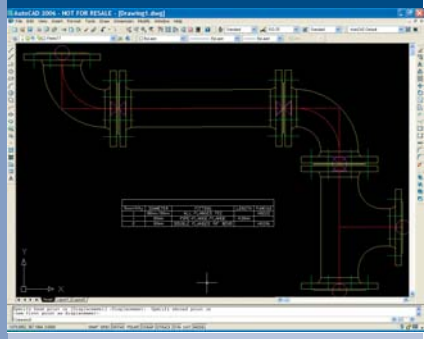


PipeSpec is a design software tool developed by Saint-Gobain PAM UK as a support tool to assist engineers in the design and specification of pipeline schemes. The software features five analytical tools that can be utilised throughout the planning and design stages of the project:

- Hydraulics - Full Pipe
- Hydraulics - Part-full Pipe
- Embedment
- Anchorage
- Installed Cost

To download a copy of PipeSpec free of charge, visit www.saint-gobain-pam.co.uk. Alternatively a copy of the PipeSpec software can be requested from the Brochure Hotline, Tel: 0800 028 2134.

PAMCAD Design Software



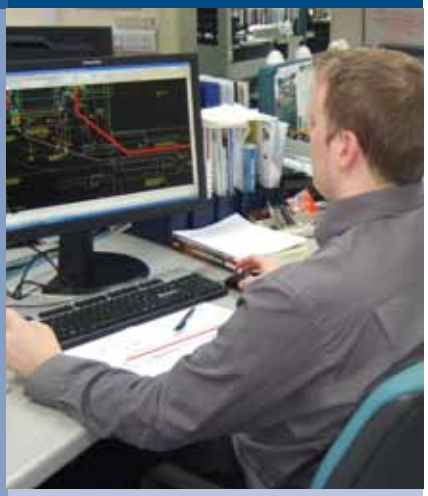
To assist engineers and specifiers in the creation and modification of a pipework design, a complete database of water pipeline products is available. The software enables accurate drawings to be produced quickly and easily by calling up pipeline components and arranging them on screen.

PAMCAD is compatible with AutoCAD. PAMCAD features a floating menu for easy, efficient pipework design.

Benefits:
- Enables pipe runs to be drawn quickly and easily
- Make-up pipe facility
- Use of standard products to minimise cost and lead time
- Automatically allows joint gaps
- Bill of materials function gives a clear list of products used

Download PAMCAD free of charge at www.saint-gobain-pam.co.uk/watersewer /wscad.cfm. Alternatively a CD-ROM is available from the Brochure Hotline, Tel: 0800 028 2134.

Drawing Take-off Service



A team of experienced engineers is able to carry out drawing take-offs, providing a detailed list of products required. The service includes optimisation of design to ensure that the most cost-effective solution is achieved.

Saint-Gobain PAM UK has the facility to accept drawings in electronic format. Please consider the following instructions for use of this facility:

- All drawings to be compatible with AutoCAD
- All drawings sent to relate only to pipework for take-off
- All drawings to be 'clean', i.e. drawings to fill the whole screen in a reasonable and printable size

To avoid delays in dealing with requests, please ensure that the relevant sections of the specification are sent at the same time as the drawings, either by mail or e-mail.

Technical Support Helpline

A technical support helpline is available to all existing and potential customers, staffed by an experienced team of engineers offering a broad range of expertise and advice on:

- Product and material compatibility
- Installation and testing
- Embedment and hydraulic flow calculations
- Regulatory requirements

Please call our Technical Sales Department, Tel: 0115 930 0700 or email technical.pipes.uk.pam@saint-gobain.com

Induct Plus

This scheme, offered by Saint-Gobain PAM UK, aims to give confidence to water utilities and contractors that pipes and fittings will be installed effectively and in optimum condition. The scheme offers contractors hands-on training in handling, storing, installing and commissioning Saint-Gobain PAM UK ductile iron pipes and fittings. A process of on-site evaluation and assessment of actual installation is used to support the certification of contractors successfully completing the scheme.

For more information on the installation of ductile iron pipes, fittings and valves, please refer to the Installation Guide at **www.saint-gobain-pam.co.uk**. This set of instructions is based on best practices which are acknowledged within the industry. This guide provides clear and concise guidance for the installation of ductile iron pipelines from delivery through to on-site commissioning and is designed to ensure that the performance of ductile iron pipes and fittings is not adversely affected during installation.

Please call our Technical Sales Department, Tel: 0115 930 0700 or email technical.pipes.uk.pam@saint-gobain.com

Soil Surveys

Saint-Gobain PAM UK can carry out a detailed soil resistivity survey along the route of a proposed pipeline. The results of the assessment provide a detailed analysis of ground conditions, allowing the most appropriate external protection system to be specified. Our soil assessment procedure has been awarded independent approval by WRc.

Please contact Technical Sales Department for more information, Tel: 0115 930 0700.

Quality Assurance

Saint-Gobain PAM UK regards quality as essential to the success of its business. From detailed metallurgical analysis of the molten metal to tight control of coating and lining applications, procedures have been developed to ensure consistent high quality of each individual pipe and fitting. Additionally, every pipe and fitting is pressure tested in accordance with BS EN 545/BS EN 598.

The “quality-is-key” principle applies to every stage of the manufacturing process and includes:

- Validation of suppliers and/or their materials
- Continuous assessment of quality systems
- On-going monitoring of product quality
- Technical support prior to and after sales
- On-time delivery of products and supporting information

FM 12908

PT/231/0404

Compliance with Standards

Saint-Gobain PAM UK products comply with and are tested according to relevant British, European and International Standards. All pipes and fittings are manufactured under the quality management system BS EN ISO 9001, 2000.

All Saint-Gobain PAM UK’s ductile iron pipes and fittings for water application conform to the latest version of BS EN 545 and for sewer applications they conform to the latest version of BS EN 598. Development of pipes and fittings can take place across the Saint-Gobain PAM UK Pipe Division. As such, third party accreditation is always achieved with the relevant auditing body e.g. BSI in the UK, Bureau Veritas (BV) in France and MPA-NRW in Germany. All of these certification bodies are also independently accredited, for example BSI is accredited by UKAS.

In addition, all materials in contact with potable water used by Saint-Gobain PAM UK have been approved by the Secretary of State for the Environment, Food and Rural Affairs in accordance with Regulation 31.4.a of the Water Supply (Water Quality) Regulations 2000 (England) (2001 in Wales), and by the Scottish Ministers in accordance with Regulation 27 of the Water Supply (Water Quality) (Scotland) Regulations.

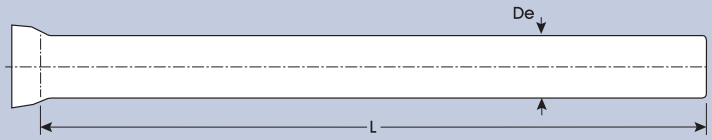
Section 2

Product Range

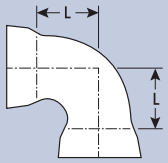
PAM SAINT-GOBAIN

Key Dimensions - Push-fit

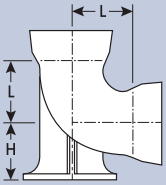
Pipe



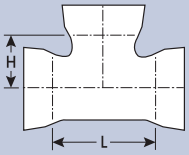
Bend



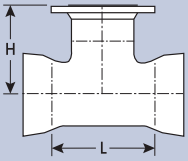
Duckfoot Bend



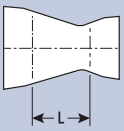
All Sochet Tee



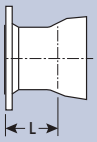
Flange on Double Socket Tee



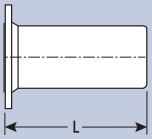
Concentric Taper



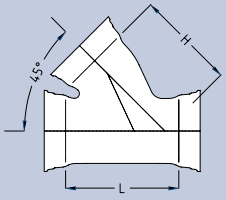
Flanged & Socket



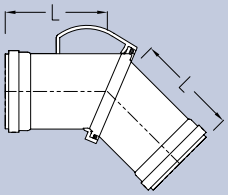
Flanged Spigot



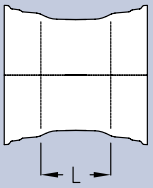
45° Angle Branch



Kameleo

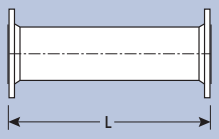


Collar

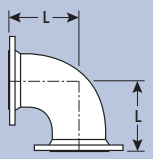


Key Dimensions - Flanged

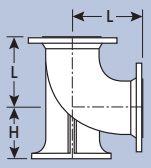
Pipe/Riser Piece



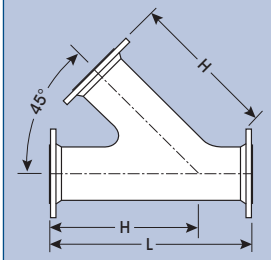
Bend



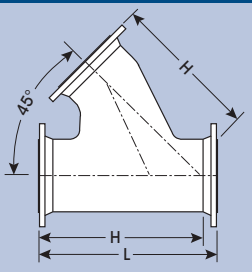
Duckfoot Bend



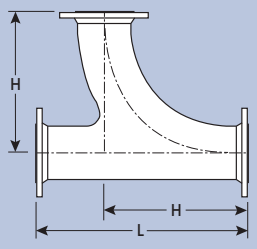
45° Angle Branch DN80-300



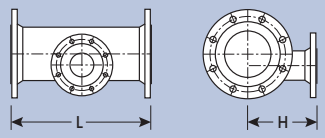
45° Angle Branch DN350-1200



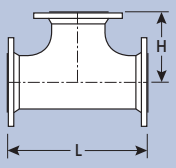
Radial Tee



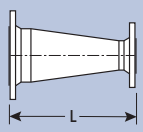
All Flanged Level Invert Tee



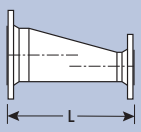
All Flanged Tee



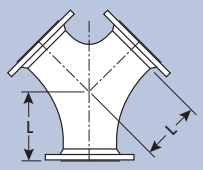
Concentric Taper



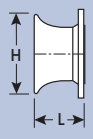
Flat Taper



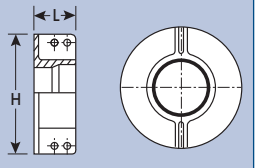
"Y" Pipe



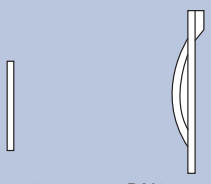
Bellmouth



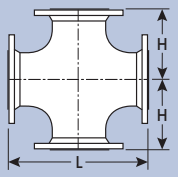
Loose Puddle Flange



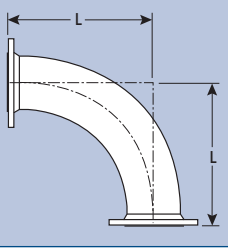
Blank Flange



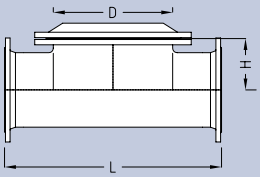
Cross



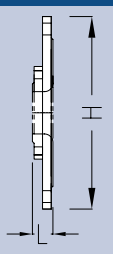
90° Long Radius Bend



Hatchbox



Reducing flange



blutop Range (Pipe)

The small diameter pipe without compromise

Blutop is an innovative ductile iron pipe system dedicated to small diameter potable water distribution which combines the strength of ductile iron with the lightness of plastic. It is available in DN/OD 75, 90, 110, 125 and 160. Blutop is approved for potable water under regulation 31.4.a. It is also WRc approved and conforms with functional performance aspects of EN545.

Benefits

Lighter pipe system as there is no cement mortar lining, which facilitates manual handling
Compatible with plastic pipes*, DN/OD dimensions
Easy to assemble, new push fit joint with low insertion force
Better hydraulic capacity than plastics thanks to an increased internal diameter allowing:
- Downsizing of pipe
- Lower carbon emissions
- Reduced pumping requirements

Lower requirement for imported/exported bedding materials, thanks to the use of excavated material as backfill
Optimum water quality thanks to the innovative 'Ductan' lining
Self-anchoring gasket available for restrained pipes application, eliminating the need for concrete thrust blocks
Eco friendly product designed to be environmentally sustainable:
- Recycled and infinitely recyclable
- Reduction in energy consumption linked to transport
- Reduction in energy consumption for pumping

Technical Details

Diameter Range	DN/OD 75, 90, 110, 125 and 160.
Joint	Manual push-fit
Gasket	Blutop non-restrained, PFA = 25 bar Blutop restrained Vi (self-anchored), PFA = 16 bar
Pipes - Coating & Lining	Coating: (Zinalium Zn/Al 85/15 400g/m^2 plus 100 µm epoxy)**
	Lining: Ultramarine blue DUCTAN thermoplastic 300 µm, nominal adhesion 8MPa
Fittings - Coating & Lining	Epoxy powder (EN14901 compliant)
Angular deflection	6 degrees

For further information on how to joint a Blutop pipe, please refer to "Section 3: Joints" of this brochure (page 67)

* Blutop socket compatible with PVC & HPPE spigot but PVC or HPPE socket not compatible with Blutop spigot
** For information on special coatings for Blutop please refer to 'Section 5: Pipe Coatings' on page 94

PIPES

PIPE - 6M LONG				DOUBLE SPIGOT PIPE 1.16M LONG		
DN/OD		Weight (Kg/m)	Product Code		Weight (Kg)	Product Code
75		5.10	KXL75H60		5.90	229336
90		6.20	KXL90H60		7.10	225410
110		7.60	KXM11H60		8.70	225412
125		8.60	KXM12H60		10.00	227062
160		12.50	KXM16H60		14.50	229337

		GASKET		ANCHOR GASKET	
DN/OD		Weight (Kg)	Product Code	Weight (Kg)	Product Code
75		0.058	JXL75BA	0.066	JXL75CA
90		0.060	JXL90BA	0.095	JXL90CA
110		0.075	JXM11BA	0.115	JXM11CA
125		0.090	JXM12BA	0.130	JXM12CA
160		0.171	JXM16BA	0.220	JXM16CA

Note.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables

Pipe Range

Saint-Gobain PAM UK supplies pipes for potable water (Natural and Classic) and sewerage applications (Integral Plus and Integral) in diameter range DN80-2000. All Saint-Gobain PAM UK pipes are manufactured in accordance with the latest version of BS EN 545 for potable water and BS EN 598 for sewerage.

Table 1: Standard offer, water - System CL

DN	Natural Prod Code	Classic Prod Code	Pipe Class	Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØB)	Weight (Kg/m)
80	NSA80Q60		C40	6000	98	167.0	12.0
100	NSB10Q60		C40	6000	118	188.0	15.0
150	NSB15Q60		C40	6000	170	242.0	22.0
200	NSB20Q60		C40	6000	222	295.0	30.0
250	NSB25Q60		C40	6000	274	352.0	42.0
300	NSB30F60		C40	6000	326	409.2	55.5
350	NSB35G60		C30	6000	378	464.2	69.0
400	NSB40G60		C30	6000	429	516.2	79.5
450	NSB45G60		C30	6000	480	574.2	94.0
500	NSB50G60		C30	6000	532	629.2	111.0
600	NSB60G60		C30	6000	635	738.5	150.5
700	NSB70H60*	SSB70G70	C25/C30	6000/6960	738	863.0	188.0/217.9
800	NSB80H70*	SSB80G70	C25/C30	6950	842	974.0	213.0/267.0
900	NSB90H70	SSB90G70*	C25/C30	6950	945	1082.0	260.0/279.0
1000	NSC10H70	SSC10G70*	C25/C30	6960	1048	1191.0	311.5/334.0
1200		SSC12H80	C25	8190	1255	1412.5	461.5
1400		SSC14H80	C25	8170	1462	1592.1	634.5
1600		SSC16H80	C25	8160	1668	1815.9	807.5
1800		SSC18H80	C25	8150	1875	2032.2	995.0
2000		SSC20H80	C25	8130	2082	2259.0	1210.0

* Preferred option
Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- DN1100 and DN1500 pipes available on request (limited range of fittings)
- For further information on the Rapid joint, please refer to 'Section 3: Joints' of this brochure, page 67

Table 2: Standard offer, water - System XL

DN	Natural Prod Code	Pipe Class	Length (mm)	Spigot OD mm (øDE)	Socket OD mm (øDE)	Weight (Kg/m)
80	189486	C40	5500	98	167.0	15.0
100	189509	C40	5500	118	188.0	17.5
150	189515	C40	5500	170	242.0	26.0
200	197942	C40	5500	222	295.0	35.0
250	189518	C40	5500	274	352.0	45.5
300	189519	C40	5500	326	409.2	57.0
350	NSB35G55EC	C30	5500	378	464.2	69.0
400	NSB40G55EC	C30	5500	429	516.2	79.5
450	NSB45G55EC	C30	5500	480	574.2	94.0
500	NSB50G55EC	C30	5500	532	629.2	111.0
600	NSB60G55EC	C30	5500	635	738.5	150.5
700	SSB70N55EC	C30	5500	738	863.0	188.0

Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Saint-Gobain is expecting to manufacture 6m long pipes in the 2nd half of 2012. The above table will be updated accordingly in due course

Table 3: Standard offer sewer

DN	Integral Plus Prod code	Integral Prod code	Length (mm)	Spigot OD mm (øDE	Socket OD mm (øDE)	Weight (Kg/m)
80	205667	TSA80S60	6000	98	167.0	13.0
100	205669	TSB10S60	6000	118	188.0	16.0
150	205670	TSB15S60	6000	170	242.0	23.5
200	205711	TSB20S60	6000	222	295.0	31.0
250	205718	TSB25S60	6000	274	352.0	40.5
300	205712	TSB30S60	6000	326	409.2	51.0
350	205719	TSB35S60	6000	378	464.2	66.5
400	205720	TSB40S60	6000	429	516.2	78.0
450	205731	TSB45S60	6000	480	574.2	92.5
500	205732	TSB50S60	6000	532	629.2	106.5
600	205733	TSB60S60	6000	635	738.5	138.0
700	205735	TSB70E69	6000/6950	738	863.0	201.0
800	206666	TSB80E69	6950	842	974.0	243.5
900		TSB90E69	6950	945	1082.0	291.5
1000		TSC10E69	6960	1048	1191.0	343.0
1200		TSC12N79	8190	1255	1412.5	507.5
1400		TSC14N80	8170	1462	1592.1	679.0
1600		TSC16N80	8160	1668	1815.9	851.5
1800		TSC18N80	8150	1875	2032.2	1036.5
2000		TSC20N80	8130	2082	2259.0	1242.0

Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- DN1100 and DN1500 pipes available on request (limited range of fittings)
- The differentiation between Integral Plus and Integral relates to the coating of the pipe. For further information, please refer to 'Section 5: Pipe Coating' of this brochure, page 93

For information on the different types of **linings and coatings (including TT)** that Saint-Gobain PAM UK has available please refer to:
- Section 4, Pipe Lining, page 85
- Section 5, Pipe Coating, page 93

Also, for further information on the different types of **joints** available from Saint-Gobain PAM UK please refer to 'Section 3: Joints'
of this brochure, page 67

Fabricated Pipe

Saint-Gobain PAM UK offers a range of fabricated pipe tailored to customer requirements: flange spigot, flange socket, double flanged, double spigot and short length socket spigot pipe in diameters DN80 to DN2000 for both water and sewer applications. Fabricated pipes are manufactured in accordance with BS EN 545 for potable water and BS EN 598 for sewerage.

The Standard flange rating is PN16, but PN10, PN25 and PN40 are also available on request. Please contact the Technical Sales Department for further information, Tel: 0115 930 0700

Puddle Flanges

Fabricated pipes can be supplied with puddle flanges where required.

Note.- Where multiple puddle flanges are required it is recommended that a drawing is sent with the enquiry.

Table 4: Standard fabricated pipe offer

DN	Clean Water (EN545)		Sewerage (EN 598)	
	Lining	Coating	Lining	Coating
DN80-800	System CL, cement lined	Zinalium (Zinc and aluminium alloy) and blue epoxy	High alumina cement	Zinc and red epoxy
DN900-DN2000		Zinc and bitumen		

Table 5 - Fabricated pipe minimum and maximum lengths (mm)

	Double Flange		Flange spigot		Double spigot		Socket spigot		Flange socket	
DN	Min length	Max length	Min length	Max length	Min length	Max length	Min length	Max length	Min length	Max length
80	135	5500	161	5500	150	6000	600	5500	600	5500
100	147		161		150		600		600	
150	147		173		150		600		600	
200	161		186		150		600		600	
250	171		194		170		600		600	
300	223		223		450		600		600	
350	300		300		630		750		750	
400	300	5900	300	5900	630	5900	750		750	5900
450	300		300		630		750		750	
500	300		350		680		750		750	
600	500		350		680		750		750	
700	550	6400	500	6400	680	6400	750	6500	750	6400
800	750		500		680		900		900	
900	750		750		680		900	7500	1000	
1000	750		750		680		900		1000	
1200	1000	7400	1000	7400	680	7400	900		1300	7400
1400	1000		1000		680		900		1500	
1600	1500		1500		680		1000		1700	

Notes.-
Please contact our technical team:
- For any requirements outside the above minimum and maximum dimensions
- For information on DN1800 and DN2000

	Double Flange c/w puddle flange		Flange spigot c/w puddle flange		Double spigot c/w puddle flange		Socket spigot c/w puddle flange		Flange socket c/w puddle flange	
DN	**Min length**	**Max length**	**Min length**	**Max length**	**Min length**	**Max length**	**Min length**	**Max length**	**Min length**	**Max length**
80	300	5500	170	5500	150	5500	600	5500	600	5500
100	300		170		150		600		600	
150	300		173		150		600		600	
200	300		190		150		600		650	
250	300		194		170		600		700	
300	500		225		450		600		750	
350	500		420		630		750		900	
400	500	5900	430	5900	630	5900	750	6000	900	5900
450	500		450		630		750		950	
500	550		500		680		750		950	
600	550		550		680		750		950	
700	700	6400	600	6400	680	6400	750	7000	1000	6400
800	750		650		680		900		1050	
900	1100		1000		750		900	8190	1150	
1000	1100		1000		750		900		1150	
1200	1500	7400	1200	7400	1000	7400	1000		1300	7400
1400	1700		1600		1000		1000		1500	
1600	2000		1800		1500		1500		1700	

Notes.-
Please contact our technical team:
- For any requirements outside the above minimum and maximum dimensions
- For information on DN1800 and DN2000

PAM Direxional

A simple and effective ductile iron solution to situations where open cut trenches are not suitable or possible.

The PAM Direxional range is Saint-Gobain PAM UK's Directional drilling pipe which can be used for both water and sewer applications.

Range overview and technical details

Diameter Range	DN100 to 700: ZMU coating DN800 to 1000: PUX based coating
Joint	Self-anchored pushfit, Universal TIS-K (Tyton) or Universal Ve (Standard/Rapid) according to diameter
Coating	ZMU : 200mg Zinc plus 5mm cement PUX: thick sprayed polyurethane based coating
Lining	Water (EN545) - Blast furnace cement Sewer (EN598) - Alumina cement

- Robustness of ZMU coating and PUX coating

ZM-U is a highly robust protective coating. In NO circumstances is further protection required. This coating is suitable for drilling pipelines through rocky conditions without detrimental effect on the performance of the coating or pipe. SGG have devised a "shock test" for this coating to prove its robustness.

PUX is a polyurethane coating intended for use with high aggressive soils. Each pipe is tested individually after coating by a 'Holiday detector' test in order to check the protective quality of the coating.

- Joint

PAM Direxional is assembled using a simple anchored push fit jointing system. The double chambered socket allows for the use of a locking ring which acts as both a restraint to enable the pipe to be pulled through the required drilling channel and a thrust restraint for the pipeline. This joint is protected from abrasive conditions with the use of a rubber protective collar and a metal sheet cone.

For further information on **how to joint a PAM Direxional pipe**, please refer to 'Section 3: Joints' of this brochure (page 67).

Installation calculations and technical support

Saint-Gobain has developed a tool that will calculate the pulling forces required and will also make weight and lift calculations to ensure that the pipe is correctly balanced in the drilling channel. For further information on this tool please contact the technical department, Tel: 0115 930 0700

Benefits of Ductile Iron vs. Plastics

	Ductile Iron	Plastics	Comments
SAFETY FACTORS	HIGH (2.5)	LOW (1.2)	LOW SAFETY FACTORS IN PLASTICS MEAN FAILURES ARE A VERY REAL RISK
TESTING	EASY	HARD	DUCTILE IRON ALLOWS A CONTRACTOR TO INSTALL TEST AND FORGET
JOINTS	ANCHORED PUSH FIT	COIL FOR SMALL DN & WELDED FOR LARGER DN	DUCTILE IRON CAN BE JOINTED DURING THE PULLING OF THE PIPE REDUCING STOP/START STRAINS ON PIPE/MACHINERY
FLOATATION CONDSIDERATION	SMALL	SIGNIFICANT??	SIMPLE CALCULATION TOOL AVAILABLE FOR SGP DUCTILE IRON
PLANNING COMPLEXITY	1 PROCESS 1 PRODUCT	1 PROCESS MANY PRODUCT	HIGH VARIETY OF PRODUCTS AVAILBLE WITH VARYING QUALITY – ADDS COMPLEXITY TO DESIGN
UNPREDICTABLE GROUND CONDITIONS	NO/LITTLE PROBLEM	WILL CAUSE PROBLEMS WITH PERFORMANCE OF PIPE	DUCTILE IRON OFFERS ONE SOLUTION TO COVER A WIDE VARIETY OF CONDTIONS – EASY TO SPECIFY, HARD TO GET WRONG
PULLING FORCES	CAN WITHSTAND HIGH FORCES	VARIABLE ACROSS DIFFERENT PRODUCTS	MANY NEW MACHINES IN MARKET HAVE ABILITY TO PULL AT WITH VERY HIGH FORCES, IN CERTAIN CASES THIS COULD BE MORE THAN MATERIAL CAN TAKE
MACHINERY			NO ADDITIONAL EQUIPMENT REQUIRED FOR PULLING DUCTILE IRON PIPES.

PAM Direxional

Product Information

Water Pipes

DN	Product code	Joint	Allowable deflection	Length (mm)	Allowable Operating Pressure (PFA)	Spigot O/D (mm)	Socket* O/D (mm)	Weight (Kg/m)	Pipe Class
100	224302	UNV TIS-K	3°	5970	64	128	220	22.50	C100
150	224305	UNV TIS-K	3°	5970	60	180	260	32.50	C64
200	224307	UNV TIS-K	3°	5970	52	232	320	45.00	C64
250	224308	UNV TIS-K	3°	5970	46	284	380	59.00	C50
300	224309	UNV TIS-K	3°	5970	41	336	440	74.00	C50
350	224310	UNV STD Ve	3°	5970	38	378	495	92.50	C40
400	224311	UNV STD Ve	3°	5970	35	439	540	108.00	C40
450	On request	UNV STD Ve	3°	5970	32	490	600	On request	C40
500	224312	UNV STD Ve	2°	5970	30	542	655	149.00	C40
600	224313	UNV STD Ve	2°	5970	30	645	770	195.00	C40
700	224314	UNV STD Ve	2°	5970	27	748	885	246.00	C30

Sewer Pipes

DN	Product code	Joint	Allowable deflection	Length	Allowable Operating Pressure (PFA)	Spigot O/D (mm)	Socket* O/D (mm)	Weight (Kg/m)
100	226988	UNV STD Ve	3°	5970	64	128	220	22.50
150	227008	UNV STD Ve	3°	5970	55	180	260	32.50
200	226990	UNV STD Ve	3°	5970	44	232	320	45.00
250	226992	UNV STD Ve	3°	5970	39	284	380	59.00
300	226993	UNV STD Ve	3°	5970	37	336	440	74.00
350	226994	UNV STD Ve	3°	5970	32	388	495	92.50
400	226995	UNV STD Ve	3°	5970	30	439	540	108.00
450	On request	UNV STD Ve	3°	5970	30	490	600	On request
500	On request	UNV STD Ve	2°	5970	30	542	655	149.00
600	226881	UNV STD Ve	2°	5970	27	645	770	195.00
700	226996	UNV STD Ve	2°	5970	25	748	885	246.00

For pipes with a deflection of 3° the minimum radius achievable will be 115m and for pipes with a deflection of 2° the minimum radius achievable will be 172m.

Notes.-
- Lenghts and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- For information on DN800-DN1000 range, please contact our Technical Department on 0115 930 0700

PAM Direxional

Other Components

	Pulling Heads	Gaskets		Locking ring	Socket sleeve	Metallic cone
DN	Product code	WATER Product Code	SEWER Product Code	Product code	Product code	Product code
100	173371	JCB10BA	JSB10BB	110259	110823	110326
150	177686	JCB15BA	JSB15BB	AKB15E	110821	110325
200	177685	JCB20BA	JSB20BB	AKB20E	110822	110324
250	177684	JCB25BA	JSB25BB	AKB25E	110828	110323
300	177683	JCB30BA	JSB30BB	AKB30E	110834	110322
350	177689	185411	JSB35BB	JKB35E	158313	208176
400	215720	185412	JSB40BB	JKB40E	110750	110321
450	184694	185413	JSB45BB	JKB45E	110301	211369
500	215792	185414	JSB50BB	JKB50E	110773	110320
600	215897	185415	JSB60BB	JKB60E	110776	110327
700	215988	JSB70BA	JSB70BB	110671	110026	110328

Jointing

DN	Products required to make a joint:						Products required for dismantling a joint:		
	Product code	Description	Qty	Product code	Description	Qty	Product code	Description	Qty
100	110355	Lever Fork Tool	1	NOT REQD		3	110281	Disassembling set	1
150	110355	Lever Fork Tool	1	NOT REQD		3	110282	Disassembling set	1
200	110355	Lever Fork Tool	1	NOT REQD		3	110283	Disassembling set	1
250	110279	Assembly Lever	1	111162	Assembly Wedges	1	110284	Disassembling set	1
300	110279	Assembly Lever	1	111163	Assembly Wedges	1	110285	Disassembling set	1
350	110279	Assembly Lever	1	111163	Assembly Wedges	1	111163	Disassembling set	1
400	110279	Assembly Lever	1	111164	Assembly Wedges	1	111164	Assembly Wedges	1
450	110279	Assembly Lever	1	111165	Assembly Wedges	1	111165	Assembly Wedges	1
500	110279	Assembly Lever	1	111165	Assembly Wedges	1	111165	Assembly Wedges	1
600			1	111165	Assembly Wedges	1	111165	Assembly Wedges	1
700			1	111166	Assembly Wedges	1	111166	Assembly Wedges	1

Fittings Range

Saint-Gobain PAM UK supplies a comprehensive range of ductile iron fittings in diameter range DN80-2000. Please note that a selection of flanged fittings are supplied with adjustable flanges. Further information on adjustable flanges is available on page 83 of this guide.

Flanged fittings are supplied as standard with PN16 flanges. For availability of PN10, PN25 or PN40 items please contact the Technical Sales Department, Tel: 0115 930 0700

Saint-Gobain PAM UK supplies two ranges of fittings:

- Blutop fittings, which are available on DN/OD 75, 90, 110, 125 and 160.
- Traditional range of push-fit and flanged fittings, available on DN80-2000.

Gasket Identification

It is important that the appropriate gasket is used, EPDM for potable water application and Nitrile for sewerage applications. Rapid joint gaskets are easily identifiable being marked EPDM for use with potable water or marked NBR, indicating Nitrile, for sewer applications. In addition, to help with identification and eliminating potential confusion on site, Rapid joint gaskets are colour-coded.

- Nitrile gaskets for sewer applications can be identified by a double yellow ring throughout the size range DN80-2000.
- EPDM gaskets for water applications can be identified by a light blue double ring in the size range DN80-600.

Notes.-
- Anchor gaskets do not have colour markings
- For further information on the rapid joint, please refer to 'Section 3: Joints' of this brochure, page 67

Blutop Gasket

The Blutop range of products utilizes a unique gasket available in non-anchored and anchored versions:

Standard (non-anchored) Blutop gasket

Anchored Blutop gasket

Range (Fittings)

The small diameter pipe without compromise. Blutop is an innovative ductile iron pipe system dedicated to small diameter potable water distribution and is available in DN/OD 75, 90, 110, 125 and 160.

FITTINGS

		90° BEND		45° BEND		22½° BEND		11¼° BEND	
DN/OD		Weight (Kg)	Product Code	Weight (Kg)	Product Code	Weight (Kg)	Product Code	Weight (Kg)	Product Code
75		4.40	KXL75CA	4.20	KXL75CB	3.40	KXL75CD	3.50	KXL75CE
90		5.50	KXL90CA	5.10	KXL90CB	4.40	KXL90CD	3.80	KXL90CE
110		7.10	KXM11CA	6.20	KXM11CB	5.50	KXM11CD	5.80	KXM11CE
125		8.80	KXM12CA	7.00	KXM12CB	6.60	KXM12CD	6.70	KXM12CE
160		12.30	KXM16CA	10.30	KXM16CB	9.20	KXM16CD	9.10	KXM16CE

DN 80 FLANGED DUCKFOOT BEND			FLANGED SOCKET		FLANGED SPIGOT		
DN/OD		Weight (Kg)	Product Code		Weight (Kg)	Product Code		Weight (Kg)	Product Code
75					5.00	KXL75BE1C		3.85	KXL75BU1C
90		8.00	KXL90DF0E		5.50	KXL90BE1E		4.70	KXL90BU1E
110		11.40	KXM11DF0E		6.70	KXM11BE1F		6.00	KXM11BU1F
125		13.60	KXM12DF0E		8.20	KXM12BE1G		7.90	KXM12BU1G
160					11.00	KXM16BE1J		12.10	KXM16BU1J

DOUBLE SOCKET TEE WITH FLG BRANCH			
DN/OD		Weight (Kg)	Product Code
75x40		5.80	KXL75TD1A
75x60		7.80	KXL75TD1C
90x40		6.80	KXL90TD1A
90x60		8.60	KXL90TD1C
90x80		9.40	KXL90TD1E
110x40		7.60	KXM11TD1A
110x60		9.40	KXM11TD1C
110x80		11.00	KXM11TD1E
110x100		12.20	KXM11TD1F
125x40		9.20	KXM12TD1A
125x60		10.80	KXM12TD1C
125x80		11.50	KXM12TD1E
125x100		12.20	KXM12TD1F
125x125		15.00	KXM12TD1G
160X40		11.30	KXM16TD1A
160X60		12.90	KXM16TD1C
160X80		14.30	KXM16TD1E
160X100		16.40	KXM16TD1F
160X125		18.00	KXM16TD1G
160X150		20.30	KXM16TD1J

ALL SOCKET TEE			
DN/OD		Weight (Kg)	Product Code
90x90		6.80	KXL90TE0D
110x90		7.80	KXM11TE0D
110x110		8.70	KXM11TE0E
125x90		9.20	KXM12TE0D
125x110		10.00	KXM12TE0E
125x125		11.00	KXM12TE0G
160X100		13.00	KXM16TE0E
160X125		13.6	KXM16TE0G

Note.-
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

FITTINGS

SEMI SLIDING COLLAR WITH BOSS FOR DRILLING			
DN/OD		Weight (Kg)	Product Code
75		5.30	KXL75MM
90		6.30	KXL90MM
110		7.30	KXM11MM
125		8.80	KXM12MM
160		10.70	KXM16MM

COLLAR			
		Weight (Kg)	Product Code
		4.00	KXL90MN
		4.90	KXM11MN
		5.50	KXM12MN

PLUG			
		Weight (Kg)	Product Code
		2.00	KXL90BH
		2.20	KXM11BH
		2.95	KXM12BH

TAPER			
DN/OD		Weight (Kg)	Product Code
110x90		5.00	KXM11VE0D
125x90		5.20	KXM12VE0D
125x110		5.50	KXM12VE0E
160x75		6.50	KXM16VE0C
160x90		7.00	KXM16VE0D
160x110		7.40	KXM16VE0E
160X125		7.80	KXM16VE0G

QUICK FLANGE (ANCHORED)			
DN/OD		Weight (Kg)	Product Code
75x60/65		2.40	226300
90x80		2.80	216901
110x100		3.40	216902
125x125		4.30	216906
160x150		5.70	226301

VALVES

PUSH FIT VALVE FOR BLUTOP OR PLASTIC PIPES					
DN/OD		Anticlockwise Close with cap top		Clockwise Close no cap top	
		Weight (Kg)	Product Code	Weight (Kg)	Product Code
75		12.30	RDL75KDXH	12.10	RDL75KBXH
90		12.80	RDL90KDXH	12.60	RDL90KBXH
110		16.20	RDM11KDXH	16.00	RDM11KBXH
125		22.80	RDM12KDXH	22.60	RDM12KBXH
160		30.00	RDM16KDXH	29.80	RDM16KBXH

ACCESSORIES

	LUBRICANT		REPAIR COATING	
	Contents (Kg)	Product Code	Weight (Kg)	Product Code
	0.85	158128	1	213686

DN/OD		DRILLING & TAPPING SADDLE	
		Weight (Kg)	Product Code
75		Please enquire	Please enquire
90		12.60	223387
110		16.00	223389
125		22.60	223390
160		Please enquire	Please enquire

Note.-
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

KAMELEO

Kameleo is a variable angle fitting designed for use with water supply pipelines. It consists of a main component or body and a range of accessories (kits) that combine together to produce different types of joints: double socket, double flange, socket/flange, mechanical, etc

It has a continuous variable angle from 0 to 45° which allows to make any connection with a single bend, without the need of using several bends.

It has an allowable operating pressure (PFA) of 16 bar, a 250 µm epoxy coating and hot dipped galvanised steel nuts and bolts.

Compliance with standards and regulations:

- Type tests carried out on Kameleo comply with EN 545
- The epoxy coating complies with EN 14901
- The components in contact with drinking water are in accordance with European regulations on potable water

For maintenance and repairs

- In its flanged socket and collar versions, Kameleo slides along the pipe completely (at 0°) and can be used in insertion.
- Its variable angle allows Kameleo to slip into small gaps, between two pipe spigots, for easy maintenance and durable repairs to small damaged pipe sections.
- The different versions of Kameleo can be easily pre-assembled outside the trench for ease of installation.

VARIABLE ANGLE BEND

DN/OD	Product Code		Product Code Push-Fit Gasket	
			Rapid	Rapid anchored
80	SZA80CV00TT		185405	JSA80CA
100	SZB10CV00TT		185406	JSB10CA
150	SZB15CV00TT		185407	JSB15DA

FLANGED JOINT

(Flange, gasket, bolts, nuts and washers)

DN/OD	Product Code	
80	JZA80KB	
100	JZB10KB	
150	JZB15KB	

MECHANICAL JOINT

(Flange, gland, rapid gasket, bolts, nuts & washers)

DN/OD	Product Code	
80	JZA80KE	
100	JZB10KE	
150	JZB15KE	

MECHANICAL ANCHORED JOINT

(Flange, gland, rapid anchored gasket, bolts, nuts and washers)

DN/OD	Product Code	
80	JZA80KL	
100	JZB10KL	
150	JZB15KL	

MECHANICAL ANCHORED JOINT (SPECIAL INSERTION)

(Flange, 2 x glands, rapid gasket, rapid anchored gasket, rods, nuts and washers)

DN/OD	Product Code	
80	JZA80KM	
100	JZB10KM	
150	JZB15KM	

DN80 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Kameleo Variable Angle Bend		SZA80CV00TT	-	16	160•		11.0
Bend	90°	SSA80CA00TT	TSA80CA	64	92		8.0
	45°	SSA80CB00TT	TSA80CB	64	57		7.5
	22.5°	SSA80CD00TT	TSA80CD	64	32		6.5
	11.25°	SSA80CE00TT	TSA80CE	64	40		7.0
Duckfoot		SSA80CF00TT	SSA80CF00FF	64	95	110	12.0
Hydrant Duckfoot		SSA80CG1ETT	-	16	150	95	12.5
All socket tee	DN80	SSA80TE0ETT	TSA80TE0E	64	183	92	11.5
Flange on Double Socket Tee*	DN80	SSA80UD1ETT	TSA80UD1E	16	183	165	13.0
45° Angle Branch		SSA80TU0ETT	SSA80TU0EFF	64	300	250	15.0
Flange & Socket Piece*		SSA80BE10TT	TSA80BE1	16	110		7.5
Flange & spigot Piece		BBA80BU10TT	BBA80BU10FF	16	350		8.0
UNIVERSAL							
Bend	90°	SFA80CA00TT	-	64	102		11.5
	45°	SFA80CB00TT	-	64	56		10.5
	22.5°	SFA80CD00TT	-	64	38		10.0
	11.25°	SFA80CE00TT	-	64	30		10.0
Flange & Socket Piece*		SFA80BE10TT	-	16	130		9.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83
· Kameleo length at 0°

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN80 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Riser piece	100mm long	BBA80MT1UTT	BBA80MT1UFF	16			7.0
	150mm long	BBA80MT1ZTT	BBA80MT1ZFF	16			8.0
	200mm long	BBA80MT1VTT	BBA80MT1VFF	16			9.0
	250mm long	BBA80MT1ATT	BBA80MT1AFF	16			9.5
	300mm long	BBA80MT1WTT	BBA80MT1WFF	16			10.5
	350mm long	186712	-	16			10.5
	400mm long	BBA80MT1XTT	BBA80MT1XFF	16			12.0
Bend	90°	BBA80CA10TT	BBA80CA10FF	16	165		10.0
	45°	BBA80CB10TT	BBA80CB10FF	16	130		10.5
	22.5°	BBA80CD10TT	BBA80CD10FF	16	100		11.0
	11.25°	BBA80CE10TT	BBA80CE10FF	16	113		9.0
90° Long radius bend		BBA80CH10TT	BBA80CH10FF	16	380		14.0
Duckfoot		BBA80CF10TT	BBA80CF10FF	16	165	110	14.0
All Flange Tee	DN80	BBA80TE1ETT	BBA80TE1EFF	16	330	165	15.5
All Flange Radial		BBA80TW1ETT	BBA80TW1EFF	16	545	380	23.0
Cross		BBA80XN1ETT	BBA80XN1EFF	16	330	165	22.0
45° Angle Branch		BBA80TU1ETT	BBA80TU1EFF	16	400	309	21.0
Concentric Taper	DN50	BBA80VE1BTT	BBA80VE1BFF	16	200		8.5
Flat Taper	DN50	BBA80VT1BTT	BBA80VT1BFF	16	200		7.5
Y Pipe		BBA80YN10TT	BBA80YN10FF	16	165		16.0
Bellmouth		BBA80BP10TT	BBA80BP10FF	16	135	160	5.0
Hatchbox		-	193377	16			65.0
Loose Puddle Flange		BBA80PF00TT	BBA80PF00FF	16	110	260	11.5
Blank Flange	Standard	186646	BBA80QN10FF	16			3.5
	D/T 1"	186649	186652	16			4.0
	D/T 1.5"	186650	186654	16			4.0
	D/T 2"	186651	186653	16			4.0

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN100 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Kameleo Variable Angle Bend		SZB10CV00TT	-	16	180•		14.0
Bend	90°	SSB10CA00TT	TSB10CA	64	105		10.5
	45°	SSB10CB00TT	TSB10CB	64	65		9.0
	22.5°	SSB10CD00TT	TSB10CD	64	35		8.0
	11.25°	SSB10CE00TT	TSB10CE	64	40		8.5
Duckfoot		SSB10CF00TT	SSB10CF00FF	64	110	125	15.5
Hydrant Duckfoot		SSB10CG1ETT	-	16	105	125	16.5
All socket tee	DN80	SSB10TE0ETT	TSB10TE0E	64	185	104	14.0
	DN100	SSB10TE0FTT	TSB10TE0F	64	210	105	15.5
Flange on Double Socket Tee*	DN80	SSB10UD1ETT	TSB10UD1E	16	185	177	15.0
	DN100	SSB10UD1FTT	TSB10UD1F	16	210	180	17.0
45° Angle Branch		SSB10TU0FTT	SSB10TU0FFF	64	300	250	18.0
Concentric Taper	DN80	SSB10VE0ETT	TSB10VE0E	64	105		7.5
Double Socket Collar		SSB10MM00TT	SSB10MM00FF	64	160		12.0
Flange & Socket Piece*		SSB10BE10TT	TSB10BE1	16	110		9.0
Flange & spigot Piece		BBB10BU10TT	BBB10BU10FF	16	360		10.0
UNIVERSAL							
Bend	90°	SFB10CA00TT	-	64	123		17.0
	45°	SFB10CB00TT	-	64	64		16.0
	22.5°	SFB10CD00TT	-	64	49		15.0
	11.25°	SFB10CE00TT	-	64	33		14.5
All socket tee	DN80	SFB10TE0ETT	-	64	170	95	21.5
	DN100	SFB10TE0FTT	-	64	190	95	26.5
Flange on Double Socket Tee*	DN80	SFB10UD1ETT	-	16	170	175	21.0
	DN100	SFB10UD1FTT	-	16	190	180	22.5
Concentric Taper	DN80	SFB10VE0ETT	-	64	90		12.5
Flange & Socket Piece*		SFB10BE10TT	-	16	130		12.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83
• Kameleo length at 0°

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN100 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Riser piece	100mm long	BBB10MT1UTT	BBB10MT1UFF	16			8.5
	150mm long	BBB10MT1ZTT	BBB10MT1ZFF	16			9.0
	200mm long	BBB10MT1VTT	BBB10MT1VFF	16			10.0
	250mm long	BBB10MT1ATT	BBB10MT1AFF	16			11.0
	300mm long	BBB10MT1WTT	BBB10MT1WFF	16			12.5
	350mm long	186728	-	16			12.5
	400mm long	BBB10MT1XTT	BBB10MT1XFF	16			15.0
Bend	90°	BBB10CA10TT	BBB10CA10FF	16	180		12.0
	45°	BBB10CB10TT	BBB10CB10FF	16	140		11.5
	22.5°	BBB10CD10TT	BBB10CD10FF	16	110		11.5
	11.25°	BBB10CE10TT	BBB10CE10FF	16	115		16.0
90° Long radius bend		BBB10CH10TT	BBB10CH10FF	16	400		18.0
Duckfoot	DN80	BBB10CF1ETT	BBB10CF1EFF	16	180	125	20.0
	DN100	BBB10CF10TT	BBB10CF10FF	16	180	125	17.5
All Flange Tee	DN80	BBB10TE1ETT	BBB10TE1EFF	16	360	175	18.5
	DN100	BBB10TE1FTT	BBB10TE1FFF	16	360	180	19.5
All Flange Radial		BBB10TW1FTT	BBB10TW1FFF	16	580	400	29.5
Level invert tee	DN80	BBB10TT1ETT	BBB10TT1EFF	16	360	195	19.5
Cross		BBB10XN1FTT	BBB10XN1FFF	16	360	180	26.5
45° Angle Branch		BBB10TU1FTT	BBB10TU1FFF	16	430	328	27.0
Concentric Taper	DN50	BBB10VE1BTT	BBB10VE1BFF	16	200		8.5
	DN80	BBB10VE1ETT	BBB10VE1EFF	16	200		9.5
Flat Taper	DN50	BBB10VT1BTT	BBB10VT1BFF	16	300		9.5
	DN80	BBB10VT1ETT	BBB10VT1EFF	16	200		9.5
Y Pipe		BBB10YN10TT	BBB10YN10FF	16	180		19.5
Bellmouth		BBB10BP10TT	BBB10BP10FF	16	140	185	6.5
Hatchbox		-	193369	16			70.0
Loose Puddle Flange		BBB10PF00TT	BBB10PF00FF	16	110	305	14.5
Blank Flange	Standard	186661	TBB10QN10FF	16			5.0
	D/T 1"	186663	186666	16			5.0
	D/T 1.5"	186664	-	16			5.0
	D/T 2"	186665	186667	16			5.0
Reducing flange**	DN80	BBB10RM1ETT	-	16			7.0

**Delivered with studs, washers and nuts

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN150 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Kameleo Variable Angle Bend		SZB15CV00TT	-	16	200•		24.0
Bend	90°	SSB15CA00TT	TSB15CA	64	153		18.5
	45°	SSB15CB00TT	TSB15CB	64	93		16.0
	22.5°	SSB15CD00TT	TSB15CD	64	42		13.0
	11.25°	SSB15CE00TT	TSB15CE	64	46		13.0
Duckfoot		SSB15CF00TT	SSB15CF00FF	64	155	160	27.0
Hydrant Duckfoot		SSB15CG1ETT	-	16	140	135	29.0
All socket tee	DN80	SSB15TE0ETT	SSB15TE0EFF	64	165	137	18.0
	DN100	SSB15TE0FTT	SSB15TE0FFF	64	190	140	20.0
	DN150	SSB15TE0JTT	TSB15TE0J	64	305	153	28.0
Flange on Double Socket Tee*	DN80	SSB15UD1ETT	TSB15UD1E	16	165	210	20.0
	DN100	SSB15UD1FTT	TSB15UD1F	16	190	215	22.0
	DN150	SSB15UD1JTT	TSB15UD1J	16	305	220	30.0
Flange on Socket Level invert tee*	DN80	SSB15UT1ETT	SSB15UT1EFF	16	188	220	19.0
45° Angle Branch		SSB15TU0JTT	SSB15TU0JFF	64	400	350	34.0
Concentric Taper	DN80	SSB15VE0ETT	TSB15VE0E	64	170		11.0
	DN100	SSB15VE0FTT	TSB15VE0F	64	130		11.0
Double Socket Collar		SSB15MM00TT	SSB15MM00FF	64	165		17.0
Flange & Socket Piece*		SSB15BE10TT	TSB15BE1	16	115		14.0
Flange & Spigot Piece		BBB15BU10TT	BBB15BU10FF	16	380		15.5
UNIVERSAL							
Bend	90°	SFB15CA00TT	-	64	172		27.5
	45°	SFB15CB00TT	-	64	87		24.5
	22.5°	SFB15CD00TT	-	64	54		23.0
	11.25°	SFB15CE00TT	-	64	39		22.0
All socket tee	DN80	SFB15TE0ETT	-	64	170	120	30.0
	DN100	SFB15TE0FTT	-	64	195	120	33.0
	DN150	SFB15TE0JTT	-	64	255	125	38.0
Flange on Double Socket Tee*	DN80	SFB15UD1ETT	-	16	170	205	30.0
	DN100	SFB15UD1FTT	-	16	195	210	31.5
	DN150	SFB15UD1JTT	-	16	255	220	36.5
Concentric Taper	DN80	SFB15VE0ETT	-	64	190		18.5
	DN100	SFB15VE0FTT	-	64	150		20.0
Flange & Socket Piece*		SFB15BE10TT	-	16	135		14.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83
· Kameleo length at 0°

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN150 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Riser piece	150mm long	BBB15MT1ZTT	BBB15MT1ZFF	16			14.0
	200mm long	BBB15MT1VTT	BBB15MT1VFF	16			16.5
	250mm long	BBB15MT1ATT	BBB15MT1AFF	16			17.0
	300mm long	BBB15MT1WTT	BBB15MT1WFF	16			19.5
	350mm long	186739	186740	16			19.5
	400mm long	BBB15MT1XTT	BBB15MT1XFF	16			23.5
Bend	90°	BBB15CA10TT	BBB15CA10FF	16	220		22.5
	45°	BBB15CB10TT	BBB15CB10FF	16	160		18.5
	22.5°	BBB15CD10TT	BBB15CD10FF	16	109		18.0
	11.25°	BBB15CE10TT	BBB15CE10FF	16	113		19.0
90° Long radius bend		BBB15CH10TT	BBB15CH10FF	16	450		30.0
Duckfoot	DN80	BBB15CF1ETT	BBB15CF1EFF	16	220	160	25.5
	DN150	BBB15CF10TT	BBB15CF10FF	16	220	160	31.5
All Flange Tee	DN80	BBB15TE1ETT	BBB15TE1EFF	16	440	205	28.5
	DN100	BBB15TE1FTT	BBB15TE1FFF	16	440	210	29.5
	DN150	BBB15TE1JTT	BBB15TE1JFF	16	440	220	32.5
All Flange Radial		BBB15TW1JTT	BBB15TW1JFF	16	670	450	48.5
Level invert tee	DN80	BBB15TT1ETT	BBB15TT1EFF	16	440	220	30.0
Cross		BBB15XN1JTT	BBB15XN1JFF	16	440	220	45.0
45° Angle Branch		BBB15TU1JTT	BBB15TU1JFF	16	530	442	47.0
Concentric Taper	DN80	BBB15VE1ETT	BBB15VE1EFF	16	200		16.0
	DN100	BBB15VE1FTT	BBB15VE1FFF	16	200		15.0
Flat Taper	DN80	BBB15VT1ETT	BBB15VT1EFF	16	400		16.0
	DN100	BBB15VT1FTT	BBB15VT1FFF	16	300		15.0
Y Pipe		BBB15YN10TT	BBB15YN10FF	16	220		32.5
Bellmouth		BBB15BP10TT	BBB15BP10FF	16	155	245	10.0
Hatchbox		-	194160	16			85.0
Loose Puddle Flange		BBB15PF00TT	BBB15PF00FF	16	130		23.0
Blank Flange	Standard	BBB15QN10TT	TBB15QN10FF	16			8.0
	D/T 1"	186674	186678	16			8.0
	D/T 2"	186675	186679	16			8.0
Reducing flange**	DN80	BBB15RM1ETT	-	16			11.0
	DN100	BBB15RM1FTT	-	16			11.0

**Delivered with studs, washers and nuts

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN200 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSB20CA00TT	TSB20CA	64	200		30.0
	45°	SSB20CB00TT	TSB20CB	64	100		24.5
	22.5°	SSB20CD00TT	TSB20CD	64	51		20.0
	11.25°	SSB20CE00TT	TSB20CE	64	52		20.0
Duckfoot		SSB20CF00TT	SSB20CF00FF	64	200	190	45.5
All socket tee	DN80	SSB20TE0ETT	SSB20TE0EFF	64	170	170	26.0
	DN100	SSB20TE0FTT	TSB20TE0F	64	195	170	28.5
	DN150	SSB20TE0JTT	TSB20TE0J	64	250	178	33.5
	DN200	SSB20TE0KTT	TSB20TE0K	64	360	180	42.0
Flange on Double Socket Tee*	DN80	SSB20UD1ETT	TSB20UD1E	16	170	240	28.0
	DN100	SSB20UD1FTT	TSB20UD1F	16	195	245	30.0
	DN150	SSB20UD1JTT	TSB20UD1J	16	250	245	35.5
	DN200	SSB20UD2KTT	TSB20UD2K	16	360	260	45.5
Flange on Socket Level invert tee*	DN80	SSB20UT1ETT	SSB20UT1EFF	16	191	250	25.0
45° Angle Branch		SSB20TU0KTT	SSB20TU0KFF	64	500	450	58.0
Concentric Taper	DN100	SSB20VE0FTT	TSB20VE0F	64	230		18.0
	DN150	SSB20VE0JTT	TSB20VE0J	64	125		17.0
Double Socket Collar		SSB20MM00TT	SSB20MM00FF	64	170		24.0
Flange & Socket Piece*		SSB20BE20TT	TSB20BE2	16	120		20.5
Flange & Spigot Piece		BBB20BU20TT	BBB20BU20FF	16	400		23.0
UNIVERSAL							
Bend	90°	SFB20CA00TT	-	64	226		45.0
	45°	SFB20CB00TT	-	64	109		39.0
	22.5°	SFB20CD00TT	-	64	66		35.5
	11.25°	SFB20CE00TT	-	64	46		34.0
All socket tee	DN80	SFB20TE0ETT	-	64	175	145	42.5
	DN100	SFB20TE0FTT	-	64	200	145	46.0
	DN150	SFB20TE0JTT	-	64	255	150	52.0
	DN200	SFB20TE0KTT	-	64	315	155	60.5
Flange on Double Socket Tee*	DN80	SFB20UD1ETT	-	16	175	235	43.0
	DN100	SFB20UD1FTT	-	16	200	240	45.0
	DN150	SFB20UD1JTT	-	16	255	250	50.5
	DN200	SFB20UD2KTT	-	16	315	260	57.0
Concentric Taper	DN100	SFB20VE0FTT	-	64	250		29.0
	DN150	SFB20VE0JTT	-	64	150		30.0
Flange & Socket Piece*		SFB20BE20TT	-	16	140		27.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN200 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Riser piece	150mm long	BBB20MT2ZTT	BBB20MT2ZFF	16			21.0
	200mm long	BBB20MT2VTT	BBB20MT2VFF	16			21.0
	250mm long	BBB20MT2ATT	BBB20MT2AFF	16			23.0
	300mm long	BBB20MT2WTT	BBB20MT2WFF	16			25.0
	400mm long	BBB20MT2XTT	BBB20MT2XFF	16			31.5
Bend	90°	BBB20CA20TT	BBB20CA20FF	16	260		31.0
	45°	BBB20CB20TT	BBB20CB20FF	16	180		27.5
	22.5°	BBB20CD20TT	BBB20CD20FF	16	138		41.0
	11.25°	BBB20CE20TT	BBB20CE20FF	16	132		36.0
90° Long radius bend		BBB20CH20TT	BBB20CH20FF	16	500		45.5
Duckfoot		BBB20CF20TT	BBB20CF20FF	16	260	190	47.0
All Flange Tee	DN80	BBB20TE2ETT	BBB20TE2EFF	16	520	235	33.5
	DN100	BBB20TE2FTT	BBB20TE2FFF	16	520	240	42.5
	DN150	BBB20TE2JTT	BBB20TE2JFF	16	520	250	48.0
	DN200	BBB20TE2KTT	BBB20TE2KFF	16	520	260	49.0
All Flange Radial		BBB20TW2KTT	BBB20TW2KFF	16	760	500	72.5
Level invert tee	DN80	BBB20TT2ETT	BBB20TT2EFF	16	520	250	43.0
	DN100	BBB20TT2FTT	BBB20TT2FFF	16	520	250	44.0
Cross		BBB20XN2KTT	BBB20XN2KFF	16	520	260	67.0
45° Angle Branch		BBB20TU2KTT	BBB20TU2KFF	16	600	509	71.0
Concentric Taper	DN80	BBB20VE2ETT	BBB20VE2EFF	16	300		19.5
	DN100	BBB20VE2FTT	BBB20VE2FFF	16	300		36.0
	DN150	BBB20VE2JTT	BBB20VE2JFF	16	300		22.0
Flat Taper	DN80	BBB20VT2ETT	BBB20VT2EFF	16	600		25.5
	DN100	BBB20VT2FTT	BBB20VT2FFF	16	600		27.0
	DN150	BBB20VT2JTT	BBB20VT2JFF	16	300		22.0
Y Pipe		BBB20YN20TT	BBB20YN20FF	16	260		49.0
Bellmouth		BBB20BP20TT	BBB20BP20FF	16	170	310	15.0
Hatchbox		-	194165	16			98.5
Loose Puddle Flange		BBB20PF00TT	BBB20PF00FF	16	130	430	28.0
Blank Flange	Standard	BBB20QN20TT	BBB20QN20FF	16			14.0
	D/T 1"	186685	186687	16			11.5
	D/T 2"	186686	199894	16			11.5
Reducing flange**	DN80	BBB20RM2ETT	-	16			14.5
	DN100	BBB20RM2FTT	-	16			15.0
	DN150	BBB20RM2JTT	-	16			16.5

**Delivered with studs, washers and nuts

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN250 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSB25CA00TT	TSB25CA	50	252		50.5
	45°	SSB25CB00TT	TSB25CB	50	136		41.5
	22.5°	SSB25CD00TT	TSB25CD	50	70		33.0
	11.25°	SSB25CE00TT	TSB25CE	50	55		31.5
Duckfoot		SSB25CF00TT	SSB25TE0EFF	50	252	225	68.0
All socket tee	DN80	SSB25TE0ETT	SSB25TE0EFF	50	234	183	42.0
	DN100	SSB25TE0FTT	TSB25TE0F	50	234	183	41.5
	DN150	SSB25TE0JTT	TSB25TE0J	50	251	165	46.0
	DN200	SSB25TE0KTT	TSB25TE0K	50	344	168	54.5
	DN250	SSB25TE0LTT	TSB25TE0L	50	404	202	65.0
Flange on Double Socket Tee*	DN80	SSB25UD1ETT	TSB25UD1E	16	234	250	44.5
	DN100	SSB25UV1FTT	TSB25UD1F	16	234	270	44.5
	DN150	SSB25UD1JTT	TSB25UD1J	16	251	280	50.5
	DN200	SSB25UD2KTT	TSB25UD2K	16	344	290	61.0
	DN250	SSB25UD2LTT	TSB25UD2L	16	404	300	70.0
Flange on Socket Level invert tee*	DN80	SSB25UT1ETT	SSB25UT1EFF	16	217	275	37.5
45° Angle Branch		SSB25TU0LTT	SSB25TU0LFF	50	550	500	83.0
Concentric Taper	DN150	SSB25VE0JTT	SSB25VE0JFF	50	225		26.0
	DN200	SSB25VE0KTT	TSB25VE0K	50	125		25.5
Double Socket Collar		SSB25MM00TT	SSB25MM00FF	50	175		30.0
Flange & Socket Piece*		SSB25BE20TT	TSB25BE2	16	135		31.0
Flange & Spigot Piece		BBB25BU20TT	BBB25BU20FF	16	420		31.5
UNIVERSAL							
Bend	90°	SFB25CA00TT	-	50	278		65.0
	45°	SFB25CB00TT	-	50	131		54.5
	22.5°	SFB25CD00TT	-	50	77		49.0
	11.25°	SFB25CE00TT	-	50	52		46.5
All socket tee	DN80	SFB25TE0ETT	-	50	180	170	56.0
	DN100	SFB25TE0FTT	-	50	200	170	60.0
	DN150	SFB25TE0JTT	-	50	260	175	66.5
	DN200	SFB25TE0KTT	-	50	315	180	75.0
	DN250	SFB25TE0LTT	-	50	375	190	85.0
Flange on Double Socket Tee*	DN80	SFB25UD1ETT	-	16	180	265	57.0
	DN100	SFB25UD1FTT	-	16	200	270	59.0
	DN150	SFB25UD1JTT	-	16	260	280	65.0
	DN200	SFB25UD2KTT	-	16	315	290	72.5
	DN250	SFB25UD2LTT	-	16	375	300	80.0
Concentric Taper	DN100	SFB25VE0FTT	-	50	350		39.5
	DN150	SFB25VE0JTT	-	50	250		40.5
	DN200	SFB25VE0KTT	-	50	150		42.5
Flange & Socket Piece*		SFB25BE20TT	-	16	145		37.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN250 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Riser piece	150mm long	BBB25MT2ZTT	BBB25MT2ZFF	16			26.0
	250mm long	BBB25MT2ATT	BBB25MT2AFF	16			31.5
	300mm long	BBB25MT2WTT	BBB25MT2WFF	16			34.0
Bend	90°	BBB25CA20TT	BBB25CA20FF	16	350		50.0
	45°	BBB25CB20TT	BBB25CB20FF	16	350		52.0
	22.5°	BBB25CD20TT	BBB25CD20FF	16	190		56.0
	11.25°	BBB25CE20TT	BBB25CE20FF	16	165		49.0
90° Long radius bend		BBB25CH20TT	BBB25CH20FF	16	550		65.0
Duckfoot		BBB25CF20TT	BBB25CF20FF	16	350	225	76.0
All Flange Tee	DN80	BBB25TE2ETT	BBB25TE2EFF	16	700	265	66.5
	DN100	BBB25TE2FTT	BBB25TE2FFF	16	700	275	67.0
	DN150	BBB25TE2JTT	BBB25TE2JFF	16	700	300	72.0
	DN200	BBB25TE2KTT	BBB25TE2KFF	16	700	325	73.0
	DN250	BBB25TE2LTT	BBB25TE2LFF	16	700	350	80.0
All Flange Radial		BBB25TW2LTT	BBB25TW2LFF	16	900	550	106.0
Level invert tee	DN80	BBB25TT2ETT	BBB25TT2EFF	16	700	275	66.0
	DN100	BBB25TT2FTT	BBB25TT2FFF	16	700	275	69.0
	DN150	BBB25TT2JTT	BBB25TT2JFF	16	700	275	70.0
Cross		BBB25XN2LTT	BBB25XN2LFF	16	700	350	110.5
45° Angle Branch		BBB25TU2LTT	BBB25TU2LFF	16	700	583	105.0
Concentric Taper	DN80	BBB25VE2ETT	BBB25VE2EFF	16	600		32.0
	DN100	BBB25VE2FTT	BBB25VE2FFF	16	300		40.0
	DN150	BBB25VE2JTT	BBB25VE2JFF	16	300		52.0
	DN200	BBB25VE2KTT	BBB25VE2KFF	16	300		47.0
Flat Taper	DN100	BBB25VT2FTT	BBB25VT2FFF	16	600		34.0
	DN150	BBB25VT2JTT	BBB25VT2JFF	16	600		38.0
	DN200	BBB25VT2KTT	BBB25VT2KFF	16	300		29.5
Y Pipe		BBB25YN20TT	BBB25YN20FF	16	350		81.0
Bellmouth		BBB25BP20TT	BBB25BP20FF	16	190	370	21.0
Hatchbox		-	193399	16			140.0
Loose Puddle Flange		BBB25PF00TT	BBB25PF00FF	16	130		37.0
Blank Flange	Standard	BBB25QN20TT	BBB25QN20FF	16			17.0
	D/T 1"	194129	194131	16			17.0
	D/T 2"	194130	-	16			17.0
Reducing flange**	DN80	BBB25RM2ETT	-	16			22.5
	DN100	BBB25RM2FTT	-	16			22.0
	DN150	BBB25RM2JTT	-	16			20.5
	DN200	BBB25RM2KTT	-	16			21.5

**Delivered with studs, washers and nuts

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN300 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSB30CA00TT	TSB30CA	50	304		74.0
	45°	SSB30CB00TT	TSB30CB	50	167		60.5
	22.5°	SSB30CD00TT	TSB30CD	50	70		43.5
	11.25°	SSB30CE00TT	TSB30CE	50	50		41.0
Duckfoot		SSB30CF00TT	SSB30CF00FF	50	304	254	100.0
All socket tee	DN100	SSB30TE0FTT	TSB30TE0F	50	237	213	58.0
	DN150	SSB30TE0JTT	TSB30TE0J	50	347	195	68.5
	DN200	SSB30TE0KTT	TSB30TE0K	50	347	198	70.5
	DN250	SSB30TE0LTT	TSB30TE0L	50	467	207	85.5
	DN300	SSB30TE0MTT	TSB30TE0M	50	467	234	92.0
Flange on Double Socket Tee*	DN80	SSB30UD1ETT	TSB30UD1E	16	237	298	59.0
	DN100	SSB30UV1FTT	TSB30UD1F	16	237	300	59.5
	DN150	SSB30UD1JTT	TSB30UD1J	16	347	310	72.5
	DN200	SSB30UD2KTT	TSB30UD2K	16	347	320	77.0
	DN250	SSB30UD2LTT	TSB30UD2L	16	467	305	89.0
	DN300	SSB30UD2MTT	TSB30UD2M	16	467	340	98.5
Flange on Socket Level invert tee*	DN80	SSB30UT1ETT	SSB30UT1EFF	16	220	305	50.0
45° Angle Branch		SSB30TU0MTT	SSB30TU0MFF	50	570	500	110.0
Concentric Taper	DN150	SSB30VE0JTT	SSB30VE0JFF	50	322		36.5
	DN200	SSB30VE0KTT	TSB30VE0K	50	222		36.0
	DN250	SSB30VE0LTT	TSB30VE0L	50	123		36.0
Double Socket Collar		SSB30MM00TT	SSB30MM00FF	50	180		39.0
Flange & Socket Piece*		SSB30BE20TT	TSB30BE2	16	130		42.0
Flange & Spigot Piece		BBB30BU20TT	BBB30BU20FF	16	440		42.5
UNIVERSAL							
Bend	90°	SFB30CA00TT	-	50	329		94.0
	45°	SFB30CB00TT	-	50	153		78.0
	22.5°	SFB30CD00TT	-	50	89		70.5
	11.25°	SFB30CE00TT	-	50	59		66.5
All socket tee	DN80	SFB30TE0ETT	-	50	180	195	75.0
	DN100	SFB30TE0FTT	-	50	205	195	78.5
	DN150	SFB30TE0JTT	-	50	260	200	85.5
	DN200	SFB30TE0KTT	-	50	320	205	95.0
	DN250	SFB30TE0LTT	-	50	435	215	108.0
	DN300	SFB30TE0MTT	-	50	435	220	150.5
Flange on Double Socket Tee*	DN80	SFB30UD1ETT	-	16	180	295	77.0
	DN100	SFB30UD1FTT	-	16	205	300	80.0
	DN150	SFB30UD1JTT	-	16	260	310	87.5
	DN200	SFB30UD2KTT	-	16	320	320	95.5
	DN250	SFB30UD2LTT	-	16	435	330	108.5
	DN300	SFB30UD2MTT	-	16	435	340	136.5
Concentric Taper	DN150	SFB30VE0JTT	-	50	350		55.5
	DN200	SFB30VE0KTT	-	50	250		58.0
	DN250	SFB30VE0LTT	-	50	150		58.0
Flange & Socket Piece*		SFB30BE20TT	-	16	150		51.5

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-

- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN300 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Riser piece	250mm long	BBB30MT2ATT	BBB30MT2AFF	16			41.5
	300mm long	BBB30MT2WTT	BBB30MT2WFF	16			45.0
	500mm long	BBB30MT2BTT	BBB30MT2BFF	16			58.0
Bend	90°	BBB30CA20TT	BBB30CA20FF	16	400		69.5
	45°	BBB30CB20TT	BBB30CB20FF	16	400		74.0
	22.5°	BBB30CD20TT	BBB30CD20FF	16	210		73.0
	11.25°	BBB30CE20TT	BBB30CE20FF	16	175		62.0
90° Long radius bend		BBB30CH20TT	BBB30CH20FF	16	600		89.5
Duckfoot		BBB30CF20TT	BBB30CF20FF	16	400	255	108.0
All Flange Tee	DN80	BBB30TE2ETT	BBB30TE2EFF	16	800	290	94.5
	DN100	BBB30TE2FTT	BBB30TE2FFF	16	800	300	93.0
	DN150	BBB30TE2JTT	BBB30TE2JFF	16	800	325	100.0
	DN200	BBB30TE2KTT	BBB30TE2KFF	16	800	350	93.0
	DN250	BBB30TE2LTT	BBB30TE2LFF	16	800	380	108.0
	DN300	BBB30TE2MTT	BBB30TE2MFF	16	800	400	109.5
All Flange Radial		BBB30TW2MTT	BBB30TW2MFF	16	1000	600	146.0
Level invert tee	DN80	BBB30TT2ETT	BBB30TT2EFF	16	800	305	92.0
	DN100	BBB30TT2FTT	BBB30TT2FFF	16	800	305	96.0
	DN150	BBB30TT2JTT	BBB30TT2JFF	16	800	305	99.0
Cross		BBB30XN2MTT	BBB30XN2MFF	16	800	400	148.0
45° Angle Branch		BBB30TU2MTT	BBB30TU2MFF	16	800	665	149.0
Concentric Taper	DN80	BBB30VE2ETT	BBB30VE2EFF	16	700		48.0
	DN100	BBB30VE2FTT	BBB30VE2FFF	16	300		41.0
	DN150	BBB30VE2JTT	BBB30VE2JFF	16	300		61.0
	DN200	BBB30VE2KTT	BBB30VE2KFF	16	300		58.0
	DN250	BBB30VE2LTT	BBB30VE2LFF	16	300		72.0
Flat Taper	DN150	BBB30VT2JTT	BBB30VT2JFF	16	600		46.0
	DN200	BBB30VT2KTT	BBB30VT2KFF	16	600		51.0
	DN250	BBB30VT2LTT	BBB30VT2LFF	16	300		39.5
Y Pipe		BBB30YN20TT	BBB30YN20FF	16	400		115.0
Bellmouth		BBB30BP20TT	BBB30BP20FF	16	210	435	29.0
Hatchbox		-	193402	16			188.0
Loose Puddle Flange		BBB30PF00TT	BBB30PF00FF	16	130	555	46.0
Blank Flange	Standard	BBB30QN20TT	BBB30QN20FF	16			26.5
	D/T 1"	193047	193050	16			23.5
	D/T 2"	193048	193051	16			23.5
Reducing flange**	DN80	BBB30RM2ETT	-	16			32.0
	DN100	BBB30RM2FTT	-	16			30.0
	DN150	BBB30RM2JTT	-	16			36.0
	DN200	BBB30RM2KTT	-	16			25.0
	DN250	BBB30RM2LTT	-	16			43.0

**Delivered with studs, washers and nuts

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN350 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSB35CA00TT	TSB35CA	50	390		115.0
	45°	SSB35CB00TT	TSB35CB	50	168		75.0
	22.5°	SSB35CD00TT	TSB35CD	50	78		53.0
	11.25°	SSB35CE00TT	TSB35CE	50	53		49.0
Duckfoot		SSB35CF00TT	SSB35CF00FF	50	390	254	135.0
All Socket Tee	DN350	SSB35TE0YTT	SSB35TE0YFF	50	495	250	110.0
Flange on Double Socket Tee*	DN80	SSB35UD1ETT	TSB35UD1E	16	194	310	73.5
	DN100	SSB35UV1FTT	TSB35UD1F	16	194	330	90.5
	DN150	SSB35UD1JTT	TSB35UD1J	16	314	340	88.5
	DN200	SSB35UD2KTT	TSB35UD2K	16	314	350	92.5
	DN250	SSB35UD2LTT	TSB35UD2L	16	369	360	104.0
	DN300	SSB35UD2MTT	TSB35UD2M	16	485	370	119.5
	DN350	SSB35UD2YTT	TSB35UD2Y	16	485	380	132.0
Flange on Socket Level invert tee*	DN150	SSB35UT1JTT	SSB35UT1JFF	16	339	340	60.5
Concentric Taper	DN200	SSB35VE0KTT	TSB35VE0K	50	335		54.5
	DN250	SSB35VE0LTT	TSB35VE0L	50	260		52.0
	DN300	SSB35VE0MTT	TSB35VE0M	50	187		55.0
Flange & Socket Piece*		SSB35BE20TT	TSB35BE2	16	135		59.5
Flange & Spigot Piece		BBB35BU20TT	BBB35BU20FF	16	460		57.5
End Cap	Socket	Use spigot cap	-	-			-
	Spigot	158079	-	-			0.2

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN350 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	90°	BBB35CA20TT	BBB35CA20FF	16	450		96.0
	45°	BBB35CB20TT	BBB35CB20FF	16	298		82.0
	22.5°	BBB35CD20TT	BBB35CD20FF	16	210		83.0
	11.25°	BBB35CE20TT	BBB35CE20FF	16	190		83.5
90º Long Radius Bend		BBB35CH20TT	BBB35CH20FF	16	650		121.0
Duckfoot		BBB35CF20TT	BBB35CF20FF	16	450	294	165.0
All Flange Tee	DN80	BBB35TE2ETT	BBB35TE2EFF	16	850	325	120.0
	DN100	BBB35TE2FTT	BBB35TE2FFF	16	850	325	122.0
	DN150	BBB35TE2JTT	BBB35TE2JFF	16	850	325	123.0
	DN200	BBB35TE2KTT	BBB35TE2KFF	16	850	325	141.5
	DN250	BBB35TE2LTT	BBB35TE2LFF	16	850	325	132.0
	DN300	BBB35TE2MTT	BBB35TE2MFF	16	850	425	144.0
	DN350	BBB35TE2YTT	BBB35TE2YFF	16	850	425	153.0
All Flange Radial		BBB35TW2YTT	BBB35TW2YFF	16	1100	650	204.0
Level invert tee	DN150	BBB35TT2JTT	BBB35TT2JFF	16	850	340	128.0
Concentric Taper	DN150	BBB35VE2JTT	BBB35VE2JFF	16	600		47.0
	DN200	BBB35VE2KTT	BBB35VE2KFF	16	600		60.5
	DN250	BBB35VE2LTT	BBB35VE2LFF	16	300		58.0
	DN300	BBB35VE2MTT	BBB35VE2MFF	16	300		52.5
Flat Taper	DN200	BBB35VT2KTT	BBB35VT2KFF	16	600		60.5
	DN250	BBB35VT2LTT	BBB35VT2LFF	16	600		67.0
	DN300	BBB35VT2MTT	BBB35VT2MFF	16	300		52.0
Bellmouth		BBB35BP20TT	BBB35BP20FF	16	225	495	39.0
Loose Puddle Flange		BBB35PF00TT	BBB35PF00FF	16	150	660	50.0
Blank Flange		BBB35QN20TT	BBB35QN20FF	16			37.5

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN400 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSB40CA00TT	TSB40CA	40	436		141.0
	45°	SSB40CB00TT	TSB40CB	40	189		88.5
	22.5°	SSB40CD00TT	TSB40CD	40	92		68.5
	11.25°	SSB40CE00TT	TSB40CE	40	58		61.5
Duckfoot		SSB40CF00TT	SSB40CF00FF	40	436	324	182.0
All Socket Tee	DN400	SSB40TE0NTT	SSB40TE0NFF	40	560	280	128.0
Flange on Double Socket Tee*	DN80	SSB40UD1ETT	TSB40UD1E	16	195	340	86.5
	DN100	SSB40UV1FTT	TSB40UD1F	16	195	360	86.0
	DN150	SSB40UD1JTT	TSB40UD1J	16	315	370	102.5
	DN200	SSB40UD2KTT	TSB40UD2K	16	315	380	107.0
	DN250	SSB40UD2LTT	TSB40UD2L	16	429	390	124.5
	DN300	SSB40UD2MTT	TSB40UD2M	16	429	400	136.0
	DN400	SSB40UD2NTT	TSB40UD2N	16	545	420	168.5
Flange on Socket Level invert tee*	DN100	SSB40UT1FTT	SSB40UT1FFF	16	226	365	76.0
Concentric Taper	DN250	SSB40VE0LTT	TSB40VE0L	40	335		65.0
	DN300	SSB40VE0MTT	TSB40VE0M	40	260		60.0
	DN350	SSB40VE0YTT	TSB40VE0Y	40	176		62.0
Double Socket Collar		SSB40MM00TT	SSB40MM00FF	40	190		52.0
Flange & Socket Piece*		SSB40BE20TT	TSB40BE2	16	140		69.0
Flange & Spigot Piece		BBB40BU20TT	BBB40BU20FF	16	480		70.0
End Cap	Socket	110064	-	-			0.2
	Spigot	110065	-	-			0.2
UNIVERSAL							
Bend	90°	SFB40CA00TT	-	40	430		141.0
	45°	SFB40CB00TT	-	40	195		109.0
	22.5°	SFB40CD00TT	-	40	110		93.5
	11.25°	SFB40CE00TT	-	40	65		84.5
Flange on Double Socket Tee*	DN80	SFB40UD1ETT	-	16	185	355	85.5
	DN100	SFB40UD1FTT	-	16	210	360	98.0
	DN150	SFB40UD1JTT	-	16	270	370	106.5
	DN200	SFB40UD2KTT	-	16	325	380	115.5
	DN300	SFB40UD2MTT	-	16	440	400	138.0
	DN400	SFB40UD2NTT	-	16	560	420	170.0
Concentric Taper	DN300	SFB40VE0MTT	-	40	260		86.5
Flange & Socket Piece*		SFB40BE20TT	-	16	160		62.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN400 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	90°	BBB40CA20TT	BBB40CA20FF	16	500		126.0
	45°	BBB40CB20TT	BBB40CB20FF	16	326		106.0
	22.5°	BBB40CD20TT	BBB40CD20FF	16	239		107.0
	11.25°	BBB40CE20TT	BBB40CE20FF	16	205		116.0
90º Long Radius Bend		BBB40CH20TT	BBB40CH20FF	16	700		157.0
Duckfoot		BBB40CF20TT	BBB40CF20FF	16	500	324	218.0
All Flange Tee	DN80	BBB40TE2ETT	BBB40TE2EFF	16	900	350	167.0
	DN100	BBB40TE2FTT	BBB40TE2FFF	16	900	350	154.0
	DN150	BBB40TE2JTT	BBB40TE2JFF	16	900	350	155.0
	DN200	BBB40TE2KTT	BBB40TE2KFF	16	900	350	159.0
	DN250	BBB40TE2LTT	BBB40TE2LFF	16	900	350	161.0
	DN300	BBB40TE2MTT	BBB40TE2MFF	16	900	450	177.0
	DN350	BBB40TE2YTT	BBB40TE2YFF	16	900	450	201.5
	DN400	BBB40TE2NTT	BBB40TE2NFF	16	900	450	194.0
All Flange Radial		BBB40TW2NTT	BBB40TW2NFF	16	1200	700	278.0
Level invert tee	DN80	BBB40TT2ETT	BBB40TT2EFF	16	900	365	153.0
	DN100	BBB40TT2FTT	BBB40TT2FFF	16	900	365	156.0
	DN150	BBB40TT2JTT	BBB40TT2JFF	16	900	365	162.0
Cross		BBB40XN2NTT	BBB40XN2NFF	16	900	450	234.0
45º Angle branch		BBB40TU2NTT	BBB40TU2NFF	16	960	145	215.0
Concentric Taper	DN200	BBB40VE2KTT	BBB40VE2KFF	16	300		60.0
	DN250	BBB40VE2LTT	BBB40VE2LFF	16	300		69.5
	DN300	BBB40VE2MTT	BBB40VE2MFF	16	300		113.5
	DN350	BBB40VE2YTT	BBB40VE2YFF	16	300		70.0
Flat Taper	DN200	BBB40VT2KTT	BBB40VT2KFF	16	600		71.0
	DN250	BBB40VT2LTT	BBB40VT2LFF	16	600		77.0
	DN300	BBB40VT2MTT	BBB40VT2MFF	16	600		84.0
	DN350	BBB40VT2YTT	BBB40VT2YFF	16	300		67.0
Y Pipe		BBB40YN20TT	BBB40YN20FF	16	500		220.0
Bellmouth		BBB40BP20TT	BBB40BP20FF	16	250	560	51.0
Loose Puddle Flange		BBB40PF00TT	BBB40PF00FF	16	150	660	62.0
Blank Flange		BBB40QN20TT	BBB40QN20FF	16			46.0

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN450 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSB45CA00TT	TSB45CA	40	482		144.0
	45°	SSB45CB00TT	TSB45CB	40	216		118.0
	22.5°	SSB45CD00TT	TSB45CD	40	100		88.0
	11.25°	SSB45CE00TT	TSB45CE	40	67		79.5
Duckfoot		SSB45CF00TT	SSB45CF00FF	40	482	355	234.0
All Socket Tee	DN450	SSB45TE0PTT	SSB45TE0PFF	40	635	318	171.0
Flange on Double Socket Tee*	DN80	SSB45UD1ETT	TSB45UD1E	16	315	375	111.0
	DN100	SSB45UV1FTT	SSB45UV1FFF	16	315	395	89.0
	DN150	SSB45UD1JTT	SSB45UD1JFF	16	315	400	102.0
	DN200	SSB45UD2KTT	SSB45UD2KFF	16	315	410	115.0
	DN250	SSB45UD2LTT	SSB45UD2LFF	16	600	420	129.5
	DN300	SSB45UD2MTT	TSB45UD2M	16	600	430	155.5
	DN400	SSB45UD2NTT	SSB45UD2NFF	16	600	450	188.5
	DN450	SSB45UD2PTT	SSB45UD2PFF	16	600	460	178.5
Flange on Socket Level invert tee*	DN100	SSB45UT1FTT	SSB45UT1FFF	16	229	380	90.0
	DN150	SSB45UT1JTT	SSB45UT1JFF	16	345	380	115.0
Concentric Taper	DN300	SSB45VE0MTT	TSB45VE0M	40	335		85.0
	DN350	SSB45VE0YTT	TSB45VE0Y	40	234		84.0
	DN400	SSB45VE0NTT	TSB45VE0N	40	166		84.0
Double Socket Collar		SSB45MM00TT	SSB45MM00FF	40	195		69.0
Flange & Socket Piece*		SSB45BE20TT	TSB45BE2	16	145		88.5
Flange & Spigot Piece		BBB45BU20TT	BBB45BU20FF	16	500		86.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN450 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	90°	BBB45CA20TT	BBB45CA20FF	16	550		221.0
	45°	BBB45CB20TT	BBB45CB20FF	16	350		134.0
	22.5°	BBB45CD20TT	BBB45CD20FF	16	349		135.0
	11.25°	BBB45CE20TT	BBB45CE20FF	16	349		135.0
90º Long Radius Bend		BBB45CH20TT	BBB45CH20FF	16	750		197.0
Duckfoot		BBB45CF20TT	BBB45CF20FF	16	550	355	289.0
All Flange Tee	DN80	BBB45TE2ETT	BBB45TE2EFF	16	950	375	187.0
	DN100	BBB45TE2FTT	BBB45TE2FFF	16	950	375	188.0
	DN100*	BAB45UE2FTT	BAB45UE2FFF	16			153.5
	DN150	BBB45TE2JTT	BBB45TE2JFF	16	950	375	190.0
	DN200	BBB45TE2KTT	BBB45TE2KFF	16	950	375	193.0
	DN250	BBB45TE2LTT	BBB45TE2LFF	16	950	375	197.0
	DN300	BBB45TE2MTT	BBB45TE2MFF	16	950	475	213.0
	DN350	BBB45TE2YTT	BBB45TE2YFF	16	950	475	221.0
	DN400	BBB45TE2NTT	BBB45TE2NFF	16	950	475	229.0
	DN450	BBB45TE2PTT	BBB45TE2PFF	16	950	475	237.0
All Flange Radial		BBB45TW2PTT	BBB45TW2PFF	16	1300	750	368.0
Level invert tee	DN100	BBB45TT2FTT	BBB45TT2FFF	16	950	380	189.0
	DN150	BBB45TT2JTT	BBB45TT2JFF	16	950	380	197.0
Concentric Taper	DN250	BBB45VE2LTT	BBB45VE2LFF	16	600		87.5
	DN300	BBB45VE2MTT	BBB45VE2MFF	16	600		95.0
	DN350	BBB45VE2YTT	BBB45VE2YFF	16	600		104.0
	DN400	BBB45VE2NTT	BBB45VE2NFF	16	300		81.0
Y Pipe		BBB45YN20TT	BBB45YN20FF	16	550		280.0
Bellmouth		BBB45BP20TT	BBB45BP20FF	16	260	620	63.0
Loose Puddle Flange		BBB45PF00TT	BBB45PF00FF	16	150	725	73.0
Blank Flange		BBB45QN20TT	BBB45QN20FF	16			64.0

* Product offered with PN16 adjustable flanges. For information on joint sets please refer to page 83.

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN500 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID							
Bend	90°	SSB50CA00TT	TSB50CA	40	525		216.0
	45°	SSB50CB00TT	TSB50CB	40	220		146.0
	22.5°	SSB50CD00TT	TSB50CD	40	110		108.0
	11.25°	SSB50CE00TT	TSB50CE	40	71		96.0
Duckfoot		SSB50CF00TT	SSB50CF00FF	40	525	389	280.0
All Socket Tee	DN500	SSB50TE0QTT	SSB50TE0QFF	40	680	340	204.0
Flange on Double Socket Tee*	DN80	SSB50UD1ETT	TSB50UD1E	16	210	415	111.0
	DN100	SSB50UV1FTT	TSB50UD1F	16	210	420	121.5
	DN150	SSB50UD1JTT	TSB50UD1J	16	325	430	143.0
	DN200	SSB50UD2KTT	TSB50UD2K	16	325	440	150.5
	DN250	SSB50UD2LTT	TSB50UD2L	16	443	450	173.0
	DN300	SSB50UD2MTT	TSB50UD2M	16	443	460	180.5
	DN400	SSB50UD2NTT	TSB50UD2N	16	555	480	221.0
	DN500	SSB50UD2QTT	TSB50UD2Q	16	675	500	280.5
Flange on Socket Level invert tee*	DN150	SSB50UT1JTT	SSB50UT1JFF	16	348	400	133.0
Concentric Taper	DN350	SSB50VE0YTT	TSB50VE0Y	40	378		88.5
	DN400	SSB50VE0NTT	TSB50VE0N	40	290		86.5
	DN450	SSB50VE0PTT	SSB50VE0PFF	40	160		80.0
Flange & Socket Piece*		SSB50BE20TT	TSB50BE2	16	170		98.0
Flange & Spigot Piece		BBB50BU20TT	BBB50BU20FF	16	520		109.0
End Cap	Socket	110107	-	-			3.0
	Spigot	110108	-	-			3.0
UNIVERSAL							
Bend	90°	SFB50CA00TT	-	40	550		235.0
	45°	SFB50CB00TT	-	40	240		176.0
	22.5°	SFB50CD00TT	-	40	130		148.0
	11.25°	SFB50CE00TT	-	40	75		133.0
Flange on Double Socket Tee*	DN80	SFB50UD1ETT	-	16	215	415	146.5
	DN100	SFB50UD1FTT	-	16	215	420	147.5
	DN150	SFB50UD1JTT	-	16	330	430	166.0
	DN200	SFB50UD2KTT	-	16	330	440	169.5
	DN250	SFB50UD2LTT	-	16	450	450	190.0
	DN300	SFB50UD2MTT	-	16	450	470	197.5
	DN400	SFB50UD2NTT	-	16	565	480	231.5
	DN500	SFB50UD2QTT	-	16	680	500	267.5
Concentric Taper	DN400	SFB50VE0NTT	-	40	260		125.0
Flange & Socket Piece*		SFB50BE20TT	-	16	170		88.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN500 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	BBB50CA20TT	BBB50CA20FF	16	600		287.0
	45°	BBB50CB20TT	BBB50CB20FF	16	375		174.0
	22.5°	BBB50CD20TT	BBB50CD20FF	16	375		210.0
	11.25°	BBB50CE20TT	BBB50CE20FF	16	375		179.0
90º Long Radius Bend		BBB50CH20TT	BBB50CH20FF	16	800		252.0
Duckfoot		BBB50CF20TT	BBB50CF20FF	16	600	389	373.0
All Flange Tee	DN80	BBB50TE2ETT	BBB50TE2EFF	16	1000	400	260.0
	DN100	BBB50TE2FTT	BBB50TE2FFF	16	1000	400	261.0
	DN150	BBB50TE2JTT	BBB50TE2JFF	16	1000	400	241.0
	DN200	BBB50TE2KTT	BBB50TE2KFF	16	1000	400	246.0
	DN250	BBB50TE2LTT	BBB50TE2LFF	16	1000	400	274.0
	DN300	BBB50TE2MTT	BBB50TE2MFF	16	1000	500	290.0
	DN350	BBB50TE2YTT	BBB50TE2YFF	16	1000	500	345.0
	DN400	BBB50TE2NTT	BBB50TE2NFF	16	1000	500	316.0
	DN450	BBB50TE2PTT	BBB50TE2PFF	16	1000	500	290.0
	DN500	BBB50TE2QTT	BBB50TE2QFF	16	1000	500	304.0
All Flange Radial		BBB50TW2QTT	BBB50TW2QFF	16	1400	800	564.0
Level invert tee	DN100	BBB50TT2FTT	BBB50TT2FFF	16	1000	400	241.0
	DN150	BBB50TT2JTT	BBB50TT2JFF	16	1000	400	248.0
Cross		BBB50XN2QTT	BBB50XN2QFF	16	1000	500	361.0
45º Angle branch		BBB50TU2QTT	BBB50TU2QFF	16	1200	850	429.0
Concentric Taper	DN250	BBB50VE2LTT	BBB50VE2LFF	16	700		114.0
	DN300	BBB50VE2MTT	BBB50VE2MFF	16	600		147.5
	DN350	BBB50VE2YTT	BBB50VE2YFF	16	600		133.0
	DN400	BBB50VE2NTT	BBB50VE2NFF	16	600		152.0
	DN450	BBB50VE2PTT	BBB50VE2PFF	16	600		189.0
Flat Taper	DN250	BBB50VT2LTT	BBB50VT2LFF	16	500		140.0
	DN300	BBB50VT2MTT	BBB50VT2MFF	16	500		144.0
	DN350	BBB50VT2YTT	BBB50VT2YFF	16	500		151.0
	DN400	BBB50VT2NTT	BBB50VT2NFF	16	500		172.0
Bellmouth		BBB50BP20TT	BBB50BP20FF	16	300	685	83.0
Loose Puddle Flange		BBB50PF00TT	BBB50PF00FF	16	150	790	85.0
Blank Flange		BBB50QN20TT	BBB50QN20FF	16			84.0

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN600 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSB60CA00TT	TSB60CA	40	624		311.0
	45°	SSB60CB00TT	TSB60CB	40	283		208.5
	22.5°	SSB60CD00TT	TSB60CD	40	140		150.0
	11.25°	SSB60CE00TT	TSB60CE	40	94		136.0
All Socket Tee	DN600	SSB60TE0RTT	SSB60TE0RFF	40	800	400	292.0
Flange on Double Socket Tee*	DN80	SSB60UD1ETT	SSB60UD1EFF	16	340	455	163.0
	DN100	SSB60UV1FTT	TSB60UV1F	16	340	475	190.0
	DN150	SSB60UD1JTT	TSB60UD1J	16	340	490	172.0
	DN200	SSB60UV2KTT	TSB60UD2K	16	340	500	196.5
	DN300	SSB60UD2MTT	TSB60UD2M	16	452	520	235.0
	DN400	SSB60UD2NTT	TSB60UD2N	16	570	540	279.0
	DN600	SSB60UD2RTT	TSB60UD2R	16	800	580	402.5
Flange on Socket Level invert tee*	DN150	SSB60UT1JTT	SSB60UT1JFF	16	354	450	176.0
Concentric Taper	DN400	SSB60VE0NTT	TSB60VE0N	40	460		155.0
	DN450	SSB60VE0PTT	TSB60VE0P	40	360		125.0
	DN500	SSB60VE0QTT	TSB60VE0Q	40	258		120.0
Flange & Socket Piece*		SSB60BE20TT	TSB60BE2	16	170		149.0
Flange & Spigot Piece		BBB60BU20TT	BBB60BU20FF	16	560		159.0
End Cap	Socket	110085	-	-			3.5
	Spigot	110086	-	-			3.5
UNIVERSAL							
Bend	90°	SFB60CA00TT	-	40	645		350.5
	45°	SFB60CB00TT	-	40	285		262.0
	22.5°	SFB60CD00TT	-	40	150		217.0
	11.25°	SFB60CE00TT	-	40	85		194.0
Flange on Double Socket Tee*	DN80	SFB60UD1ETT	-	16	340	475	229.5
	DN100	SFB60UD1FTT	-	16	340	480	229.0
	DN150	SFB60UD1JTT	-	16	340	490	232.0
	DN200	SFB60UD2KTT	-	16	340	500	236.5
	DN250	SFB60UD2LTT	-	16	570	510	246.0
	DN300	SFB60UD2MTT	-	16	570	520	288.0
	DN400	SFB60UD2NTT	-	16	570	540	307.0
	DN600	SFB60UD2RTT	-	16	800	580	404.5
Flange & Socket Piece*		SFB60BE20TT	-	16	180		125.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN600 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	90°	BBB60CA20TT	BBB60CA20FF	16	700		431.0
	45°	BBB60CB20TT	BBB60CB20FF	16	426		264.0
	22.5°	BBB60CD20TT	BBB60CD20FF	16	426		267.0
	11.25°	BBB60CE20TT	BBB60CE20FF	16	426		268.0
90º Long Radius Bend		BBB60CH20TT	BBB60CH20FF	16	900		379.0
Duckfoot		BBB60CF20TT	BBB60CF20FF	16	700	455	569.0
All Flange Tee	DN80	BBB60TE2ETT	BBB60TE2EFF	16	1100	450	349.0
	DN100	BBB60TE2FTT	BBB60TE2FFF	16	1100	450	350.0
	DN150	BBB60TE2JTT	BBB60TE2JFF	16	1100	450	398.0
	DN200	BBB60TE2KTT	BBB60TE2KFF	16	1100	450	408.0
	DN250	BBB60TE2LTT	BBB60TE2LFF	16	1100	450	358.0
	DN300	BBB60TE2MTT	BBB60TE2MFF	16	1100	550	369.0
	DN350	BBB60TE2YTT	BBB60TE2YFF	16	1100	550	385.0
	DN400	BBB60TE2NTT	BBB60TE2NFF	16	1100	550	436.0
	DN450	BBB60TE2PTT	BBB60TE2PFF	16	1100	550	404.0
	DN500	BBB60TE2QTT	BBB60TE2QFF	16	1100	550	409.0
	DN600	193678	193679	16	1100	550	447.0
All Flange Radial		BBB60TW2RTT	BBB60TW2RFF	16	1600	900	732.0
Level invert tee	DN100	BBB60TT2FTT	BBB60TT2FFF	16	1100	435	298.0
	DN150	BBB60TT2JTT	BBB60TT2JFF	16	1100	450	360.0
	DN200	BBB60TT2KTT	BBB60TT2KFF	16	1100	450	396.0
Cross		BBB60XN2RTT	BBB60XN2RFF	16	1100	550	523.0
45º Angle branch		BBB60TU2RTT	BBB60TU2RFF	16	1300	1100	550.0
Concentric Taper	DN300	BBB60VE2MTT	BBB60VE2MFF	16	800		171.0
	DN350	BBB60VE2YTT	BBB60VE2YFF	16	700		167.0
	DN400	BBB60VE2NTT	BBB60VE2NFF	16	600		164.0
	DN450	BBB60VE2PTT	BBB60VE2PFF	16	600		230.0
	DN500	BBB60VE2QTT	BBB60VE2QFF	16	600		232.0
Flat Taper	DN300	BBB60VT2MTT	BBB60VT2MFF	16	500		203.0
	DN350	BBB60VT2YTT	BBB60VT2YFF	16	500		245.0
	DN400	BBB60VT2NTT	BBB60VT2NFF	16	500		255.0
	DN500	BBB60VT2QTT	BBB60VT2QFF	16	500		268.0
Bellmouth		BBB60BP20TT	BBB60BP20FF	16	300	810	122.0
Loose Puddle Flange		BBB60PF00TT	BBB60PF00FF	16	165	900	120.0
Blank Flange		BBB60QN20TT	BBB60QN20FF	16			133.0

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN700 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSB70CA00TT	TSB70CA	30	670		584.0
	45°	SSB70CB00TT	TSB70CB	30	336		319.0
	22.5°	SSB70CD00TT	TSB70CD	30	158		239.0
	11.25°	SSB70CE00TT	TSB70CE	30	87		204.0
Flange on Double Socket Tee	DN150*	SSB70UD1JTT	TSB70UD1J	16	365	520	269.0
	DN200*	SSB70UD2KTT	TSB70UD2K	16	365	525	265.0
	DN250*	SSB70UV2LTT	SSB70UV2LFF	16	365	535	271.0
	DN400*	SSB70UD2NTT	TSB70UD2N	16	585	555	351.0
	DN600*	SSB70UD2RTT	TSB70UD2R	16	915	585	499.0
	DN700	SSB70TD2STT	TSB70TD2S	16	915	600	546.0
Flange on Socket Level invert tee*	DN200	SSB70UT2KTT	SSB70UT2KFF	16	585	500	346.0
Concentric Taper	DN500	SSB70VE0QTT	SSB70VE0QFF	30	480		198.0
	DN600	SSB70VE0RTT	SSB70VE0RFF	30	268		176.0
Flange & Socket Piece		SSB70BE20TT	TSB70BE2	16	190		166.0
Flange & Spigot Piece		SEB70BU20TT	SEB70BU20FF	16	600		187.0
End Cap	Socket	110296	-	-			3.5
	Spigot	110295	-	-			3.5
UNIVERSAL							
Bend	45°	SFB70CB00TT	-	30	336		490.0
	22.5°	SFB70CD00TT	-	30	158		400.0
	11.25°	SFB70CE00TT	-	30	87		350.0
Flange on Double Socket Tee*	DN150	SFB70UD1JTT	-	16	365	520	403.0
	DN200	SFB70UD2KTT	-	16	365	525	428.0
	DN250	SFB70UD2LTT	-	16	365	535	455.5
	DN300	SFB70UD2MTT	-	16	585	530	510.0
	DN400	SFB70UD2NTT	-	16	585	555	570.0
Flange & Socket Piece		SFB70BE20TT	-	16	190		259.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN700 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	90°	BBB70CA20TT	BBB70CA20FF	16	800		561.0
	45°	BBB70CB20TT	BBB70CB20FF	16	478		338.0
	22.5°	BBB70CD20TT	BBB70CD20FF	16	300		258.0
	11.25°	BBB70CE20TT	BBB70CE20FF	16	230		223.0
Duckfoot		BBB70CF20TT	BBB70CF20FF	16	800	520	746.0
All Flange Tee	DN150*	BBB70UE2JTT	BBB70UE2JFF	16	650	520	299.0
	DN200*	BBB70UE2KTT	BBB70UE2KFF	16	650	525	302.0
	DN250*	BBB70UV2LTT	BBB70UV2LFF	16	650	535	309.0
	DN300*	BBB70UE2MTT	BBB70UE2MFF	16	870	530	335.0
	DN400*	BBB70UE2NTT	BBB70UE2NFF	16	870	555	388.0
	DN600*	BBB70UE2RTT	BBB70UE2RFF	16	1200	585	536.0
	DN700	BBB70TE2STT	BBB70TE2SFF	16	1200	600	510.0
Level invert tee	DN200	BBB70TT2KTT	BBB70TT2KFF	16	870	500	239.0
45º Angle branch		BBB70TU2STT	BBB70TU2SFF	16	1500	1150	770.0
Concentric Taper	DN400	194589	194590	16	600		220.0
	DN450	BBB70VE2PTT	BBB70VE2PFF	16	700		285.0
	DN500	BBB70VE2QTT	BBB70VE2QFF	16	600		266.0
	DN600	BBB70VE2RTT	BBB70VE2RFF	16	600		243.0
Flat Taper	DN400	BBB70VT2NTT	BBB70VT2NFF	16	600		291.0
	DN500	BBB70VT2QTT	BBB70VT2QFF	16	600		330.0
	DN600	BBB70VT2RTT	BBB70VT2RFF	16	600		340.0
Bellmouth		BBB70BP20TT	BBB70BP20FF	16	500	945	259.0
Blank Flange		BBB70QN20TT	BBB70QN20FF	16			166.0

* Product offered with PN16 adjustable flanges. For information on joint sets please refer to page 83.

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN800 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSB80CA00TT	TSB80CA	30	735		696.0
	45°	SSB80CB00TT	TSB80CB	30	365		414.0
	22.5°	SSB80CD00TT	TSB80CD	30	171		303.0
	11.25°	SSB80CE00TT	TSB80CE	30	91		253.5
Flange on Double Socket Tee	DN150*	SSB80UD1JTT	TSB80UD1J	16	355	580	332.0
	DN200*	SSB80UD2KTT	TSB80UD2K	16	355	585	336.0
	DN250*	SSB80UD2LTT	TSB80UD2L	16	355	585	349.0
	DN400*	SSB80UD2NTT	TSB80UD2N	16	575	615	435.0
	DN600*	SSB80UD2RTT	TSB80UD2R	16	1015	645	642.0
	DN800	SSB80TD2TTT	TSB80TD2T	16	1015	675	674.0
Flange on Socket Level invert tee*	DN200	SSB80UT2KTT	SSB80UT2KFF	16	575	540	426.0
Concentric Taper	DN600	SSB80VE0RTT	TSB80VE0R	30	468		255.0
	DN700	SSB80VE0STT	TSB80VE0S	30	280		243.0
Flange & Socket Piece		SSB80BE20TT	TSB80BE2	16	200		220.0
Flange & Spigot Piece		SEB80BU20TT	SEB80BU20FF	16	600		250.0
End Cap	Socket	111067	-	-			3.5
	Spigot	111068	-	-			3.5
UNIVERSAL							
Bend	45°	SFB80CB00TT	-	30	364		700.0
	22.5°	SFB80CD00TT	-	30	170		550.0
	11.25°	SFB80CE00TT	-	30	90		470.0
Flange on double socket tee*	DN200	SFB80UD2KTT	-	16	355	585	530.0
	DN600	SFB80UD2RTT	-	16	1015	645	845.0
Flange & Socket Piece		SFB80BE20TT	-	16	200		385.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN800 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	90°	BBB80CA20TT	BBB80CA20FF	16	900		778.0
	45°	BBB80CB20TT	BBB80CB20FF	16	529		458.0
	22.5°	BBB80CD20TT	BBB80CD20FF	16	335		336.0
	11.25°	BBB80CE20TT	BBB80CE20FF	16	255		286.0
Duckfoot		BBB80CF20TT	BBB80CF20FF	16	900	590	1003.0
All Flange Tee	DN150*	BBB80UE2JTT	BBB80UE2JFF	16	690	580	392.0
	DN200*	BBB80UE2KTT	BBB80UE2KFF	16	690	585	396.0
	DN250*	BBB80UV2LTT	BBB80UV2LFF	16	690	585	401.0
	DN300*	BBB80UE2MTT	BBB80UE2MFF	16	910	585	435.0
	DN400*	BBB80UE2NTT	BBB80UE2NFF	16	910	615	495.0
	DN450*	BBB80UE2PTT	BBB80UE2PFF	16	1350	615	508.0
	DN600*	BBB80UE2RTT	BBB80UE2RFF	16	1350	645	701.0
	DN800	BBB80TE2TTT	BBB80TE2TFF	16	1350	675	734.0
Level invert tee*	DN200	BBB80UT2KTT	BBB80UT2KFF	16	910	540	489.0
45º Angle branch		BBB80TU2TTT	BBB80TU2TFF	16	1600	1300	1005.0
Concentric Taper	DN500	BBB80VE2QTT	BBB80VE2QFF	16	800		480.5
	DN600	BBB80VE2RTT	BBB80VE2RFF	16	600		354.0
	DN700	BBB80VE2STT	BBB80VE2SFF	16	600		269.0
Flat Taper	DN500	BBB80VT2QTT	BBB80VT2QFF	16	600		285.0
	DN600	BBB80VT2RTT	BBB80VT2RFF	16	600		275.0
	DN700	BBB80VT2STT	BBB80VT2SFF	16	600		295.0
Bellmouth		BBB80BP20TT	BBB80BP20FF	16	380	1055	203.0
Blank Flange		BBB80QN20TT	BBB80QN20FF	16			230.0

* Product offered with PN16 adjustable flanges. For information on joint sets please refer to page 83

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN900 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSB90CA00TT	TSB90CA	30	880		800.0
	45°	SSB90CB00TT	TSB90CB	30	404		545.0
	22.5°	SSB90CD00TT	TSB90CD	30	198		405.5
	11.25°	SSB90CE00TT	TSB90CE	30	103		325.5
Flange on Double Socket Tee	DN200*	SSB90UD2KTT	SSB90UD2KFF	16	375	645	419.0
	DN400*	SSB90UD2NTT	SSB90UD2NFF	16	595	675	536.0
	DN600*	SSB90UD2RTT	SSB90UD2RFF	16	1145	705	823.0
	DN900	SSB90TD2UTT	SSB90TD2UFF	16	1145	750	878.0
Flange on Socket Level invert tee*	DN200	SSB90UT2KTT	SSB90UT2KFF	16	595	580	542.0
Concentric Taper	DN700	SSB90VE0STT	SSB90VE0SFF	30	480		338.0
	DN800	SSB90VE0TTT	SSB90VE0TFF	30	280		307.0
Flange & Socket Piece		SSB90BE20TT	SSB90BE20FF	16	210		268.0
Flange & Spigot Piece		SEB90BU20TT	SEB90BU20FF	16	600		298.0
UNIVERSAL							
Bend	45°	SFB90CB00TT	-	30	415		916.0
	22.5°	SFB90CD00TT	-	30	220		770.0
	11.25°	SFB90CE00TT	-	30	120		696.0
Flange on double socket tee*	DN600	SFB90UD2RTT	-	16	1145	705	1205.0
Flange & Socket Piece		SFB90BE20TT	-	16	210		450.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN900 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	90°	BBB90CA20TT	BBB90CA20FF	16	1000		1025.0
	45°	BBB90CB20TT	BBB90CB20FF	16	581		587.0
	22.5°	BBB90CD20TT	BBB90CD20FF	16	375		437.0
	11.25°	BBB90CE20TT	BBB90CE20FF	16	280		363.0
Duckfoot		BBB90CF20TT	BBB90CF20FF	16	1000	645	1751.0
All Flange Tee	DN150*	BBB90UE2JTT	BBB90UE2JFF	16	730	600	480.0
	DN200*	BBB90UE2KTT	BBB90UE2KFF	16	730	645	483.0
	DN250*	BBB90UV2LTT	BBB90UV2LFF	16	730	640	482.0
	DN300*	BBB90UE2MTT	BBB90UE2MFF	16	950	660	550.0
	DN400*	BBB90UE2NTT	BBB90UE2NFF	16	950	675	598.0
	DN450*	BBB90UE2PTT	BBB90UE2PFF	16	1500	680	630.0
	DN600*	BBB90UE2RTT	BBB90UE2RFF	16	1500	705	885.0
	DN900	BBB90TE2UTT	BBB90TE2UFF	16	1500	750	940.0
Level invert tee*	DN200	BBB90UT2KTT	BBB90UT2KFF	16	950	580	483.0
Concentric Taper	DN700	BBB90VE2STT	BBB90VE2SFF	16	600		414.0
	DN800	BBB90VE2TTT	BBB90VE2TFF	16	600		359.0
Bellmouth		BBB90BP20TT	BBB90BP20FF	16	390	1165	239.0
Blank Flange		BBB90QN20TT	BBB90QN20FF	16			300.0

* Product offered with PN16 adjustable flanges. For information on joint sets please refer to page 83

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN1000

Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	90°	SSC10CA00TT	TSC10CA	30	1000		1461.0
	45°	SSC10CB00TT	TSC10CB	30	440		703.5
	22.5°	SSC10CD00TT	TSC10CD	30	218		507.5
	11.25°	SSC10CE00TT	TSC10CE	30	118		414.5
Flange on Double Socket Tee	DN150*	SSC10UD1JTT	SSC10UD1JFF	16	379	705	447.0
	DN200*	SSC10UD2KTT	SSC10UD2KFF	16	379	705	510.0
	DN250*	SSC10UV2LTT	SSC10UV2LFF	16	379	705	519.0
	DN300*	SSC10UD2MTT	SSC10UD2MFF	16	599	720	569.0
	DN400*	SSC10UD2NTT	SSC10UD2NFF	16	599	735	644.0
	DN600*	SSC10UD2RTT	SSC10UD2RFF	16	1258	765	1032.0
	DN800	SSC10TD2TTT	SSC10TD2TFF	16	1258	795	1082.0
	DN1000	SSC10TD2VTT	SSC10TD2VFF	16	1258	830	1137.0
Flange on Socket Level invert tee*	DN200	SSC10UT2KTT	SSC10UT2KFF	16	599	630	520.0
Concentric Taper	DN800	SSC10VE0TTT	SSC10VE0TFF	30	480		417.0
	DN900	SSC10VE0UTT	SSC10VE0UFF	30	280		378.0
Flange & Socket Piece		SSC10BE20TT	SSC10BE20FF	16	220		359.0
Flange & Spigot Piece		SEC10BU20TT	SEC10BU20FF	16	600		376.0
UNIVERSAL							
Bend	45°	SFC10CB00TT	-	30	460		1085.0
	22.5°	SFC10CD00TT	-	30	240		899.0
	11.25°	SFC10CE00TT	-	30	130		800.0
Flange on double socket tee*	DN600	SFC10UD2RTT	-	16	1265	765	1404.0
Flange & Socket Piece		SFC10BE20TT	-	16	220		550.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- Codes starting with 'T' are gasket inclusive

DN1000

Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	90°	BBC10CA20TT	BBC10CA20FF	16	1100		1348.0
	45°	BBC10CB20TT	BBC10CB20FF	16	632		771.0
	22.5°	BBC10CD20TT	BBC10CD20FF	16	410		581.0
	11.25°	BBC10CE20TT	BBC10CE20FF	16	310		482.0
Duckfoot		BBC10CF20TT	BBC10CF20FF	16	1100	710	2303.0
All Flange Tee	DN150*	BBC10UE2JTT	BBC10UE2JFF	16	770	705	631.0
	DN200*	BBC10UE2KTT	BBC10UE2KFF	16	770	705	633.0
	DN250*	BBC10UV2LTT	BBC10UV2LFF	16	770	705	695.0
	DN300*	BBC10UE2MTT	BBC10UE2MFF	16	990	720	754.0
	DN400*	BBC10UE2NTT	BBC10UE2NFF	16	990	735	767.0
	DN600*	BBC10UE2RTT	BBC10UE2RFF	16	1650	765	1155.0
	DN1000	BBC10TE2VTT	BBC10TE2VFF	16	1650	830	1260.0
Level invert tee*	DN200	BBC10UT2KTT	BBC10UT2KFF	16	990	630	627.0
Concentric Taper	DN800	BBC10VE2TTT	BBC10VE2TFF	16	600		520.0
	DN900	BBC10VE2UTT	BBC10VE2UFF	16	600		447.0
Bellmouth		BBC10BP20TT	BBC10BP20FF	16	390	1200	360.0
Blank Flange		BBC10QN20TT	BBC10QN20FF	16			400.0

* Product offered with PN16 adjustable flanges. For information on joint sets please refer to page 83

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN1200 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	45°	SSC12CB00TT	SSC12CB00FF	30	538		1015.0
	22.5°	SSC12CD00TT	SSC12CD00FF	30	259		644.0
	11.25°	SSC12CE00TT	SSC12CE00FF	30	138		478.0
Flange on Double Socket Tee	DN200*	SSC12UD2KTT	SSC12UD2KFF	16	855	880	949.0
	DN300*	SSC12UD2MTT	SSC12UD2MFF	16	855	838	927.0
	DN400*	SSC12UD2NTT	SSC12UD2NFF	16	855	835	943.0
	DN600*	SSC12UD2RTT	SSC12UD2RFF	16	855	885	977.0
	DN800	SSC12TD2TTT	SSC12TD2TFF	16	1245	915	1353.0
	DN900	SSC12TD2UTT	SSC12TD2UFF	16	1245	930	1397.0
	DN1000	SSC12TD2VTT	SSC12TD2VFF	16	1245	920	1380.0
	DN1200	SSC12TD2BTT	SSC12TD2BFF	16	1480	950	1732.0
Flange on Socket Level invert tee*	DN200	SSC12UT2KTT	SSC12UT2KFF	16	855	700	1084.0
Concentric Taper	DN1000	SSC12VE0VTT	SSC12VE0VFF	30	480		543.0
Flange & Socket Piece		SSC12BE20TT	SSC12BE20FF	16	240		484.0
Flange & Spigot Piece		SEC12BU20TT	SEC12BU20FF	16	600		526.0
UNIVERSAL							
Bend	45°	SFC12CB00TT		30	550		1487.0
	22.5°	SFC12CD00TT		30	285		1116.0
	11.25°	SFC12CE00TT		30	150		950.0
Flange on double socket tee*	DN200	SFC12UD2KTT		16	823	880	1421.0
	DN250	SFC12UV2LTT		16	823	873	1423.0
	DN300	SFC12UD2MTT		16	823	838	1428.0
	DN400	SFC12UD2NTT		16	823	835	1457.0
	DN600	SFC12UD2RTT		16	840	885	1510.0
Flange & Socket Piece		SFC12BE20TT		16	240		720.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid, Universal and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN1200 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	90°	BBC12CA20TT	BBC12CA20FF	16	1355		2625.0
	45°	BBC12CB20TT	BBC12CB20FF	16	746		1205.0
	22.5°	BBC12CD20TT	BBC12CD20FF	16	468		1018.0
	11.25°	BBC12CE20TT	BBC12CE20FF	16	346		858.0
Duckfoot		BBB12CF20TT	BBB12CF20FF	16	1355	840	4150.0
All Flange Tee	DN200*	BBC12UE2KTT	BBC12UE2KFF	16	1245	880	1259.0
	DN300*	BBC12UE2MTT	BBC12UE2MFF	16	1245	838	1269.0
	DN400*	BBC12UE2NTT	BBC12UE2NFF	16	1245	835	1263.0
	DN600*	BBC12UE2RTT	BBC12UE2RFF	16	1245	885	1304.0
	DN1000	BBC12TE2VTT	BBC12TE2VFF	16	1665	920	1686.0
	DN1200	BBC12TE2BTT	BBC12TE2BFF	16	1900	950	1979.0
Level invert tee	DN200	BBC12TT2KTT	BBC12TT2KFF	16	1245	700	1277.0
Concentric Taper	DN600	BBC12VE2RTT	BBC12VE2RFF	16	1490		980.0
	DN1000	BBC12VE2VTT	BBC12VE2VFF	16	860		717.0
Bellmouth		BBC12BP20TT	BBC12BP20FF	16	470	1523	520.0
Blank Flange		BBC12QN20TT	BBC12QN20FF	16			662.0

* Product offered with PN16 adjustable flanges. For information on joint sets please refer to page 83

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN1400 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	45°	SSC14CB00TT	SSC14CB00FF	30	522		1555.0
	22.5°	SSC14CD00TT	SSC14CD00FF	30	264		1107.0
	11.25°	SSC14CE00TT	SSC14CE00FF	30	143		884.0
Flange on Double Socket Tee	DN600*	SSC14UD2RTT	SSC14UD2RFF	16	1010	980	1567.0
	DN1400	SSC14TD2CTT	SSC14TD2CFF	16	1950	1100	2612.0
Concentric Taper	DN1200	SSC14VE0BTT	SSC14VE0BFF	30	360		714.0
Flange & Socket Piece		SSC14BE20TT	SSC14BE20FF	16	310		768.0
Flange & Spigot Piece		SSC14BU20TT	SSC14BU20FF	16	710		726.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN1400 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	45°	BBC14CB20TT	BBC14CB20FF	16	782		1772.0
	22.5°	BBC14CD20TT	BBC14CD20FF	16	524		1324.0
	11.25°	BBC14CE20TT	BBC14CE20FF	16	403		1100.0
All Flange Tee	DN1000	BBC14TE2VTT	BBC14TE2VFF	16	2470	1040	2612.0
	DN1400	BBC14TE2CTT	BBC14TE2CFF	16	2470	1100	2833.0
Concentric Taper	DN1200	BBC14VE2BTT	BBC14VE2BFF	16	760		955.0
Bellmouth		BBC14BP20TT	BBC14BP20FF	16	585	1735	700.0
Blank Flange		BBC14QN20TT	BBC14QN20FF	16			993.0

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN1600 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	45°	SSC16CB00TT	SSC16CB00FF	25	563		2089.0
	22.5°	SSC16CD00TT	SSC16CD00FF	25	284		1479.0
	11.25°	SSC16CE00TT	SSC16CE00FF	25	153		1173.0
Flange on Double Socket Tee	DN300*	SSC16UD2MTT	SSC16UD2MFF	16	1050	1050	1967.0
	DN1000	SSC16TD2VTT	SSC16TD2VFF	16	1505	1150	2458.0
	DN1600	SSC16TD2ETT	SSC16TD2EFF	16	2170	1240	3859.0
Concentric Taper	DN1200	SSC16VE0BTT	SSC16VE0BFF	25	645		1065.0
	DN1400	SSC16VE0CTT	SSC16VE0CFF	25	350		1009.0
	DN1500	SSC16VE0DTT	SSC16VE0DFF	25	400		1190.0
Flange & Socket Piece		SSC16BE20TT	SSC16BE20FF	16	330		1046.0
Flange & Spigot Piece		SSC16BU20TT	SSC16BU20FF	16	780		1019.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN1600 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	45°	BBC16CB20TT	BBC16CB20FF	16	843		2446.0
	22.5°	BBC16CD20TT	BBC16CD20FF	16	564		1836.0
	11.25°	BBC16CE20TT	BBC16CE20FF	16	433		1530.0
All Flange Tee	DN300*	BBC16UE2MTT	BBC16UE2MFF	16	1610	1050	2317.0
	DN1000	BBC16TE2VTT	BBC16TE2VFF	16	2065	1150	3230.0
	DN1600	BBC16TE2ETT	BBC16TE2EFF	16	2730	1240	3921.0
Concentric Taper	DN1200	BBC16VE2BTT	BBC16VE2BFF	16	1085		1245.0
	DN1400	BBC16VE2CTT	BBC16VE2CFF	16	890		1325.0
	DN1500	BBC16VE2DTT	BBC16VE2DFF	16	890		1344.0
Blank Flange		BBC16QN20TT	BBC16QN20FF	16			1462.0

* Product offered with PN16 adjustable flanges. For information on joint sets please refer to page 83

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN1800 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	45°	SSC18CB00TT	SSC18CB00FF	25	642		3126.0
	22.5°	SSC18CD00TT	SSC18CD00FF	25	337		2070.0
	11.25°	SSC18CE00TT	SSC18CE00FF	25	200		1542.0
Flange on Double Socket Tee	DN400*	SSC18UV2NTT	SSC18UV2NFF	16	1125	1300	2345.0
	DN600*	SSC18UV2RTT	SSC18UV2RFF	16	1125	1200	2385.0
	DN800	SSC18TD2TTT	SSC18TD2TFF	16	1360	1230	2800.0
	DN1800	SSC18TD2FTT	SSC18TD2FFF	16	2485	1380	5850.0
Concentric Taper	DN1600	SSC18VE0ETT	SSC18VE0EFF	25	427		1267.0
Flange & Socket Piece		SSC18BE20TT	SSC18BE20FF	16	387		1330.0
Flange & Spigot Piece		SSC18BU20TT	SSC18BU20FF	16	845		1359.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN1800 Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	45°	BBC18CB20TT	BBC18CB20FF	16	905		3725.0
	22.5°	BBC18CD20TT	BBC18CD20FF	16	600		2675.0
	11.25°	BBC18CE20TT	BBC18CE20FF	16	463		2140.0
All Flange Tee	DN900	BBC18TE2UTT	BBC18TE2UFF	16	1885	1245	3350.0
	DN1800	BBC18TE2FTT	BBC18TE2FFF	16	3006	1380	6300.0
Concentric Taper	DN1200	BBC18VE2BTT	BBC18VE2BFF	16	1445		1960.0
Blank Flange		BBC18QN20TT	BBC18QN20FF	16			2016.0

Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN2000 Push-fit (Rapid)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
RAPID			-				
Bend	45°	SSC20CB00TT	SSC20CB00FF	25	685		3702.0
	22.5°	SSC20CD00TT	SSC20CD00FF	25	355		2668.0
	11.25°	SSC20CE00TT	SSC20CE00FF	25	200		2151.0
Flange on Double Socket Tee	DN600*	SSC20UV2RTT	SSC20UV2RFF	16	1110	1315	3320.0
	DN1000	SSC20TD2VTT	SSC20TD2VFF	16	1580	1370	4480.0
	DN1400	SSC20TD2CTT	SSC20TD2CFF	16	2045	1430	5750.0
Concentric Taper	DN1800	SSC20VE0FTT	SSC20VE0FFF	25	472		1780.0
Flange & Socket Piece		SSC20BE20TT	SSC20BE20FF	16	395		1789.0
Flange & Spigot Piece		SSC20BU20TT	SSC20BU20FF	16	885		1749.0

* Product offered with PN16 adjustable flange. For information on joint sets please refer to page 83

Notes.-
- For information on gaskets and joint sets (Rapid and flange) please refer to 'Section 3: Joints' on page 67. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

DN2000

Flanged (PN16 Flanges)

Description		Product code		Allowable Operating Pressure (PFA) bar	Key dimensions		Weight Per Unit (Kg)
		Water	Sewer		L mm	H mm	
Bend	45°	BBC20CB20TT	BBC20CB20FF	16	980		3490.0
	22.5°	BBC20CD20TT	BBC20CD20FF	16	650		2978.0
	11.25°	BBC20CE20TT	BBC20CE20FF	16	495		2461.0
All Flange Tee	DN1000	BBC20TE2VTT	BBC20TE2VFF	16	2170	1370	5000.0
	DN1400	BBC20TE2CTT	BBC20TE2CFF	16	2635	1430	6200.0
Concentric Taper	DN1200	BBC20VE2BTT	BBC20VE2BFF	16	1825		2735.0
	DN1400	BBC20VE2CTT	BBC20VE2CFF	16	1630		2770.0
	DN1600	BBC20VE2ETT	BBC20VE2EFF	16	1350		2660.0
	DN1800	BBC20VE2FTT	BBC20VE2FFF	16	1030		2285.0
Blank Flange		BBC20QN20TT	BBC20QN20FF	16			2660.0

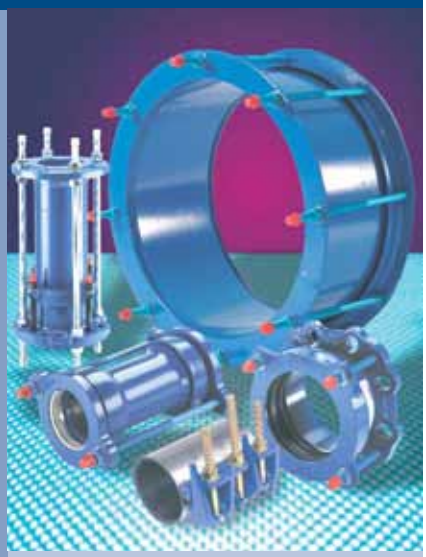
Notes.-
- For information on fixed flange joint sets please see page 81. Please note that our fixed flange joint sets are CESWI 7th edition compliant
- Weights are provided for estimation purposes only and actual values may vary from those provided in these tables

Valves and Accessories

Saint-Gobain PAM UK offers a comprehensive range of valves and accessories for the water and sewerage industry. Our valves range includes:

- Gate valves, resilient and metal faced DN50-300
- Non return valves DN80-300
- Flap valves DN80-600
- Air valves
- Fire Hydrants
- Buttefly valves

Couplings and Adaptors



Our range of adaptors and couplings offer sustainable solutions to pipeline connections. They are available as standard products or as part of specifically engineered packages to suit customer requirements. Our range includes:

- Wide tolerance couplings and flange adaptors (50-300mm)
- Dedicated couplings and flange adaptors (350-1200mm)
- Dismantling joints (50-1200mm)
- Flexlock couplings and flange adaptors
- Repair clamps

Section 3

Joints

Jointing Systems

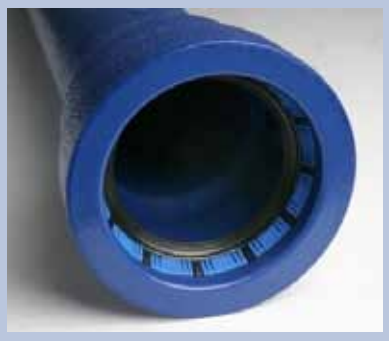
Saint-Gobain PAM UK's pipes and fittings are available with a range of jointng systems to suit a range of applications or installation needs. Cost effective alternatives to the use of thrust blocks are available using either Rapid anchor gaskets, Rapid mechanical or the Universal joint.

Table 6: Pressure capabilities overview

Joint offer														
	Non-anchored			Anchored										
	Blutop	Rapid		Blutop Vi	Rapid Vi		Universal Rapid Vi		Universal Rapid Ve		Rapid Ve		PAMLOCK	
OD	Water	Water	Sewer	Water	Water	Sewer	Water	Sewer	Water	Sewer	Water	Sewer	Water	Sewer
75	25	-	-	16	-	-	-	-	-	-	-	-	-	-
90	25	-	-	16	-	-	-	-	-	-	-	-	-	-
110	25	-	-	16	-	-	-	-	-	-	-	-	-	-
125	25	-	-	16	-	-	-	-	-	-	-	-	-	-
160	25	-	-	16	-	-	-	-	-	-	-	-	-	-
DN	Water	Water	Sewer	Water	Water	Sewer	Water	Sewer	Water	Sewer	Water	Sewer	Water	Sewer
80	-	40	40	-	22	16	60	60	-	-	-	-	-	-
100	-	40	40	-	16	16	56	56	64	64	-	-	-	-
150	-	40	40	-	16	16	48	48	60	60	-	50	-	-
200	-	40	40	-	16	16	43	43	52	52	-	44	-	-
250	-	40	38	-	16	12	39	39	46	46	-	39	-	-
300	-	40	35	-	16	12	34	34	41	41	-	37	-	-
350	-	30	32	-	16	12	25	25	38	38	27	27	-	-
400	-	30	30	-	16	12	20	20	35	35	25	25	-	-
450	-	30	29	-	13	11	16	16	32	32	23	23	-	-
500	-	30	28	-	11	9	16	16	30	30	22	22	-	-
600	-	30	26	-	10	8	16	16	30	30	20	20	-	-
700	-	30/25	29	-	-	-	-	-	27	27	16	16	-	-
800 -1000	-	30/25	28-26	-	-	-	-	-	25	-	16	16	-	-
1200	-	25	29	-	-	-	-	-	25	-	16	16	-	-
1400 -2000	-	25	28-26	-	-	-	-	-	-	-	-	-	25-16*	25-16*

* Except DN2000. Please enquire

Blutop Joint (non-anchored)



The Blutop Joint is a push-fit joint to be used with Saint-Gobain PAM UK's Blutop range of products. Suitable for drinking water networks for sizes DN/OD75-160. It has been designed to last more than 100 years.

Blutop Joints are compatible with PVC pipe conforming to EN 1452 or with HDPE pipe conforming to EN 12201, i.e PVC and HDPE spigots conforming to the mentioned standards can be inserted into Blutop pipe. Please note that Blutop pipe spigots must not be fitted into sockets designed for other joints (plastic, or other cast iron parts).

How does it work?

The seal is achieved by the compression of the main body of the elastomeric gasket. As the pressure in the main increases, the 'concave' design of the gasket ensures that the seal tightens proportionally to the pressure.

Benefits:

- Ease of laying
  - Quick push fit joint with low insertion forces
  - Fittings designed with handles for easy of insertion
- Angular deflection of up to 6 degrees
  - Capable of angular deflection and longitudinal withdrawal with no loss of performance
  - Enables long bends without the use of fittings
  - Additional safety against the hazards of earth and trench movements

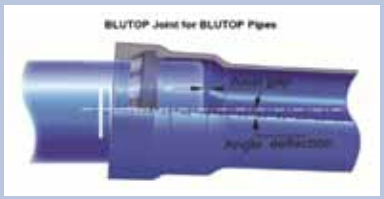
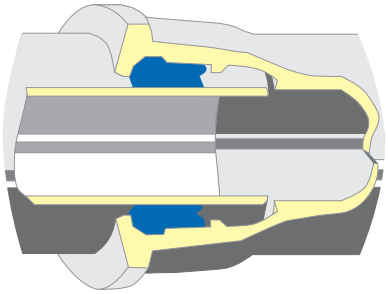


Table 7: Blutop pipe, non-anchored gasket

DN/OD	Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)
75	C25	25	6
90	C25	25	6
110	C25	25	6
125	C25	25	6
160	C25	25	6

Note.-
Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) can easily be calculate for the above pipes by using the following formulas:
PMA = PFA x 1.2
PEA = PMA + 5 bar

Rapid Joint



The Rapid joint is the standard joint for both potable water and sewerage application for all sizes from DN80-2000. The introduction of internally and externally harmonised sockets for all Saint-Gobain PAM UK's pipes and fittings offers substantial benefits to customers in the UK and world-wide. Harmonisation of sockets means that just one joint can be used for both potable water and sewer products, with easy identification of gaskets to ensure correct installation. The Rapid joint is a proven system and has been used successfully and extensively throughout Europe and the rest of the World for over 50 years.

How it works:

The seal is achieved by the compression of the main body of the elastomeric gasket. As the internal pressure increases, the 'fish-tail' design of the gasket ensures that the seal tightens proportionally to the pressure.

Benefits:

- Quick to install and dismantle
- Capable of angular deflection and longitudinal withdrawal with no loss of performance
- Provides opportunity to reduce the number of fittings
- Flexible joint to cope with ground movement
- Easy identification of gaskets for water or sewerage
- One joint whatever the application

Rapid Joint Specification

Tables 8 & 9 give additional information regarding the joint specification and dimensions.

Table 8: Water pipe (EPDM gasket)

DN	Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Rapid Gasket Water (EPDM) Prod Code
80	C40	40	5	185405
100	C40	40	5	185406
150	C40	40	5	185407
200	C40	40	5	185408
250	C40	40	5	185409
300	C40	40	5	185410
350	C30	30	4	185411
400	C30	30	4	185412
450	C30	30	4	185413
500	C30	30	4	185414
600	C30	30	4	185415
700	C25*/C30	25/30	4	JSB70BA
800	C25*/C30	25/30	4	JSB80BA
900	C25/C30*	25/30	4	JSB90BA
1000	C25/C30*	25/30	4	JSC10BA
1200	C25	25	4	JSC12BA
1400	C25	25	3	JSC14BA
1600	C25	25	3	JSC16BA
1800	C25	25	2.5	JSC18BA
2000	C25	25	2	JSC20BA

*Preferred option

Notes.-

- For information on product codes, weights and lengths for water pipe please refer to table 1 & 2 on page 15
- Allowable negative internal pressure DN80-DN2000 is -0.9 bar, allowable external pressure is +5 bar
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) can easily be calculated for the above pipes by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Table 9: Sewer Pipe (Nitrile gasket)

DN	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Rapid Gasket Sewer (Nitrile) Prod Code
80	40	5	JSA80BB
100	40	5	JSB10BB
150	40	5	JSB15BB
200	40	5	JSB20BB
250	38	5	JSB25BB
300	35	5	JSB30BB
350	32	4	JSB35BB
400	30	4	JSB40BB
450	29	4	JSB45BB
500	28	4	JSB50BB
600	26	4	JSB60BB
700	29	4	JSB70BB
800	28	4	JSB80BB
900	27	4	JSB90BB
1000	26	4	JSC10BB
1200	29	4	JSC12BB
1400	28	3	JSC14BB
1600	27	3	JSC16BB
1800	27	2.5	JSC18BB
2000	26	2	JSC20BB

Notes.-
- For information on product codes, weights and lengths for sewer pipe please refer to table 3 on page 16
- Allowable negative internal pressure DN80-DN2000 is -0.9 bar, allowable external pressure is +5 bar
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) can easily be calculated for the above pipes by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

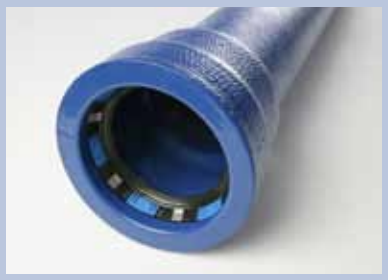
Anchored Solutions

Why do pipelines need anchoring?

Pressure pipelines are subject to forces at changes of direction, blank ends, valves, tapers etc. At these points restraint is required to avoid joint separation.

Saint-Gobain PAM UK offers a wide range of cost effective self anchoring solutions for such situations. These solutions eliminate the need for thrust blocks so pipelines can be installed in areas where space is limited or in unstable ground conditions where thrust blocks are not an option.

Blutop Vi Joint



The Blutop Joint is a push-fit joint to be used with Saint-Gobain PAM UK's Blutop range of products. Suitable for drinking water networks for sizes OD75-160. It has been designed to last more than 100 years.

The Blutop Vi Joint is the anchored version of the Blutop Joint and can be fitted in all pipes and fittings within the Blutop range. The gasket features stainless steel teeth moulded into the rubber.

How it works:

When the joint is under pressure the teeth grip the pipe spigot and prevent separation of the joint, making this a self-restrained joint. The Blutop Vi gasket can only be used once, although the joint can be re-made using a new gasket.

Benefits:

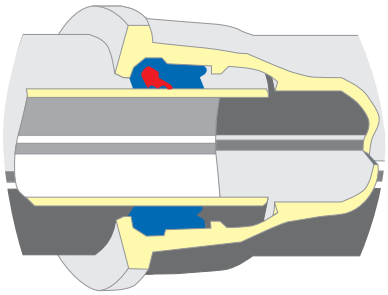
- Ease of laying
  - Quick push fit joint with low insertion forces
  - Fittings designed with handles for easy of insertion
- Angular deflection of up to 6 degrees
  - Enables long bends without the use of fittings
  - Additional safety against the hazards of earth and trench movements
- Low cost, high performance pipeline anchorage
- Eliminates the need for thrust blocks at changes in direction

Table 10: Blutop pipe, Vi gasket

DN/OD	Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)
75	C25	16	6
90	C25	16	6
110	C25	16	6
125	C25	16	6
160	C25	16	6

Note.-
Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) can easily be calculated for the above pipes by using the following formulas:
PMA = PFA x 1.2
PEA = PMA + 5 bar

Rapid Vi Joint



The Rapid Vi joint uses the same socket as the non-anchored version. The gasket features stainless steel teeth moulded into the rubber.

How it works:

When the joint is under pressure the teeth grip the pipe spigot and prevent separation of the joint. Rapid Vi gaskets can only be used once, although the joint can be remade using a new gasket.

Benefits:

- Low cost, high performance pipeline anchorage
- Quick and easy to install
- Eliminates the need for thrust blocks at changes in direction
- DN80-600
- Proven solution over many years
- Ideal for unstable ground or where space is limited

To determine the number of anchored joints required please contact Technical Sales Department, Tel: 0115 930 0700 or use PipeSpec. For guidance on how to install Rapid Vi gaskets, please request our Installation Guide. This is available to download from our website, www.saint-gobain-pam.co.uk or call our Brochure Hotline, Tel: 0800 028 2134.

Rapid Vi Joint utilises EPDM gaskets. EPDM may not be suitable for all sewerage applications, please consult Technical Sales Department for information, Tel: 0115 930 0700.

Note: Rapid Vi Gaskets are not colour coded.

Rapid Vi Joint Specification

Tables 11 to 13 give additional information regarding the joint specification.

Table 11: Water pipe (Natural, System CL or System XL) - Rapid Vi joint, EPDM anchor gasket

DN	Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)
80	C40	22	5
100	C40	16	5
150	C40	16	5
200	C40	16	4
250	C40	16	4
300	C40	16	3
350	C30	16	3
400	C30	16	2
450	C30	13	2
500	C30	11	2
600	C30	10	2

Note.-
- For information on product codes, weights and lengths for both system CL or system XL, please refer to tables 1 & 2 on page 15
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) for the above pipes can easily be calculated by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Table 12: Push-fit Anchor Gaskets (Rapid Vi) - EPDM

DN	Product Code
80	JSA80CA
100	JSB10CA
150	JSB15DA*
200	JSB20DA*
250	JSB25DA*
300	JSB30CA
350	JSB35CA
400	JSB40CA
450	JSB45CA
500	JSB50CA
600	JSB60CA

*New anchor gasket developed by Saint-Gobain

Table 13: Sewer pipe-Rapid Vi joint, EPDM anchor gasket

DN	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)
80	16	5
100	16	5
150	16	5
200	16	4
250	12	4
300	12	3
350	12	3
400	12	2
450	11	2
500	9	2
600	8	2

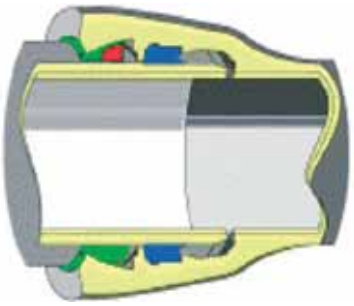
Notes.-
- Rapid anchor gaskets are manufactured from EPDM rubber for further information on gaskets please refer to table 12
- For information on product codes, weights and lengths please refer to table 3 on page 16
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) for the above pipes can easily be calculated by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Nitrile anchor gaskets are currently being developed by Saint-Gobain PAM UK and are expected to be available in 2012. The above table will be updated accordingly in due course.

Universal Joint

For very demanding applications such as trenchless installation or for restrained requirements under high pressures Saint-Gobain PAM UK recommends the Universal Joint. The Universal joint offers boltless restraint solutions featuring a double chambered socket design. The Universal joint uses the same sealing socket and gasket as the Rapid joint, with a second chamber providing anchorage using either an anchored gasket or a weld bead and locking ring.

Universal Rapid Vi Joint



The Universal Rapid Vi joint is available in DN80-600. Universal Rapid Vi operates up to a pressure of 60 bar depending on diameter. There is no need for a weld bead on the pipe spigot.

How it works:

Anchorage is provided by the use of a separate Universal anchoring gasket with moulded-in stainless steel teeth to grip the pipe spigot to avoid joint separation.

Benefits:

- Boltless anchoring solution
- Simple push-fit joint with separate anchoring gasket
- Up to 60 bar working pressure

Universal Rapid Vi Joint Specification:

Tables 14 & 15 provide additional information regarding the joint performance.

Table 14: Universal Rapid Vi, water

DN	Prod Code Pipe	Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Pipe Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØDE)	Pipe Weight (Kg/m)	Prod Code Universal Anchoring Gasket
80	NGA80N60	C100	60	3	5970	98	159	16.0	ANA80CA6
100	NGB10N60	C100	56	3	5970	118	188	19.5	ANB10CA6
150	NGB15N60	C64	48	3	5970	170	230	29.0	ANB15CA5
200	NGB20N60	C64	43	3	5970	222	290	40.0	ANB20CA4
250	NGB25N60	C50	39	3	5970	274	350	52.5	ANB25CA4
300	NGB30N60	C50	34	3	5970	326	408	67.5	ANB30CA4
350	NGB35N60	C40	25	3	5970	378	463	83.5	JNB35CA
400	NGB40N60	C40	20	3	5970	429	510	98.0	JNB40CA
450	NGB45N60	C40	16	3	5970	480	570	117.5	JNB45CA
500	NGB50N60	C40	16	2	5970	532	625	139.0	JNB50CA
600	NGB60N60	C40	16	2	5970	635	740	188.0	JNB60CA

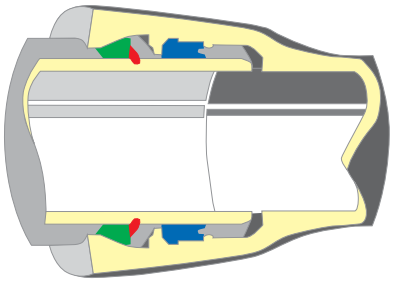
Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- For information on Rapid gaskets water please refer to page 70
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) for the above pipes can easily be calculated by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar
- Limited range of Universal fittings available for DN350 and DN450. Please contact our Technical Sales Department for further details, Tel. 0115 930 0700

Table 15: Universal Rapid Vi, Sewer

DN	Prod Code Pipe	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Pipe Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØDE)	Pipe Weight (Kg/m)	Prod Code Universal Anchoring Gasket
80	TGA80N60	60	3	5970	98	159	15.5	ANA80CA6
100	TGB10N60	56	3	5970	118	188	19.0	ANB10CA6
150	TGB15N60	48	3	5970	170	230	28.0	ANB15CA5
200	TGB20N60	43	3	5970	222	290	38.5	ANB20CA4
250	TGB25N60	39	3	5970	274	350	51.5	ANB25CA4
300	TGB30N60	34	3	5970	326	408	64.5	ANB30CA4
350	TGB35N60	25	3	5970	378	463	83.5	JNB35CA
400	TGB40N60	20	3	5970	429	510	98.0	JNB40CA
450	TGB45N60	16	3	5970	480	570	114.0	JNB45CA
500	TGB50N60	16	2	5970	532	625	135.5	JNB50CA
600	TGB60N60	16	2	5970	635	740	174.0	JNB60CA

Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- For information on Rapid gaskets sewer please refer to page 71
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) for the above pipes can easily be calculated by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar
- Limited range of Universal fittings available for DN350 and DN450. Please contact our Technical Sales Department for further details, Tel. 0115 930 0700

Universal Rapid Ve Joint



The Universal Rapid Ve joint is available in DN100 - 1200. The joint is capable of operating pressure of up to 64 bar (depending on diameter) and is the joint used on PAM Direxional pipes.

How it works:

Anchorage is provided by a locking ring which abuts a weld bead on the pipe spigot to prevent joint separation.

Benefits:

- Boltless anchoring system
- Up to 64 bar working pressure
- Used on PAM Direxional pipe
- Up to 3° angular deflection
- Can be used in trenchless applications

Universal Rapid Ve Joint Specification:

Table 16 & 17 provides additional information regarding joint performance.

Table 16: Universal Rapid Ve, water

DN	Prod Code Pipe	Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Pipe Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØDE)	Pipe Weight (Kg/m)	Prod code Universal Locking Ring
100	NFB10N60	C100	64	3	5970	118	188	19.5	110259
150	NFB15N60	C64	60	3	5970	170	230	29.0	AKB15E
200	NFB20N60	C64	52	3	5970	222	290	40.0	AKB20E
250	NFB25N60	C50	46	3	5970	274	350	52.5	AKB25E
300	NFB30N60	C50	41	3	5970	326	408	67.5	AKB30E
350	NFB35N60	C40	38	3	5970	378	463	83.5	JKB35E
400	NFB40N60	C40	35	3	5970	429	510	98.0	JKB40E
450	NFB45N60	C40	32	3	5970	480	570	117.5	JKB45E
500	NFB50N60	C40	30	2	5970	532	625	139.0	JKB50E
600	NFB60N60	C40	30	2	5970	635	740	188.0	JKB60E
700	NFB70N60	C30	27	2	5970	738	863	229.0	110671
800	SFB80N70	C30	25	1.5	6890	842	974	278.0	JFB80S
900	SFB90N70	C30	25	1.5	6870	945	1082	349.0	JFB90S
1000	SFC10N70	C30	25	1	6880	1048	1191	403.0	JFC10S
1200	SFC12N80	C30	25	1	8150	1255	1412.5	521.5	JFC12S

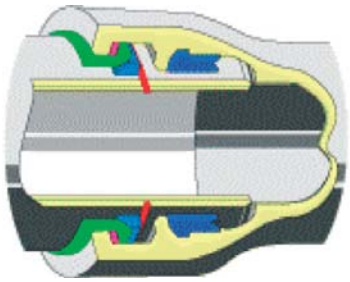
Notes. -
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables.
- For information on Rapid gaskets water please refer to page 70.

Table 17: Universal Rapid Ve, sewer

DN	Prod code	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Pipe Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØB)	Weight (Kg/m)	Prod code Universal Locking Ring
100	209956	64	3	5970	118	188	19.0	110259
150	209958	60	3	5970	170	230	28.0	AKB15E
200	209959	52	3	5970	222	290	38.5	AKB20E
250	209960	46	3	5970	274	350	51.5	AKB25E
300	209981	41	3	5970	326	408	64.5	AKB30E
350	209983	38	3	5970	378	463	83.5	JKB35E
400	209984	35	3	5970	429	510	98.0	JKB40E
450	214457	32	3	5970	480	570	114.0	JKB45E
500	209985	30	2	5970	532	625	135.0	JKB50E
600	209986	30	2	5970	635	740	174.0	JKB60E
700	209385	27	2	5970	738	863	228.5	110671

Notes. -
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- For information on Rapid gaskets please refer to page 71
- For information on DN800 - 1200 please contact our Technical Department
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) for the above pipes can easily be calculated by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

PAMLOCK Joints



The PAMLOCK joint is used on pipes and fittings DN1400-2000 where self restrained joints are required.

How it works:

Anchorage is provided by the addition of a weld bead onto the pipe spigot, and a segmented locking ring which abuts the weld bead and a conformator which restricts the diameter of the socket mouth and is held in place by two locking clamps. The conformator is filled with steel shot to complete the joint.

Benefits:

- Boltless anchoring system
- Up to 25 Bar working pressure

PAMLOCK Joint Specification

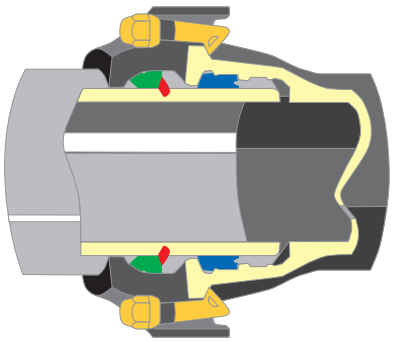
Table 18 provides additional information regarding joint performance.

Table 18: PAMLOCK

DN	Prod code		Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Pipe Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØDE)	Weight (Kg/m)
	Water	Sewer							
1400	SPC14N80	120351	C25	25	1	8170	1462	1620.1	695
1600	SPC16N80	120623	C25	25	1	8160	1668	1868.0	873
1800	SPC18N80	TPC18N80	C25	16	0.5	8150	1875	2075.3	1065
2000	Enquire	Enquire	C25	Enquire	Enquire	8130	2082	Enquire	Enquire

Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables.
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) for the above pipes can easily be calculated by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Rapid Ve (Mechanical) Joint



The Rapid Ve joint utilises the same socket and gasket as the Rapid push-fit version.

How it works:

Anchorage is provided by the addition of the Rapid mechanical anchor kit which comprises:

1. Factory-applied weld bead on the pipe spigot. Where pipes have been cut, the bead can also be welded on site, please refer to the Installation Guide.
2. A locking ring (single piece DN80-700, segmented DN800-1200) which abuts the weld bead.
3. A bolted gland which tightens against the pipe socket using hook bolts and retains the locking ring.

Benefits:

- Provision for anchorage whilst maintaining flexibility
- Eliminates need for thrusts blocks
- Ideal for unstable ground or where space is limited
- Suitable for higher pressure mains
- Weld bead can be applied on site
- Requires a minimal number of fittings compared to other ductile iron anchor solutions

Note.-
Please refer to the Installation Guide for required equipment.

Rapid Ve Joint Specification

Tables19 & 20 provide additional information regarding the joint specification and dimensions.

Table 19: Rapid Ve (Mechanical) water pipe

DN	Prod code	Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	External Diameter (OD)			Pipe Length (mm)	Weight (Kg/m)	Bolts		
					Nom. Pipe Barrel OD	Max. Pipe Socket OD	Max. Anchor Gland OD			No.	Dia	Length (mm)
350	NQB35G60	C30	27	3	378	465	570	6000	68.0	8	M27	102
400	NQB40G60	C30	25	3	429	517	618	6000	79.5	10	M27	102
450	NQB45G60	C30	23	3	480	575	671	6000	93.5	14	M27	102
500	NQB50G60	C30	22	3	532	630	734	6000	110.0	16	M27	102
600	NQB60G60	C30	20	3	635	739	840	6000	149.0	20	M27	102
700	SQB70H70	C25	16	2	738	863	958	6960	186.0	24	M27	123
800	SQB80H70	C25	16	2	842	974	1100	6950	229.0	30	M27	123
900	SQB90H70	C25	16	1.5	945	1082	1218	6950	276.0	28	M27	123
1000	SQC10H70	C25	16	1.5	1048	1191	1306	6960	330.5	30	M27	123
1200	SQC12H80	C25	16	1.5	1255	1412	1547	8190	461.5	40	M27	123

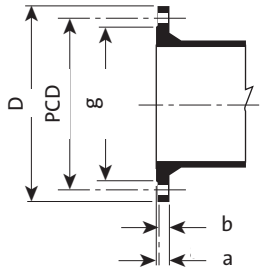
Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables.
- For anchoring solutions DN80-DN300 please refer to Universal joint or enquire.
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) for the above pipes can easily be calculated by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Table 20: Rapid Ve (Mechanical) sewer pipe

DN	Prod codes	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	External Diameter (OD)			Pipe Length (mm)	Weight (Kg/m)	Bolts		
				Nom. Pipe Barrel OD	Max. Pipe Socket OD	Max. Anchor Gland OD			No.	Dia	Length (mm)
150	TQB15S60	50	5	170	243	311	6000	23.5	6	M22	70
200	TQB20S60	44	4	222	296	364	6000	30.5	8	M22	70
250	TQB25S60	39	4	274	353	457	6000	40.0	6	M27	102
300	TQB30S60	37	4	326	410	516	6000	50.5	8	M27	102
350	TQB35S60	27	3	378	465	570	6000	66.5	8	M27	102
400	TQB40S60	25	3	429	517	618	6000	78.0	10	M27	102
450	TQB45S60	23	3	480	575	671	6000	92.5	14	M27	102
500	TQB50S60	22	3	532	630	734	6000	106.5	16	M27	102
600	TQB60S60	20	3	635	739	840	6000	138.0	20	M27	102
700	TQB70E69	16	2	738	863	958	6950	199.0	24	M27	123
800	TQB80E69	16	2	842	974	1100	6950	243.5	30	M27	123
900	TQB90E69	16	1.5	945	1082	1218	6950	291.5	28	M27	123
1000	TQC10E69	16	1.5	1048	1191	1306	6955	343.0	30	M27	123
1200	TQC12N79	16	1.5	1255	1412	1547	8185	507.5	40	M27	123

Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables.
- For anchoring solutions DN80-DN100 please refer to Universal joint or enquire.
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) for the above pipes can easily be calculated by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Flange Joint



Flanged joints are rigid and are typically used in above ground applications. Due to the risk of excessive bending moments being imposed it is recommended that flanged pipework is **NOT** buried. In certain situations it may be necessary to bury flange pipework, please contact Technical Sales Department for advice, Tel: 0115 930 0700.

Benefits:

- Strength of DI supports external bending moment making it ideally suited for above ground applications
- High beam strength accommodates spans up to 16m
- No risk of performance loss through UV degradation
- Wide range of flanges available in PN10-PN40.

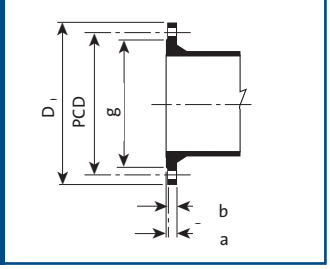
Fixed Flange Joint Sets:

Joint sets are available to order for use with fixed flanges, these sets contain all components required for fixed flanged joints.

- Full face gasket 80° IRHD hardness
- Mild steel (grade 4.6) bolts, nuts and washers rilsan coated to water industry specification WIS 4-52-03

EPDM gaskets are supplied for use in potable water applications and Nitrile gaskets for sewerage applications.

All PN16 fixed flange joint sets supplied by Saint-Gobain as standard comply with the Civil Engineering Specification for the Water Industry (CESWI) 7th edition.



Tables 21 & 22 provide additional information regarding fixed flange joint dimensions.

Table 21: Fixed flanges PN16

DN	Prod Code		D	g	a	b	Bolt Hole Details			Bolt size	
	Water	Sewer					PCD	No.	Dia	Dia	Length (mm)
80	228458	228480	200	132	19.0	16.0	160	8	19	M16	70
100	228460	228481	220	156	19.0	16.0	180	8	19	M16	70
150	228471	228482	285	211	19.0	16.0	240	8	23	M20	80
200	228472	228483	340	266	20.0	17.0	295	12	23	M20	80
250	228473	228484	400	319	22.0	19.0	355	12	28	M24	90
300	228474	228485	455	370	24.5	20.5	410	12	28	M24	100
350	228475	228486	520	429	26.5	22.5	470	16	28	M24	100
400	228476	228487	580	480	28.0	24.0	525	16	31	M27	100
450	228477	228488	640	548	30.0	26.0	585	20	31	M27	110
500	228478	228489	715	609	31.5	27.5	650	20	34	M30	115
600	228479	228490	840	720	36.0	31.0	770	20	37	M33	130
700	229045	229054	910	794	39.5	34.5	840	24	37	M33	135
800	229047	229056	1025	901	43.0	38.0	950	24	40	M36	155
900	229050	229058	1125	1001	46.5	41.5	1050	28	40	M36	155
1000	229051	229060	1255	1112	50.0	45.0	1170	28	43	M39	165
1200	229052	229061	1485	1328	57.0	52.0	1390	32	49	M45	190
1400	Enquire	Enquire	1685	1530	60.0	55.0	1590	36	49	M45	Enquire*
1600	Enquire	Enquire	1930	170	65.0	60.0	1820	40	56	M52	Enquire*
1800	Enquire	Enquire	2130	1950	70.0	65.0	2020	44	57	M52	Enquire*
2000	Enquire	Enquire	2345	2150	75.0	70.0	2230	48	62	M56	Enquire*

*Bolt length will be calculated on a project by project basis.
Note.- PN10 & 40 available on request

Table 22: Fixed flanges PN25

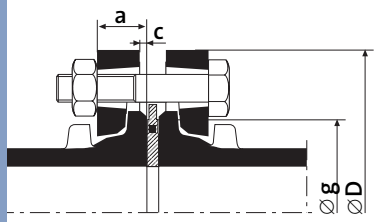
DN	D	g	a	b	Bolt Hole Details			Bolt size	
					PCD	No.	Dia	Dia	Length (mm)
80	200	132	19.0	16.0	160	8	19	M16	70
100	235	156	19.0	16.0	190	8	23	M20	75
150	300	211	20.0	17.0	250	8	28	M24	90
200	360	274	22.0	19.0	310	12	28	M24	90
250	425	330	24.5	21.5	370	12	31	M27	100
300	485	389	27.5	23.5	430	16	31	M27	105
350	555	448	30.0	26.0	490	16	34	M30	110
400	620	503	32.0	28.0	550	16	37	M33	120
450	670	548	34.5	30.5	600	20	37	M33	125
500	730	609	36.5	32.5	660	20	37	M33	130
600	845	720	42.0	37.0	770	20	40	M36	145
700	960	820	46.5	41.5	875	24	43	M39	160
800	1085	928	51.0	46.0	990	24	49	M45	170
900	1185	1028	55.5	50.5	1090	28	49	M45	180
1000	1320	1140	60.0	55.0	1210	28	56	M52	205
1200	1530	1350	69.0	64.0	1420	32	56	M52	220
1400	1755	1560	74.0	69.0	1640	36	62	M56	Enquire*
1600	1975	1780	81.0	76.0	1860	40	62	M56	Enquire*
1800	2195	1985	88.0	83.0	2070	44	70	M64	Enquire*
2000	2425	2210	95.0	90.0	2300	48	70	M64	Enquire*

* Bolt length will be calculated on a project by project basis.

Saint-Gobain PAM UK supplies fixed flange joint sets with full face EPDM/Nitrile gasket and bolts (as per above lengths), nuts and two washers per bolt as standard. These joint sets are CESWI 7th edition compliant

Adjustable Flanges

DN80-600



Saint-Gobain PAM UK is able to offer adjustable flanges on a range of fittings in DN80-600. On a selected number of flanged fittings Saint-Gobain PAM UK will provide adjustable flanges as the standard product range. Please refer to the product range section for details.

Adjustable flanges have been used for over 25 years in Europe. Adjustable flanges facilitate flange assembly by allowing the loose flange to be rotated and positioned to align bolt holes. Saint-Gobain PAM UK can also offer an additional range of flanged fittings with adjustable flanges, please contact Technical Sales department for further information, Tel: 0115 930 0700.

The key benefits offered by adjustable flanges are time & effort saved on site, particularly above ground or in pumping stations/treatment works.

- Adjustable for easy alignment if flanges are off-set
- Able to quickly change flange to higher/lower rating

Joint sets are available to order for use with adjustable flanges, these sets contain all components required for adjustable flanged joints.

- Metal insert gasket
- Mild steel bolts, nuts and washers

Note: Adjustable flanges utilise different bolt lengths to fixed flanges. Please refer to adjustable data sheet for bolt lengths; ref: PAMRF03. This is available from www.saint-gobain-pam.co.uk.

ASSEMBLING JOINT WITH ADJUSTABLE FLANGES PN16

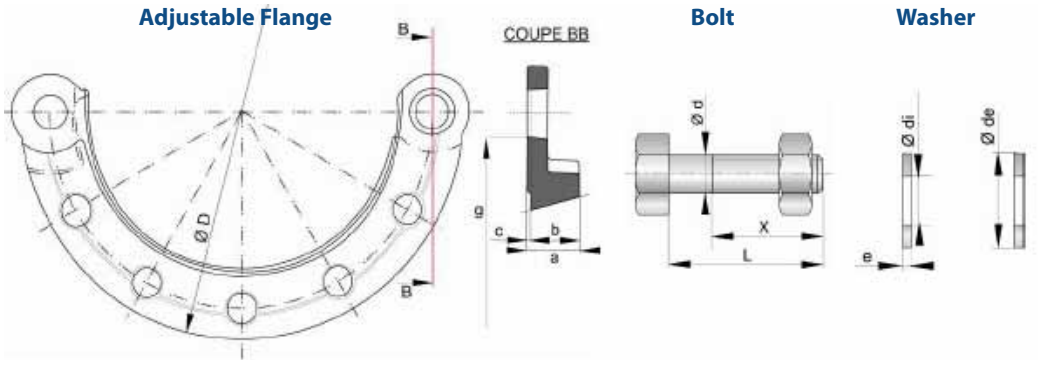


Table 23: Adjustable Flanges dimensions

DN	Adjustable Flange					Bolt No.	Bolt size	
	D	g	a	b	c		Dia	Length (mm)
80	200	132	23.0	20.0	3	4	16	85
100	220	156	23.0	20.0	3	8	16	90
150	285	211	26.0	23.0	3	8	20	100
200	340	266	29.0	26.0	3	12	20	100
250	400	319	32.0	29.0	3	12	24	110
300	455	370	36.0	32.0	4	12	24	130
350	520	429	39.0	35.0	4	16	24	130
400	580	480	42.0	38.0	4	16	27	150
450	640	527	45.0	41.0	4	20	27	130
500	715	582	48.0	44.0	4	20	30	160
600	840	682	55.0	50.0	5	20	33	180

Table 24: Adjustable flanges joint sets

DN	Product Code					
	WATER			SEWER		
	Kit reference (incl. gasket, bolts, nuts and washers			Gasket	Bolt and nut	Washer
80	JBA80KV1			JBA80GW1	JXM16BM85	JXM16RQE
100	JBB10KV1			JBB10GW1	JXM16BM90	JXM16RQE
150	JBB15KV1			JBB15GW1	JXM20BM100	JXM20RQE
200	JBB20KV2			JBB20GW1	JXM20BM100	JXM20RQE
250	JBB25KV2			JBB25GW1	JXM24BM110	JXM24RQE
300	JBB30KV2			JBB30GW1	JXM24BM130	JXM24RQE
	Gasket	Bolt and nut	Washer	Gasket	Bolt and nut	Washer
350	JBB35GV1	JXM24BM130	JXM24RQE	Nitrile gasket not available	JXM24BM130	JXM24RQE
400	JBB40GV1	JXM27BM150	JXM27RQE		JXM27BM150	JXM27RQE
450	JBB45GV1	JXM27BM130	JXM27RQE		JXM27BM130	JXM27RQE
500	JBB50GV1	JXM30BM160	JXM30RQE		JXM30BM160	JXM30RQE
600	JBB60GV1	JXM33BM180	JXM33RQE		JXM33BM180	JXM33RQE

Section 4

Pipe Lining

PAM SAINT-GOBAIN

Pipe Linings

Saint-Gobain PAM UK is highly experienced in providing high performance and fit-for-purpose linings for use with both potable water and sewage. All linings used by Saint-Gobain PAM UK conform to the requirements of the latest versions of BS EN 545 for use with potable water. Sewage linings conform to BS EN 598.

The standard linings offered by Saint-Gobain PAM UK are suitable for virtually all water and sewer applications within the UK. However, Saint-Gobain PAM UK has access to a wide range of specific solutions to suit even the most demanding requirements.

Table 25: Matrix of pipe linings offered by Saint Gobain PAM UK

Product Range	Dia Range	Ductan	System CL	System XL	HAC	pH1
Water Pipe	OD75-OD160	Standard (Blutop)				
	DN80-DN800		Standard (Natural)	Standard (Natural)		
	DN900-DN2000		Standard (Classic)			
Sewerage Pipe	Uti DN800				Standard (Integral Plus or Integral)	Special Request (Integral)
	DN900-DN2000				Standard (Integral)	Special Request (Integral)
Directional Drill pipes - Water & Sewer	DN100-DN1000		Standard for potable water (PAM Direxional)		Standard for sewerage (PAM Direxional)	

Water Pipes

Since potable water may prove aggressive for pipelines due to its mineral composition or to treatment products, ductile iron pipelines are lined with an internal coating.

All ductile iron pipes for use with potable water are approved by the Secretary of State for use in public water supplies under Regulation 31.4.a of the Water Supply (Water Quality) Regulations 2000, Regulation 27 of the Water Supply (Water Quality) (Scotland) Regulations 2001 and are listed in the "List of Approved Products and Processes" published by the DWI.

Ductan: Potable water OD75-160 - Blutop range

Traditionally, the internal lining for ductile iron pipes has been cement mortar. For the Blutop range, the cement mortar is replaced by an innovative thermoplastic coating called Ductan.

Main characteristics:

- 300µm thick
- Perfectly adherent, with an adhesion value greater than 8MPa (80kg/cm2) the same as fusion bonded epoxy. DUCTAN withstands without damage:
  - perforation under load
  - cuts on site
- Approved by the Secretary of State under Regulation 31.4.a of the Water Supply (Water Quality) Regulations 2000

Advantages:

- Perfectly smooth internal surface, DUCTAN minimizes head losses
- Extra-light, DUCTAN reduces the pipe weight by 25 %
- Thinner than the cement coating, DUCTAN increases the pipe's hydraulic cross-section.
- Exceptional abrasion resistance
- Anti-corrosion protection for 100 years

In addition, the DUCTAN lining is impact resistant and therefore does not flake in case of point impact.

The Ductan lining covers the inside of the pipe completely from the socket to the end of the spigot

Cement mortar linings

Cement mortar linings create an alkaline environment at the metal surface of the pipe thereby producing conditions under which corrosion cannot take place. Cement mortar linings are applied in accordance with BS EN 545. Saint-Gobain PAM UK applies two types of cement mortar linings: System CL and System XL

1) System CL : Potable Water DN80-2000, Natural range

Saint-Gobain PAM UK System CL is the standard pipe system for diameters DN80-2000. System CL comprises blast furnace cement which fully complies with BS EN 545 and is applied as a pipe lining under strict factory conditions.

When used in accordance with Saint-Gobain PAM UK System CL "Instructions for Use" document, System CL gives excellent pH and leachate performance for hard and soft waters, even with extended residence times.

Features and benefits of Saint-Gobain PAM UK System CL:

- Available in diameters DN80-2000
- pH controlled within regulatory limits
- Residence times compatible with normal commissioning and operating conditions
- Approved by the Secretary of State under Regulation 31.4.a of the Water Supply (Water Quality) Regulations 2000
- Excellent hydraulic performance

Socket areas which come into contact with potable water are coated with an approved blue epoxy paint.

2) System XL: Potable Water DN80-700, Natural range

Saint-Gobain PAM UK System XL is the standard pipe system for diameters up to and including DN700. The system comprises an epoxy seal coat applied to the cement mortar lining under factory conditions with tight control over process parameters. Saint-Gobain PAM UK System XL controls both inorganic and organic leachates to exceptionally low levels.

When used in accordance with Saint-Gobain PAM UK's "Instructions for Use", System XL controls the pH within regulatory limits.

Features and benefits of Saint-Gobain PAM UK System XL:

- Available in diameters uti DN700
- Recommended for soft water areas
- pH controlled within regulatory limits
- Residence times compatible with normal commissioning and operating conditions
- Approved by the Secretary of State under Regulation 31.4.a of the Water Supply (Water Quality) Regulations 2000
- Excellent Hydraulic Performance

Socket areas which come into contact with potable water are coated with an approved blue epoxy paint.

Note.-
The Saint-Gobain PAM UK instructions for use documents for System XL and System CL are available on request. Please contact our Technical Sales Department on 0115 930 0700.

Sewerage Pipes

High Alumina Cement Mortar Lining: Sewerage DN80-2000, Integral Range

Saint-Gobain PAM UK supplies its standard sewer pipes with a high alumina cement mortar lining to allow for operating conditions ranging from pH 4 (highly acidic) to pH 12 (highly alkaline). High alumina cement mortar linings conform to the requirements of BS EN 598 and offer high abrasion resistance.

Socket areas which could come into contact with effluent receive a coating of red epoxy paint.

Benefits of high alumina cement:

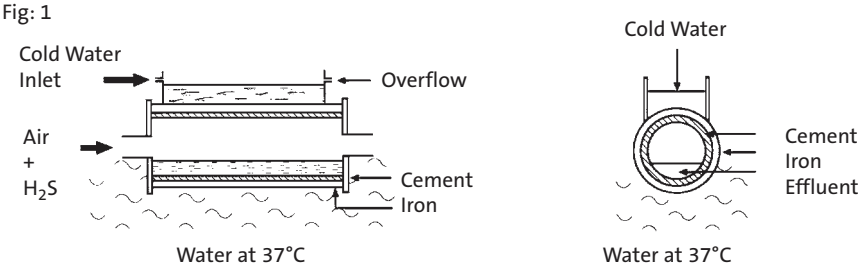
- Resistance to septic attack
- Resistance to chemical attack
- Resistance to abrasion

High Alumina Cement Mortar Lining (Integral range)

Resistance to Septic Attack

Sewers are occasionally at risk from attack due to the septicity of effluents, particularly during periods of low flow or high temperature. A two year test (see fig 1) to compare the resistance of High Alumina and other cements found that High Alumina cement offers excellent resistance to septic attack.

Fig: 1



Type of Cement	Attack depth at water line
Blast Furnace	1.7mm to 2mm
Portland A	1.9mm to 2.3mm
Portland B	1.7mm
Sulphate Resisting	4.4mm
High Alumina	0.6mm (surface layer only)

Resistance to Chemical Attack

Sewers are at risk from attack by chemicals found in industrial discharges. Table 26 shows the resistance of high alumina cement, compared to ordinary Portland cement, against some common aggressive substances.

Table 26: Resistance of High Alumina Cement vs. Portland Cement

Effluent Example	Aggressive Substance	Limitation of Resistance (mg/2)	
		Portland Cement	High Alumina Cement
Chemical Condensate	Ammonia	< 30	< 2000
Effluents	Magnesium	< 300	No limit
Mine Waters	Sulphates	< 400	No limit
Raw Waters	CO_2	< 20	No limit
	pH Range	> 5.5	4 to 12

The chemical resistance of Saint-Gobain PAM UK Integral range under maximum allowable concentrations at 20°C is given in table 27.

Table 27: Chemical Resistance

Chemical	Pipe Linings	Fittings	Gasket Nitrile
Alcohols			
Ethanol	50%	No limit	No limit
Methanol	50%	No limit	No limit
Glycol	No limit	No limit	No limit
Aliphatic Hydrocarbons			
White Spirit	No limit	No limit	No limit
Petrol, Diesel, Gas, Oil	No limit	No limit	No limit
Kerosene	No limit	No limit	No limit
Aromatic Hydrocarbons			
Xylene Toluene	No limit	No limit	No limit
Benzene, Styrene, Naphtha	No limit	No limit	Not suitable
Oils			
Lubricants, Petrol, Derivatives	No limit	No limit	No limit
Organic	No limit	No limit	No limit
Detergents			
Teepol	No limit	No limit	No limit
Water			
Soft Water	No limit	No limit	No limit
Saline Solution	No limit	10%	No limit
Distilled Water	No limit	No limit	No limit
Chlorinated Water	No limit	No limit	No limit
Chlorinated Solution			
Trichloroethylene	No limit	10%	Not suitable
Chloroform	No limit	10%	Not suitable
Genklene	No limit	10%	Not suitable
Acids			
Actic	40 ppm	40 ppm	No limit
Chromic	10 ppm	10 ppm	No limit
Citric	20 ppm	20 ppm	No limit
Hydrochloric	3 ppm	3 ppm	No limit
Lactic	15 ppm	15 ppm	No limit
Nitric	6 ppm	6 ppm	No limit
Oxalic	12 ppm	12 ppm	No limit
Phosphoric	10 ppm	10 ppm	No limit
Sulphuric	10 ppm	10 ppm	No limit
Tannic	200 ppm	10%	No limit
Tartaric	50 ppm	50 ppm	No limit
Bases			
Ammonia	18%	40%	No limit
Aniline	No limit	No limit	No limit
Dimethylamine	0.6%	No limit	No limit
Phenol/Cresol	No limit	No limit	No limit
Potassium Hydroxide	560 ppm	500 ppm	No limit
Pyridine	No limit	No limit	No limit
Quinoline	No limit	No limit	No limit
Sodium Hydroxide	400 ppm	400 ppm	No limit
Trimethylamine	No limit	No limit	No limit
Salts			
Sodium Chloride	25%	10%	No limit
Potassium Chloride	25%	10%	No limit
Ammonium Sulphate	5%	10%	No limit

Please consult us regarding the suitability of Integral for conveyance of other industrial effluents.

Resistance to Abrasion

Abrasion is the degradation of the internal lining of the pipe due to the impact of solid particles contained in the effluent.

It is likely to be a problem in the following instances:
a) Combined sewers conveying surface waters, where there is likely to be a high concentration of solids.
b) Steep slopes, leading to high effluent velocity.
c) Industrial effluent, where a high concentration of solid particles is envisaged.

High alumina cement lining used by Saint-Gobain PAM UK offers excellent resistance to abrasion. The lining allows regular maximum flow rates of 7m/s with minimal abrasive attack in each of the applications.

The effect of abrasion can be calculated from the formula: $U=K \times V^3 N^{1/2} 10^{-4}$

U= Wear in mm per annum
K= The coefficient characteristic of the material (the lower the value, the greater the resistance to abrasion)
V= Flow rate m/s
N= Characteristic of particle abrasiveness (according to the "Miller Index")

Table 28 demonstrates the superior abrasion resistance of High Alumina cement in comparison with most other common sewer pipeline materials. As greater effluent velocities can be permitted, savings at the design stage can be achieved by avoiding manhole backdrops or flow control chambers on steep inclines.

Table 28 Abrasion resistance of High Alumina Cement vs. Other materials

Abrasive	K value
Basalt/Polyurethane	5 to 15
High alumina cement/Natural rubber	15 to 30
Unlined iron	30 to 50
Blast furnace cement/concrete/PIC	50 to 100
GR	300
Asbestos cement	> 1000

The lower the K value, the greater the resistance to abrasion.

Special requirements

Intergral pH1

For effluents <pH4 or >pH12 Saint-Gobain PAM UK plc offers a pH1 pipe-system. For information please contact Technical Sales Department, Tel: 0115 930 0700.

Lining Thickness & Condition: Water & Sewerage pipe linings

Thickness

Lining thicknesses for pipes are in accordance with the latest version of BS EN 545/BS EN 598. The standard allows for the lining thickness to taper down at the end of pipes and fittings. Please refer to BS EN 545/BS EN 598 for lining thicknesses.

Lining Condition

The surface of the lining will be substantially smooth but may occasionally contain longitudinal and circumferential shrinkage cracks which do not affect the stability of the lining. The widths of the cracks and any radial displacement at the cracks will not exceed the values given in BS EN 545/BS EN 598. These shrinkage cracks are permissible under the relevant product standards and close on continuous exposure to water - a process known as autogenous healing. Jointing surfaces i.e the inside of sockets and flange faces are free from cement mortar.

Installation Instructions

For guidance on testing and commissioning of pipelines, lining repair, installation guidance and storage instructions please download the Installation Guide from our website, www.saint-gobain-pam.co.uk.

Section 5

Pipe Coating

PAM SAINT-GOBAIN

External Coatings

Saint-Gobain PAM UK offers a range of proven external coatings to suit all types of ground conditions. The standard coating is Zinalium, Saint-Gobain PAM UK's zinc and aluminium alloy system. First launched with PAM Natural Water pipe. This coating is now available on PAM Integral Plus sewer pipe and on Blutop water pipe as standard.

For extreme soil conditions a wide variety of special coating systems can be offered.

To ensure the most cost effective and appropriate solution is supplied, Saint-Gobain PAM UK offers soil resistivity surveys, please see page 10.

Table 29: Matrix of coating available from Saint-Gobain PAM UK.

Product Range	Dia Range	Zinalium (Zinc/ Aluminium) + Epoxy	Zinc & Bitumen	Zinc & Epoxy	PE Sleeving	Tape Wrap 25mm or 55%	ZM-U	PE (Polyethylene)	PUX (Polyurethane)
Water Pipe	OD75 - OD160	Standard (Blutop)				Special request			
	DN80 - DN600	Standard (Natural)				Special request		Special request (TT range)	
	DN700	Standard (Natural)	Optional		Special request*	Special request		Special request (TT range)	
	DN800	Standard (Natural)	Optional		Special request*	Special request			Special request (TT range)
	DN900-DN1000	Optional	Standard (Classic) - Black		Special request*	Special request			Special request (TT range)
	DN900-DN2000		Standard (Classic) - Black		Special request	Special request			Special request (TT range)
Sewerage Pipe	Uti DN800	Standard (Integral Plus)		Standard (Integral)	Special request *	Special request		Special request uti DN700 only (TT range)	
	DN900-DN2000			Standard (Integral)	Special request	Special request			Special request DN800-2000 (TT range)
Directional Drill pipes - Water & Sewer	DN100-DN700						Standard (PAM Direxional)		

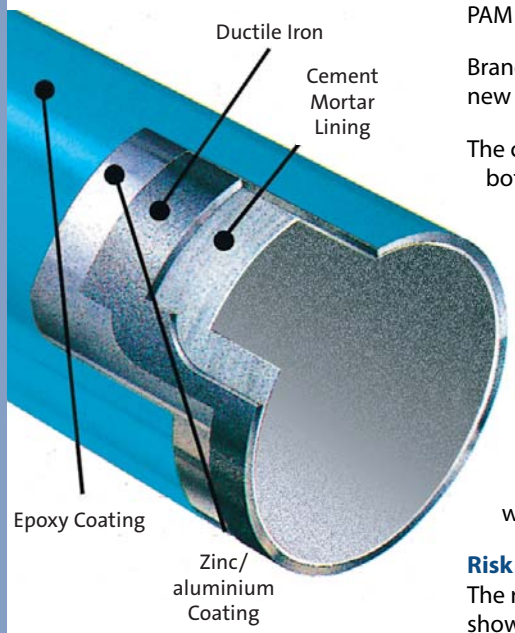
* Potentially required if Zinalium is not used

Table 30: Shows the Recommended Protection System

Ground Conditions	Blutop (OD 75 - 160)	Natural (DN 80 – 800)	Zinc and Bitumen (DN 900 – 2000)	Integral Plus (DN 80 – 800)	Integral (DN 80-2000)	TT Coating	Tape Wrap 25mm Overlap	Tape Wrap 55% Overlap	PE Sleeving	PE Sleeving + Imp. Bed & Surround
Natural soils with resistivity above 2500 ohm/cm	R	R	R	A	R	a	a	a	a	a
Natural soils with resistivity between 1500-2500 ohm cm without water table	R	R	R	A	R	a	a	a	a	a
Natural soils with resistivity between 1500-2500 ohm cm with seasonal water table or permanent water-loggging	R	R		R		a	a	a	A	a
Natural soils with resistivity between 500-1500 ohm cm without water table	R	R		R		a	a	a	A	a
Natural soils containing coal, ironstone or peat						R	A	a		A
Natural soils with resistivity below 500 ohm-cm						R	A	a		A
Natural soils with resistivity between 500 and 1500 ohm cm with seasonal water table or permanent waterloggging	R	R		R		R	A	a		A
Made up ground with light chemical contamination. e.g. Refuse sites. Farmyard waste without water table						R	A	a		A
Made up ground with light chemical contamination. e.g. Refuse sites. Farmyard waste with water table						R	A	a		
Stray electrical currents. e.g. Crossing cathodically protected pipelines and DC traction systems						R	A	a		
Stray electrical currents. e.g. Parallel to cathodically protected pipelines and DC traction systems						A	A	a	R	
Natural soils with a pH< 5 without water table						R	A	a		A
Natural soils with a pH< 5 with water table or permanent water-logging						R	A	a		
Made up ground with flints, clinker etc material likely to cause mechanical damage with or without water table						R		A		A
Made up ground with solid chemical contamination. Ex-industrial or chemical sites						R		A		A
Made up ground with liquid chemical contamination. Ex-industrial or chemical sites						R		A		
Tidal waters. E.g. estuarine conditions						R		A		

R = Recommended coating	A = Alternative recommended coating option	a = technically acceptable (but not recommended) coating option

PAM Blutop, Natural and Integral Plus



The exceptional protection of Zinalium

Saint-Gobain PAM UK supplies a zinc/aluminum coating (Zinalium) for all water and sewer pipes uti DN800 as standard. The development of this coating is an example of Saint-Gobain PAM UK's continual research and development programme.

Branded as Pam Natural (Water) and PAM Integral Plus (Sewer) and later extended to the new Blutop range, this coating is a revolutionary and evolutionary pipeline product.

The coating utilises an 85% zinc / 15% aluminium alloy which increases the longevity of both the active and barrier protection for the pipe. This alloy, coupled with an epoxy topcoat (Blue for Pam Blutop & Natural and Red for PAM Integral Plus), gives significant benefits compared to previously available coating systems.

Advantages:

Ease and Speed of Pipe Laying

The PAM Blutop, Natural and Integral Plus system provides a complete protection system in nearly all natural soil conditions and eliminates the need for PE-sleeving and the associated time consuming installation. Consequently, the time to install pipes will reduce significantly.

Risk Elimination

The risk of specifying an inappropriate protective system is virtually eliminated as tests have shown that PAM Blutop/Natural/Integral Plus is suitable for use in more than 90% of UK soil conditions and is insensitive to soil variations over short distances.

Extended Service Life

The use of an external coating consisting of a zinc/aluminium alloy extends the longevity of ductile iron pipes. Increasing the weight of Zinc does not give the same degree of improvement, nor does it extend the range of soils for which the pipe is suitable. A performance study of the PAM Natural system in comparison to enhanced zinc systems, Technical Reference Document, SGP-Ref: TP1H/TRD/0303/March 2003 is available on request.

Reduced Stock Levels

With one coating type covering the vast majority of UK soil conditions, stock may be reduced both at the end customer, and throughout the supply chain.

Robustness

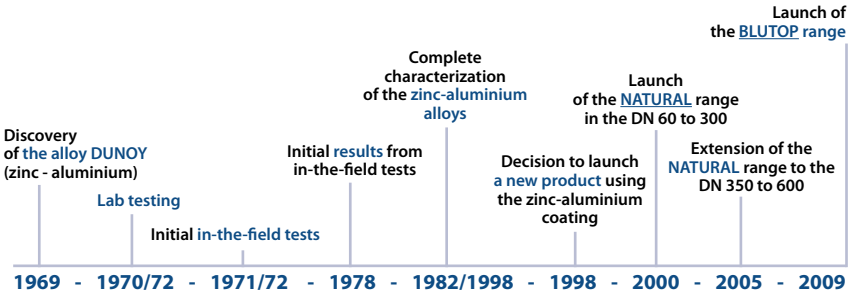
The PAM Blutop/Natural/Integral Plus system has been tested under 'real life' conditions and has been shown to withstand the extremes of handling, transportation and laying without compromising the protective coating.

Reduced Work 'On-site'

With the elimination of the need to apply polyethylene sleeving to PAM Blutop/Natural/ Integral Plus pipes and the reduction in pre-jointing preparation, installation times with PAM pipes are reduced, thus increasing productivity and reducing consequential delay.

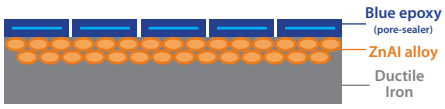
Zinc/Aluminium Alloy

40 years of Research and Development



Using zinic aluminium alloys instead of zinc means:

- A Galvanic protection offered by zinc
- An Imporoved chemical and mechanical stability of the coating thanks to the use of aluminium



The protective layers stick to the ductile iron pipe perfectly, covering the entire barrel and socket.

The scientific explanation

Zinalium offers an active protection to ductile iron pipes, thanks to the power of galvanic protection offered by the alloy ZnAL 85-15.

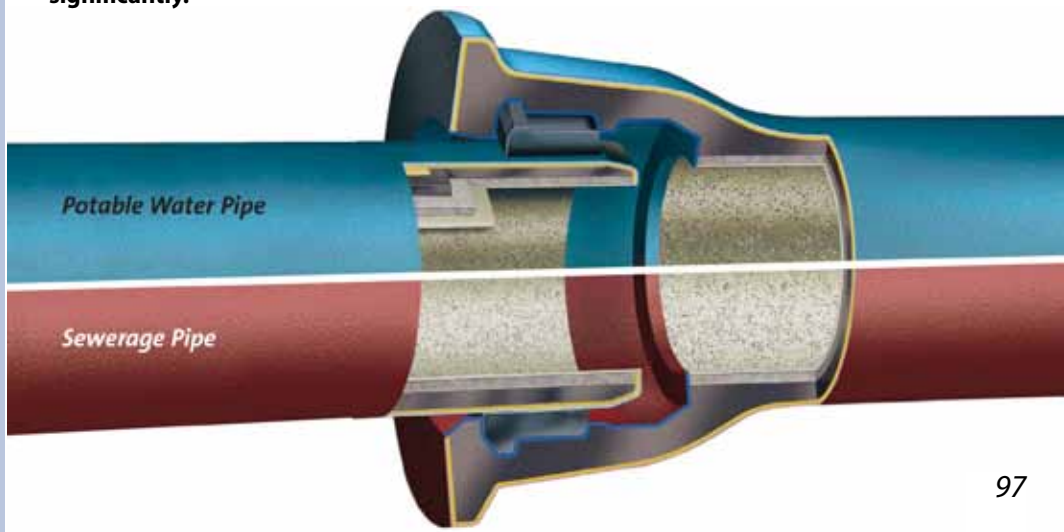
Zinc ions within the alloy provide sacrificial galvanic protection to areas which may have been damaged during the transportation, handling or installation of the pipe.

Once the pipe has been installed and is in contact with the surrounding soil the zinc/ aluminum alloy provides a long term barrier through the formation of a stable insoluble protective layer.

Although a coating of pure zinc provides galvanic protection for the ductile pipe, it is 100% active, and its effect can be rapidly depleted. Similarly, although zinc provides a protective layer when it transforms into a dense, impermeable layer of zinc salts, these salts can only form under specific conditions.

If zinc transforms too quickly the resulting passive layer is of poor quality. The presence of aluminum slows this conversion, by considerably decreasing the rate at which the zinc is transformed and creates a more stable protective layer compared to zinc alone, whilst allowing the sacrificial galvanic healing process to take place.

The dual structure (islands of zinc within the aluminium skeleton) of the alloy used on PAM Blutop/Natural/Integral Plus means the duration of active protection increases significantly.



High performance epoxy coating > 100µm

Metallic zinc/aluminium coating (≥400g/m²)

Epoxy socket coating (>40µm)

Cement mortar lining (System XL water/HAC Sewer)

Ductile Iron

The quantity of alloy applied

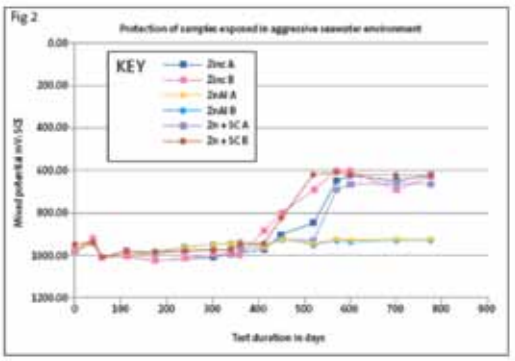
Saint-Gobain PAM has increased the quantity of metallic coating from 200g/m^2 (minimum specified by standard EN 545 and EN 598) to 400g/m^2 of zinc aluminium alloy which results in exponential increase in the longevity of the coating, offering greater protection in a wider range of soils.

The very significant increase in the thickness of the coating means:

- Improved formation of long-term protective layers
- Improved performance of galvanic protection provided by the zinic aluminium alloy
- Greater mechanical resistance of the protective layer

Will increasing the thickness of zinc have the same effect as Zinalium?

Increasing the weight of zinc does not significantly extend the lifetime when exposed to an aggressive environment. The extra zinc is rapidly consumed by auto-corrosion and does not produce the stable conversion layer that is needed for long term durability. Fig 2 shows how the protection given to ductile iron by zinc rapidly ceases in aggressive environments.



A negative potential of more than 750 mV (with respect to a saturated calomel electrode) is required to prevent corrosion of the ductile iron. This graph shows how that potential changes after about 450 days for the zinc coatings but remains constant for the zinc/aluminium coating.

The role of the epoxy layer

With ZINALIUM, the conventional black pore-sealer is replaced by blue epoxy coating (signal blue for the Natural range and ultramarine for the Blutop range) or by red epoxy coating (for the Integral Plus range).

This tough porous epoxy coating is applied at an optimum thickness to provide durability and robustness to the coating but also allow the galvanic action of the zinc to continue.

The main Improvements provided by the epoxy includes:

- Greater chemical stability
- Better long-term performance in soil as it ages
- Better control of the zinc-aluminium alloy conversion process (controlled porosity allows the zinc's galvanic action to take place)
- Better mechanical resistance of the coating (during transport and use), scrape tests fail to expose bare metal
- Improved resistance to solvents present in the soil (contaminated soil)
- Possibility of colouring the pipe to enable easier identification
- Better organoleptic (taste/odour) performance
- Severe impact and drop tests fails to crack the epoxy seal (WRc Ref, UC 3841)

Supplementary Coating Systems

Introduction

Saint-Gobain PAM UK offers a range of external coating systems to suit different ground conditions. PAM Blutop (OD 75-160), Natural (DN80-800) and Integral Plus (DN80-800) pipe is the standard pipeline product from Saint-Gobain PAM and can be used in the majority of soil conditions found in the U.K.

Zinc + a Topcoat

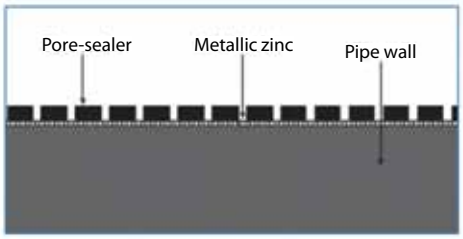
For diameters greater than DN800 Saint-Gobain PAM UK offers a coating system of zinc plus a top coat. For water (PAM Classic) the top coat is bitumen and for waste water and sewage (PAM Integral), red epoxy is applied.

Zinc coating is an active protection, due to the galvanic action of the zinc/iron.

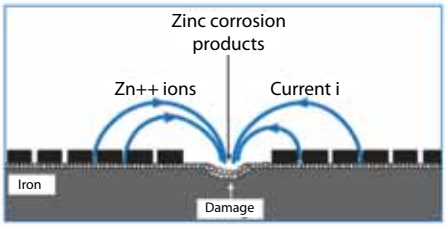
The Zinc and top coat works in two ways:

Formation of a stable protective layer
Under the top coating, the zinc is transformed into a passive barrier protection layer, which adheres tightly to the iron surface.

Damage self-healing
If the zinc coating is damaged during transport and laying, the zinc metal adjacent to the damage site cathodically protects the exposed iron until a healing layer of zinc transformation products forms over the damage site.



Stable protective layer



Damage self-healing

200g/m² Zinc + Bitumen: Large Diameter Water Pipes DN900-2000

In the diameter range DN900-2000 Saint-Gobain PAM UK offers a ductile iron pipe externally coated with 200g/m² zinc plus bitumen topcoat . This allows a high degree of protection against the majority of soil conditions. This protection system conforms to the latest version of BS EN 545.

200g/m² Zinc + Red Epoxy: PAM Integral DN80-2000

PAM Integral pipes are supplied with a 200g/m² zinc coating and finished with a tough red epoxy layer applied in accordance with BS EN 598. The PAM Integral coating provides a high degree of protection in most soil conditions. In specific conditions where Saint-Gobain's standard offer is not suitable, the use of PE sleeving may be appropriate.

Special Applications

In certain soils and under specific conditions, PAM Blutop/Natural/Integral Plus and PAM Classic/Integral, may not offer sufficient protection. For these instances, Saint-Gobain PAM UK can offer various alternative protection systems. See table 30 detailing types of soil conditions and the appropriate recommended protection system.

Zinc + PE Sleeving

How Sleeving Works:

The principal function of the polyethylene sleeving is to separate the pipe from contact with the soil environment thus preventing non-uniform contact with the soil solids. The system is therefore relatively insensitive to minor handling damage and the presence of ground water inside the sleeving. Where major damage to the sleeving is caused however, repairs must be carried out before laying.

Application of PE sleeving

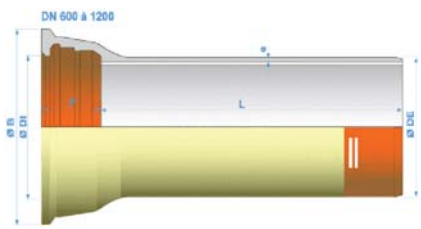
Polyethylene sleeving may be obtained from Saint-Gobain PAM UK for application on site. Polyethylene sleeving can be fitted on site and no special equipment is needed other than that necessary to lift the pipes and fittings.

Details on the size of sleeving required for each pipe diameter with the weight and approximate length of sleeving per standard roll can be found in the Installation Guide, www.saint-gobain-pam.co.uk

Zinc + TT (PEC and PUX Coating)

Extruded polyethylene - PEC coating

Sprayed polyurethane - PUX coating



Saint-Gobain PAM UK is also able to supply an external protective systems called TT (Total Terrain). The TT external coating system comprises thick organic coatings. (Extruded polyethylene PEC DN80-700 & sprayed polyurethane PUX DN800-2000).

How TT works:

The TT external coating system uses thick organic coatings. These coatings provide a complete barrier between the pipe and the surrounding soil. The TT coating system is suitable for use in highly aggressive soils.

Application of TT

DN80-700 pipes are supplied with a nominally 2mm thick polyethylene coating, which is applied using a heat bonding adhesive, co-extrusion technique. DN800-2000 pipes are supplied with a sprayed polyurethane coating, 900 microns thick. The TT coating system minimises risk of damage during transportation and installation.

Table 31: TT Water Pipe, Rapid Joint

DN	Product Code	Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Pipe Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØB)	Weight (Kg/m)
80	SSA80F60AG	C40	40	5	6000	98	167.0	13.5
100	SSB10F60AG	C40	40	5	6000	118	188.0	16.5
150	SSB15F60AG	C40	40	5	6000	170	242.0	25.0
200	SSB20F60AG	C40	40	5	6000	222	295.0	35.0
250	SSB25F60AG	C40	40	5	6000	274	352.0	46.0
300	SSB30F60AG	C40	40	5	6000	326	409.2	58.5
350	SSB35G60AG	C30	30	4	6000	378	464.2	71.5
400	SSB40G60AG	C30	30	4	6000	429	516.2	83.5
450	SSB45G60AG	C30	30	4	6000	480	574.2	98.5
500	SSB50G60AG	C30	30	4	6000	532	629.2	115.0
600	SSB60G60AG	C30	30	4	6000	635	738.5	115.5
700	SSB70G60AG	C25	25	4	6000	738	863.0	223.0
800	SSB80H70AH	C25	25	4	6950	842	974.0	233.0
900	SSB90H70AH	C25	25	4	6950	945	1082.0	283.5
1000	SSC10H70AH	C25	25	4	6960	1048	1191.0	339.0
1200	SSC12H79AH	C25	25	4	8190	1255	1412.5	467.0
1400	SSC14H80AH	C25	25	3	8170	1462	1592.1	641.0
1600	SSC16H80AH	C25	25	3	8160	1668	1815.9	815.5
1800	SSC18H80AH	C25	25	2.5	8150	1875	2032.2	1004.0
2000	SSC20H80AH	C25	25	2	8130	2082	2259.0	1220.0

Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- For information on Rapid gaskets water please refer to page 70
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) can easily be calculated for the above pipes by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Table 32: TT Water Pipe, Universal Vi Joint

DN	Product Code	Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Pipe Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØB)	Weight (Kg/m)
80	SGA80N60AG	C100	60	3	5970	98	159	16.0
100	SGB10N60AG	C100	56	3	5970	118	188	20.0
150	SGB15N60AG	C64	48	3	5970	170	230	29.5
200	SGB20N60AG	C64	43	3	5970	222	290	40.5
250	SGB25N60AG	C50	39	3	5970	274	350	54.0
300	SGB30N60AG	C50	34	3	5970	326	408	68.0
350	SGB35N60AG	C40	25	3	5970	378	463	85.0
400	SGB40N60AG	C40	20	3	5970	429	510	100.5
450	SGB45N60AG	C40	16	3	5970	480	570	119.0
500	SGB50N60AG	C40	16	2	5970	532	625	143.0
600	SGB60N60AG	C40	16	2	5970	635	740	192.5

Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- For information on Rapid gaskets water please refer to page 70
- For information on Universal Vi Anchoring gasket please refer to page 75
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) can easily be calculated for the above pipes by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Table 33: TT Water Pipe, Universal Ve Joint

DN	Product Code	Pipe Class	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Pipe Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØB)	Weight (Kg/m)
100	SFB10N60AG	C100	64	3	5970	117.8	188	20.0
150	SFB15N60AG	C64	60	3	5970	169.7	230	29.0
200	SFB20N60AG	C64	52	3	5970	221.6	290	40.5
250	SFB25N60AG	C50	46	3	5970	273	350	54.0
300	SFB30N60AG	C50	41	3	5970	324.9	408	68.0
350	SFB35N60AG	C40	38	3	5970	376.8	463	85.0
400	SFB40N60AG	C40	35	3	5970	427.7	510	99.5
450	SFB45N60AG	C40	32	3	5970	478.6	570	119.0
500	SFB50N60AG	C40	30	2	5970	530.5	625	143.0
600	SFB60N60AG	C40	30	2	5970	633.3	740	192.5
700	SFB70N60AG	C30	27	2	5970	736.6	855	234.0
800	SFB80N70AH	C30	25	1.5	6890	840.4	980	282.0
900	SFB90N70AH	C30	25	1.5	6870	943.2	1087	349.0
1000	SFC10N70AH	C30	25	1	6880	1046	1191	403.0
1200	SFC12G80AH	C30	25	1	8150	1252.3	1415	561.0

Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- For information on Rapid gaskets water please refer to page 70
- For information on Universal Ve Locking ring please refer to page 77
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) can easily be calculated for the above pipes by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Table 34: TT Sewer Pipe, Rapid Joint

DN	Product Code	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Pipe Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØB)	Weight (Kg/m)
80	TSA80S60BG	40	5	6000	98	167.0	13.5
100	TSB10S60BG	40	5	6000	118	188.0	19.0
150	TSB15S60BG	40	5	6000	170	242.0	23.5
200	TSB20S60BG	40	5	6000	222	295.0	32.5
250	TSB25S60BG	38	5	6000	274	352.0	42.0
300	TSB30S60BG	35	5	6000	326	409.2	53.0
350	TSB35S60BG	32	4	6000	378	464.2	69.0
400	TSB40S60BG	30	4	6000	429	516.2	81.5
450	TSB45S60BG	29	4	6000	480	574.2	95.0
500	TSB50S60BG	28	4	6000	532	629.2	111.0
600	TSB60S60BG	26	4	6000	635	738.5	141.0
700	TSB70E60BG	29	4	6000	738	863.0	206.0
800	TSB80E69BH	28	4	6950	842	974.0	243.5
900	TSB90E69BH	27	4	6950	945	1082.0	296.0
1000	TSC10E69BH	26	4	6960	1048	1191.0	348.0
1200	TSC12N79BH	29	4	8190	1255	1412.5	513.0
1400	TSC14N80BH	28	3	8170	1462	1592.1	686.0
1600	TSC16N80BH	27	3	8160	1668	1815.9	859.0
1800	TSC18N80BH	27	2.5	8150	1875	2032.2	1045.0
2000	TSC20N80BH	26	2	8130	2082	2259.0	1252.0

Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- For information on Rapid gaskets sewer please refer to page 71
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) can easily be calculated for the above pipes by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Table 35: TT Sewer Pipe, Universal Ve Joint

DN	Prod code	Allowable Operating Pressure (PFA)	Allowable Deflection (Degree)	Pipe Length (mm)	Spigot OD mm (ØDE)	Socket OD mm (ØB)	Weight (Kg/m)
100	Enquire	64	3	5970	118	188	20.0
150	Enquire	60	3	5970	170	230	29.0
200	TFB20N60BG	52	3	5970	222	290	40.5
250	TFB25N60BG	46	3	5970	274	350	54.0
300	TFB30N60BG	41	3	5970	326	408	68.0
350	TFB35N60BG	38	3	5970	378	463	85.0
400	TFB40N60BG	35	3	5970	429	510	100.0
450	TFB45N60BG	32	3	5970	480	570	118.5
500	TFB50N60BG	30	2	5970	532	625	137.5
600	TFB60N60BG	30	2	5970	635	740	179.0
700	TFB70N60BG	27	2	5970	738	855	229.0

Notes.-
- Lengths and weights are provided for estimation purposes only and actual values may vary from those provided in these tables
- For information on Rapid gaskets water please refer to page 70
- For information on Universal Ve Locking ring please refer to page 77
- Allowable test pressure (PEA) and allowable maximum operating pressure (PMA) can easily be calculated for the above pipes by using the following formulas:
  PMA = PFA x 1.2
  PEA = PMA + 5 bar

Table 36: Socket sleeve for TT Pipes

DN	Product Code	Material	Description
80	JSA80YAT	EPDM	Rubber sleeve
100	JSB10YAT	EPDM	Rubber sleeve
150	JSB15YAT	EPDM	Rubber sleeve
200	JSB20YAT	EPDM	Rubber sleeve
250	JSB25YAT	EPDM	Rubber sleeve
300	JSB30YAT	EPDM	Rubber sleeve
350	205584	MPSM	Heat shrink sleeve
400	111234	MPSM	Heat shrink sleeve
450	110301	MEPS	Heat shrink sleeve
500	110078	MPSM	Heat shrink sleeve
600	123649	MPSM	Heat shrink sleeve
Above 700mm sleeve generally not required. For further information please contact our Technical Sales Department, Tel 0115 930 0700			
800 - 2000	158030	HEPS	Heat shrink Roll (30m)
800 - 2000	158098	HEPS	Raychem fastners - Pk 25

Zinc + ZM-U

For trenchless installations Saint-Gobain PAM UK can offer PAM Direxional, a ductile iron pipe specifically designed for trenchless installation. PAM Direxional (DN100-700) has a coating which is able to cope with the rigors of trenchless installations. 200mg/m^2 of Zinc + ZM-U is applied to Pam Direxional pipes to ensure protection from potentially damaging conditions. ZM-U provides protection against damage to pipes being pulled through rocky conditions and performs in the most extreme conditions.

How ZM-U works:

ZM-U is a fibre cement coating applied on top of 200mg/m^2 of zinc. The tough nature of the ZM-U coating means that there are no special handling requirements. ZM-U provides a total barrier between the pipe and the surrounding ground conditions eliminating any risk of corrosion. The coating provides an extremely robust protection system and no further protection is required.

Zinc + Tape Wrap

Tape Wrapping

In highly aggressive soils a more robust type of protection may be necessary. Saint-Gobain PAM UK is able to supply pipes wrapped with heavy duty self-adhesive tape throughout the diameter range. The tape consists of a combined anti-corrosion mastic and pressure sensitive adhesive, laminated to a flexible PVC backing.

How Tape Wrap Works:

The tape exhibits high resistance to bacterial attack, low water vapour transmission and low water absorption as well as providing high electrical resistance.

Application of Tape Wrap

Tape is factory applied around the body of the pipe. The tape is applied around and along the pipe until it covers the pipe from the back of the socket to a point sufficiently removed from the spigot such that it will not interfere with jointing. Each wrap overlaps the preceding one by approximately 25mm or 55%, depending upon the degree of protection required. The tension in the tape results in a protective wrap which adheres strongly to the pipe body, completely isolating it from the soil.

Installation and Handling

For guidance on how to install and handle pipes and fittings with any of the protection systems in this product guide please refer to the Installation Guidelines on our website: www.saint-gobain-pam.co.uk

Cathodic Protection

Ductile iron mains which contain sections that may be buried adjacent to pipelines with cathodic protection systems or other sources of electrical currents such as train or tram lines may be subject to eddy currents. In these circumstances further advice should be sought from Technical Sales Department, Tel: 0115 930 0700.

The use of Cathodic protection systems for new ductile iron mains is not recommended by Saint-Gobain PAM UK for the following reasons:

- Other effective and maintenance free protection systems provide suitable protection for iron pipelines, e.g. PAM Blutop/Natural/Integral Plus, polyethylene sleeving and tape wrapping.
- Most types of joint used in ductile iron pipelines provide a degree of insulation between both pipes and fittings. This insulation prevents the establishment of the long-line corrosion currents which are a feature of welded steel pipelines.

If a cathodic protection system is applied to a ductile iron pipeline, it will be necessary to bond across the joints to guarantee electrical continuity. This will add significantly to the cost of installation, and takes away the advantages related to the insulating joints.

Epoxy Coated Fittings DN80-2000

All ductile iron fittings in the sizes DN80-2000 are supplied with an epoxy coating conforming to BS EN 14901.

Potable water fittings are coated internally and externally with blue epoxy. The blue epoxy is approved to BS 6920.

Coated products are also approved by the Secretary of State under Regulation 31.4.a of the Water Supply (Water Quality) Regulations 2000. These are listed as "PAM Natural Pipeline Components" in the DWI list of approved products.

Sewerage fittings are internally and externally coated with a red epoxy.

Compatibility with Pipe Systems

Epoxy coated fittings are designed to form a complete system with Saint-Gobain PAM UK pipes. The tough epoxy is able to cope with aggressive soil conditions without the need for additional protection and PAM epoxy coated fittings are therefore suitable for use in conjunction with any pipe coating systems offered by Saint-Gobain PAM UK.

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Fax:+44(0)115 932 9513

Products and services available from Saint-Gobain PAM UK:

Blutop™

A small diameter, push fit water pipe system compatible with plastic pipe made from ductile iron. It has the added advantages of a corrosion resistant exterior coating and the innovative Ductan lining to prevent the risk of corrosion.

Natural™

A new generation of potable water pipeline products available DN80 to DN800 with a new revolutionary system of external protection, fully compliant with the requirements of BS EN 545.

Large diameter water pipes

Large diameter water pipeline products available DN900 to DN2000, fully compliant with the requirements of BS EN 545.

Integral and Integral Plus™

A complete range of sewerage pipeline products available from DN80 to DN2000, fully compliant with the requirements of BS EN 598.

Valves

A comprehensive range of valves and accessories suitable for water and sewerage applications. All valves are supplied in compliance with WRAS requirements where applicable, and manufactured in accordance with ISO 9001.

- Gate valves, resilient and metal faced DN50 to DN300
- Non return valves DN80 to DN300
- Tidal flap valves DN80 to DN600
- Air valves
- Fire hydrants
- Butterfly valves DN50 to DN2000
- Control valves

Couplings and flange adaptors

Accommodating a wide range of external diameters and pipe materials in accordance with British, European Standards and ISO 9001 requirements. A diversified range from wide tolerance fittings to dedicated products.

Induct Plus™

An installation accreditation scheme, designed to give peace of mind and confidence to water utilities and contractors in the knowledge that the ductile iron pipeline that they have purchased will be installed effectively and in its optimum condition.

Access covers and gratings

A comprehensive range of ductile iron access covers and gratings. For high performance products which meet the increasing demands from traffic to a purpose designed range for low density applications, Saint-Gobain PAM UK access cover products provide targeted solutions for the key civil engineering, utility and infrastructure sectors.

PAM Estate™

Designed to meet the requirements and expectations of the housing and commercial sectors.

Ensign™

Cast iron above and below ground drainage system BSI Kitemark approved to BS EN 877.

Used for soil and waste, rainwater, suspended, buried and bridge drainage applications, providing lifetime service for commercial and public buildings.

Ensign EEZI-FIT™

A new range of cast iron push-fit fittings and couplings in 100 diameter, Kitemarked to BS EN 877 for gravity sanitary installations.

Timesaver™

Cast iron above ground system BSI Kitemark approved to BS 416 part 2, used for soil and waste refurbishment, and external soil stacks for traditional appearance.

Cast iron below ground system BSI Kitemark approved to BS 437, favoured for under building drainage, and unstable ground conditions due to its superior strength performance.

Classical – Classical Plus™

Cast iron rainwater and gutter systems to BS 460 BBA certified. Seven gutter profiles and circular and rectangular downpipes systems supplied in a black primer coat. Classical Plus is a standard range of gutters and downpipes available in a factory applied semi-gloss black finished coat for immediate installation.

EPAMS™

A complete syphonic rainwater system, consisting of steel syphonic roof outlets and cast iron pipework to BS EN 877 BBA certified.

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