

TOPAZ

Sewerage

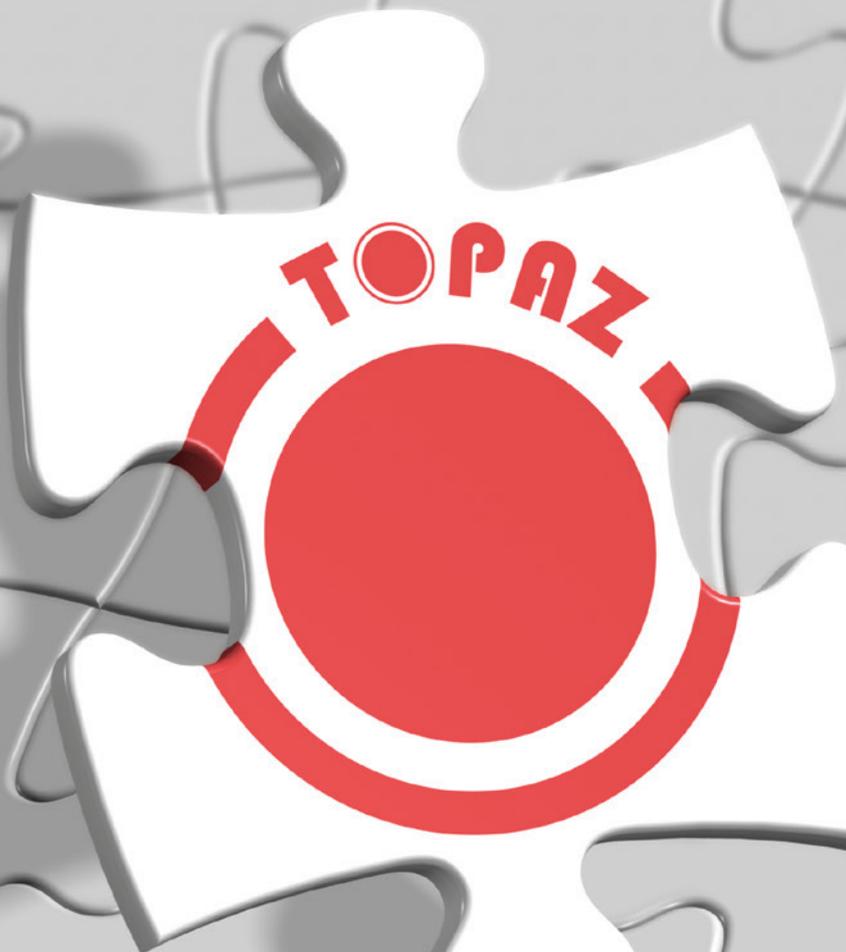
New offer - **small diameter pipes**
for **discharge**



*A revolution
in the world
of sewerage
DN/OD 75 to 160*

Comprehensive pipe solutions

PAM
SAINT-GOBAIN



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Satisfying concerns and preserving resources

Preservation of water resources and ecosystems is a major requirement for future generations.

The European directives linked to the Community policy of restoring aquatic environments, together with the regulations and codes drawn up to preserve the environment, show that industrial concerns have a major role to play in meeting these requirements.

The French law known as "Grenelle II" requires territorial authorities to enhance their knowledge of the locations and condition of their structures and networks for draining and carrying waste water.

To meet fast-growing needs on the mains drainage market, Saint-Gobain PAM has to provide reliable solutions that are economically optimized and easy to implement, while complying with the rules of good professional practice.



TOPAZ® Site

The reference

Expertise recognized worldwide



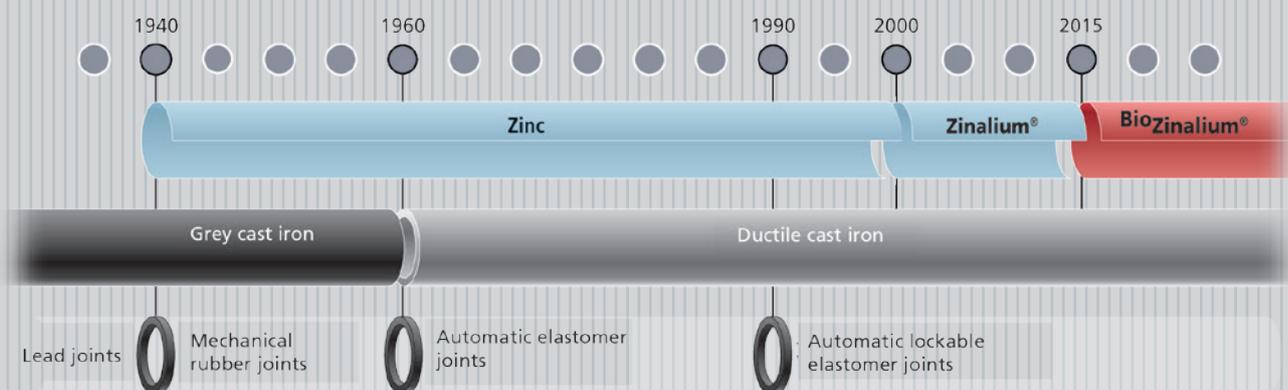
Since 1856, PAM has designed, made and marketed a complete set of solutions dedicated to mains water supplies, and sewerage systems.

Its reputation in the piping fields is based on its know-how, the reliability of its products, and the levels of services provided for customers.

110 capitals and 40,000 km of piping per year



Driving force behind innovation



PAM is consistently enhancing the performances levels of its materials, coatings and joints. Its engineers and researchers have developed over 150 inventions that have led to 1,500 patents to date. Currently, 30% of the Company's worldwide turnover stems from products launched within the last five years.

160 years of experience

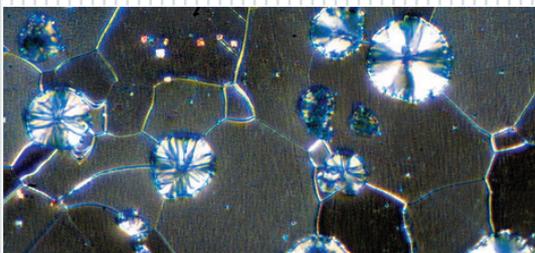
History and know-how

Set up in 1856, SAINT-GOBAIN PAM is the world leader for complete solutions involving ductile cast iron piping.

The importance attached to research and development has enabled it to combine traditional know-how with technical progress to consistently provide its customers with quality products that are reliable and ergonomic.

Ductile cast iron

Ductile cast iron is an iron/carbon/silicon alloy in which carbon exists in its pure state, in the form of spheroidal graphite.



Macrography of ductile cast iron: the graphite particles can be seen as small spheres that avoid all risk of spreading cracks.

A fully recyclable natural material

Ductile cast iron is a noble material that is 100% recycled, without limits and endlessly recyclable.

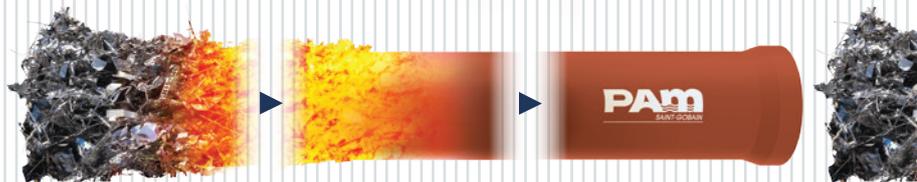
This means that it is fully recyclable without any loss of its properties and for the same use, in industrial activities that are not restrictive or hazardous.

Recycled cast iron is used as a raw material for second melts in classic metalworking.

The volume of cast iron produced by the SAINT-GOBAIN Group's PIPING activity in its factories in Europe stems mainly from recycled ferrous materials. Its factories hold ISO 14001 certification.

Exceptional mechanical properties

- Elasticity ($R_e \geq 270$ MPa)
- Breaking strength ($R_m \geq 420$ MPa)
- Impact strength
- Major elongation at break ($> 10\%$)



Actor in sustainable development

> Long service life

Durable solutions, further strengthened by our new BioZinalium® and DUCTAN® coatings.

> Eco-design

30% reduction in energy requirements over 15 years.

> Eco-laying

Natural pipe laying procedures.



Durability, Watertightness, Easy laying with TOPAZ®

A full range of small-diameter pipes dedicated to discharge mains drainage

Saint-Gobain PAM's know-how, the high safety coefficients of ductile cast iron and the performance levels of NBR joints are all combined to make the TOPAZ® sewerage pipes, designed for discharge networks, pumping stations, waste water treatment plants and special applications.

This new offer meets needs for small diameters from DN 75 to DN 160.

Manual laying

Enhancement of laying conditions is a core strength for the TOPAZ® range: transport to locations that are difficult to access, laying in trenches, assembly in cramped spaces, etc.

The pipes can be carried by hand by two people, without any mechanical equipment, and fitted together with a crow bar.

Reliable coatings designed to last

TOPAZ® features a BioZinalium® outer coating that provides durable, reliable protection from localized biocorrosion, and a DUCTAN® inner coating that stands up to the harshest acid or alkaline effluents (pH1 to 10).

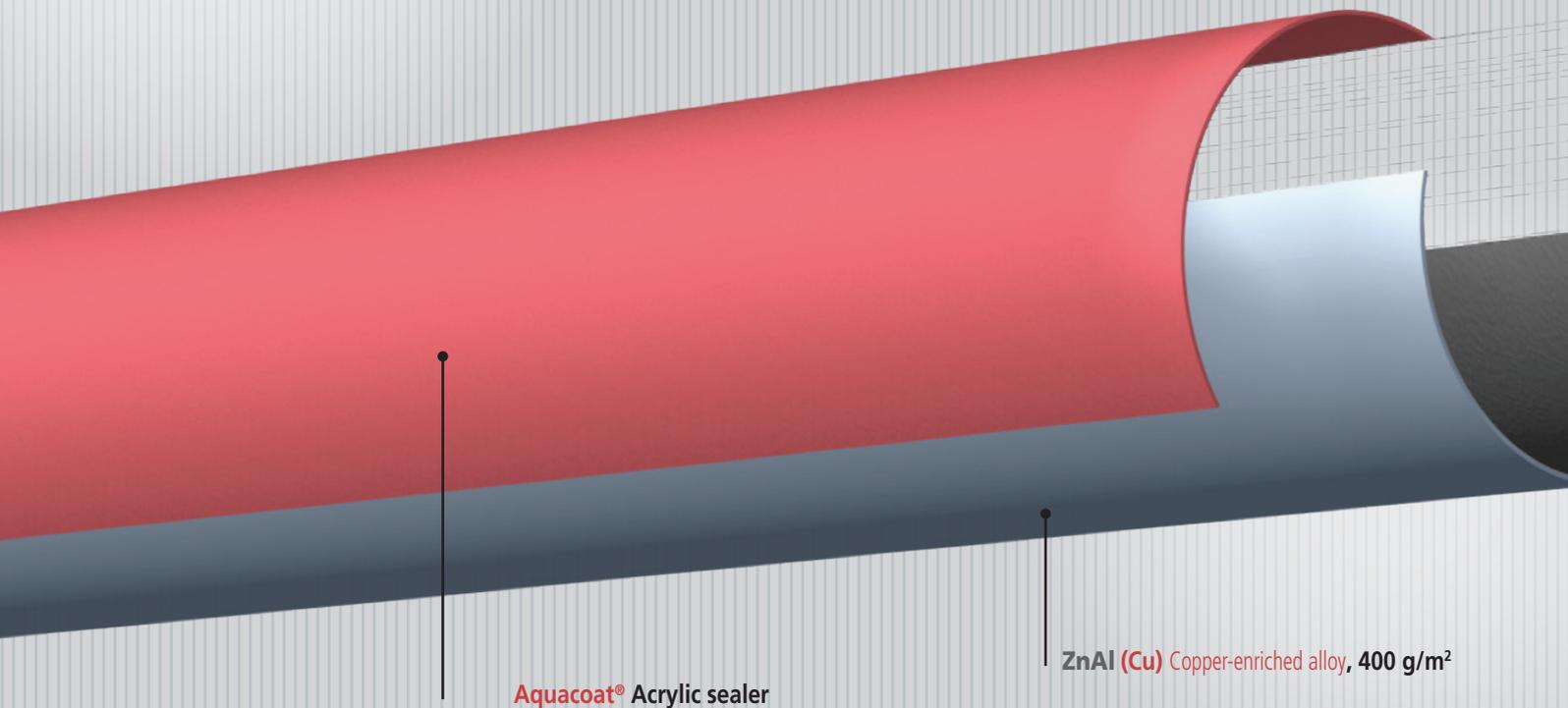


TOPAZ® is laid quickly and efficiently, making the job easier for the technical teams.



Durability

TOPAZ[®] coatings, the successful outcome of Saint-Gobain PAM technology



For a very long time now, Saint-Gobain PAM's research work on Zinc-based coatings has helped to enhance protection of underground cast iron piping all over the world. BioZinalium[®] is Saint-Gobain PAM's concrete response to the legitimate concerns of investors, managers and operators of water networks.

The BioZinalium[®] outer coating consists of 2 layers :

- A layer of 85-15 Zinc-Aluminium alloy enriched with Copper, with a minimum surface density of 400g/m², applied by spraying molten metal on the surface of the cast iron.
- A red, semi-permeable Aquacoat[®] protective layer, made of aqueous phase acrylic, with an average thickness of 80 microns.

Protection from corrosion

The BioZinalium[®] coating maintains the "active" properties of the Zinalium[®] coating when it in contact with the ground, i.e.:

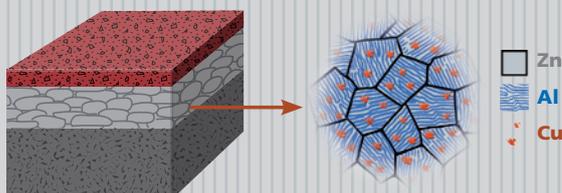
- Formation of a closely bonded, stable protective layer (Zinc hydroxides, etc.), that covers the entire surface of the underground piping;
- Restoration of the continuity of the protective layer at points that have suffered limited damage (impacts during transport, scraping during backfilling).

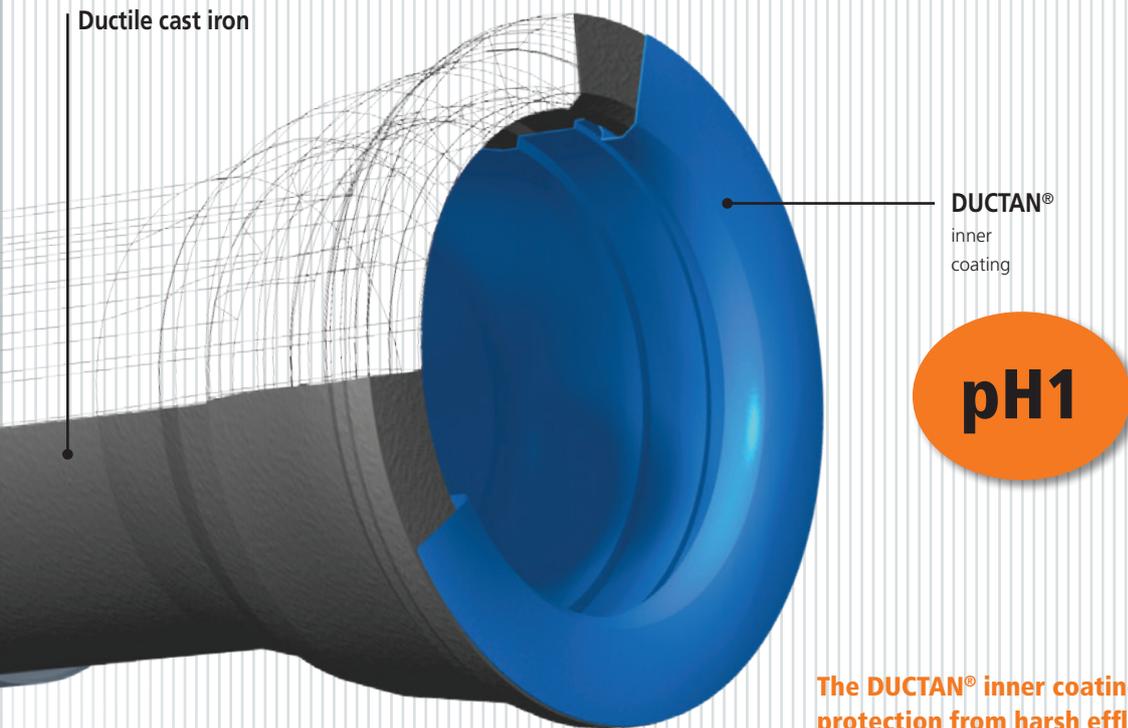
The combination of Aluminium and Zinc in the ZnAl (Cu) alloy enhances the strength of the protective layer. As compared with a pure zinc coating, it extends the field of use (or the service life) in highly corrosive soils as defined in European standard EN545: 2010 (annex D.2.2.).

Aquacoat[®]

ZnAl (Cu)
alloy

Ductile cast
iron





Protection from local biocorrosion

The enrichment of the ZnAl (Cu) alloy with Copper reduces the random risk of local biocorrosion in the following situations:

- Anaerobic soils (heavy ground, wet clay, etc.);
- Soils rich in SO₄²⁻ sulphates or organic matter;
- Coating damage.

BioZinalium[®] thus provides a completely new solution.

The DUCTAN[®] inner coating provides protection from harsh effluents

Effluents can attack piping.

Saint-Gobain PAM has opted for a DUCTAN[®] ultramarine blue thermoplastic inner coating

It shows the following characteristics:

- Strong bonding at average levels of up to 15 MPa (150 kg/cm²).
- Resistance to the harshest acid and alkaline effluents over a pH range from 1 to 10.
- Completely smooth for ideal flow rates.
- Full, continuous protection of the pipe bodies, socket joints and spigot ends.

The DUCTAN[®] coating is light but very strong, and it reduces the unit weight of TOPAZ[®] cast iron pipes.





A healthy, ecological choice

Aquacoat®

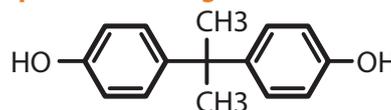
The Aquacoat® coating is free of VOCs

The effects of VOCs are highly variable; they can range from slight olfactory discomfort to mutagenic and carcinogenic effects (benzene, certain HPAs), via various types of irritations and reduced respiratory capacities. Their volatile nature enables them to spread well away from their point of emission. They play a part in photochemical reactions in the lower atmosphere, causing increases in ozone levels in the troposphere. VOCs are thus greenhouse gases with indirect effects on health.

Regulations:

On 1 December 1999, the United Nations Economic Commission for Europe (UNECE) obtained from 26 European countries, including France, an undertaking to comply, within the framework of the Gothenburg protocol, with caps on emission levels for harmful gases (including VOCs) to reduce the impacts of atmospheric pollution on health and the environment.

The Aquacoat® coating is free of BPA



Bisphenol A (BPA) is a chemical compound that stems from a reaction between two phenol equivalents and an acetone equivalent. It has been in use for more than 50 years, and it is found as a residue from synthesis of plastics such as polycarbonate, and epoxy resins. It is easily lixiviable, especially at high temperatures. BPA is on the list of endocrine disruptors. Its levels of toxicity and ecotoxicity, together with the "acceptable daily intake", are still the object of scientific and societal debate.

Nonetheless, as a precautionary principle, national regulations are gradually being implemented to reduce risks of population exposure through foods or through handling in professional surroundings.



Durable protection from corrosion



Zn-Al

Low environmental impact



No VOCs

Bio Zinalium®

Cu



Preventing local biocorrosion



No BPA

Response to a public health concern

Long service life +++

Contribution of the coating to the pipeline's service life

For pipeline manufacturers, the service life results from the performance levels for the following 3 elements:

- **Material:** resistance to mechanical stresses (hydraulic pressure and soil weight),
- **Coating:** resistance to chemical attacks (from effluents and soils),
- **Assembly:** maintaining watertightness under all circumstances (overpressure or ground movements).

Saint-Gobain PAM has hence developed an original, rational approach to separately assess the coating's contribution to the service life:

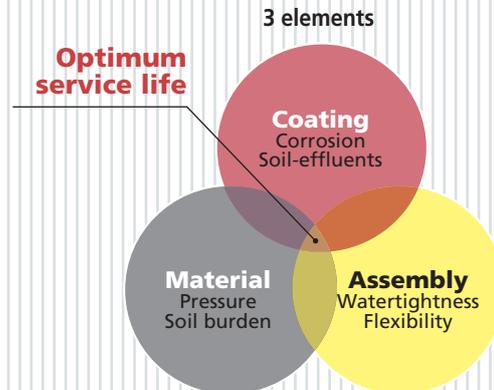
Its researchers use a mathematical forecasting simulator (an internal software program) that is the only one of its kind in the world. It is based on an algorithm that calculates cumulative levels of probabilities and assesses risks of perforation, taking into account:

- The laws governing corrosion of cast iron (rates of attack depending on the environment);
- The coating performance levels depending on the types of soil met with;
- The geological distribution of the type of soils and their mixtures;
- The unforeseen aspects of laying.

Fittings coated with red epoxy

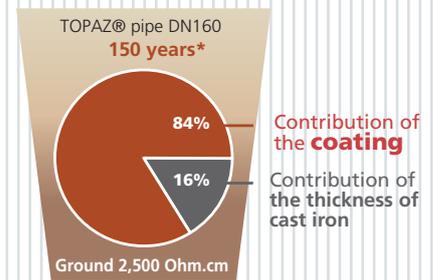
A film of epoxy resin is applied by dipping in a fluidized bed or by powdering, to coat the complete part. It gives the fittings a level of chemical resistance at least equivalent to that of the pipes. The application process ensures placing of a regular thickness over the full surface area of the parts treated (average thickness: at least 250 microns).

Taking these numerous variables into account, the probabilistic model provides an assessment of the "foreseeable service life" of an underground pipe by summing the time required for transformation of Zinc/Aluminium alloy, the time lapse for passive transformation of the alloy's hydroxide layer and the duration of corrosion for cast iron.



The optimum service life is reached when all three elements (material, coating and assembly) are made fully reliable.

Contribution of the coating to the foreseeable service life of an underground pipe



* With this model, the foreseeable service life of a DN 160 TOPAZ® pipe in soil with a resistivity of 2,500 Ω .cm is estimated at 150 years.





Watertightness

TOPAZ® joints are tested under extreme conditions

Underground pipes is subjected to numerous pressure variations (day/night cycle, water hammer, water table pressure, etc.).

Performance levels of TOPAZ® joints

TOPAZ® NBR joints have been rigorously tested in accordance with the criteria set out in standard EN598, under extreme conditions of angular deviation and dimensional tolerance.

In particular, the joint performance levels have been tested taking the following cases into account:

- Transient service overpressure (twice the joint's PFA).
- Partial vacuum in the case of draining or cavitation (- 0.9 bar).
- Pulsed pressure close to pumps (24,000 cycles).
- Exterior pressure exerted by a water table (2 bar).



The NBR quality of TOPAZ® joints

Joints are key points for ensuring watertightness of piping assemblies, whether they are used under gravity or under pressure.

TOPAZ® NBR quality joints have been adopted to ensure that they stand up to the effluents found in mains drainage. This quality meets the requirements set out in European standard EN 681-1 type WG.

The engineers at Saint-Gobain PAM used the latest finite element modelling calculation techniques to develop the TOPAZ® joints.

3 types of TOPAZ® joints for all situations

- Single version for TOPAZ® cast iron pipes and fittings, and for PVC-U and PVC-BO tubes. Anti-expulsion in the event of water hammer thanks to plastic inserts.
- Vi locked version joints for TOPAZ® cast iron pipes and fittings only.
- ViP locked version joints for plastic, PVC-U, PVC-BO and PE tubes connected to TOPAZ® cast iron fittings.



Single version joint



Vi locked version joint



ViP locked version joint

Easy laying conditions

Laying is a core asset for the TOPAZ® range

TOPAZ® pipes and fittings can be carried by hand



TOPAZ® pipes can be handled by 2 people. This means that they can be taken to the laying point, even in locations that are difficult to access, and then laid in trenches without requiring mechanical equipment.

Topaz® uses the Blutop® range of fittings. The gripping handles make for easy handling.



TOPAZ® pipes are easy to fit

The pipes and fittings can be assembled using a jumper bar or a crow bar. This is made possible thanks to the optimized design of the TOPAZ® joints, and the shape of the fittings, which feature leverage points to position the bar and minimize the force required in the assembly alignment.



Shorter site times

Use of the automated Blutrak® laying trolley makes for faster laying rates at the trench surface once the trencher has gone through.

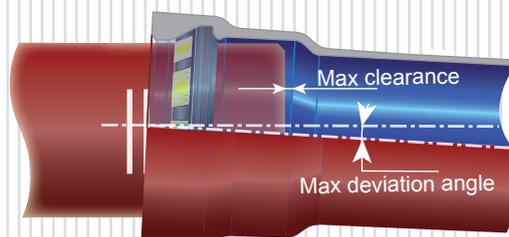


Watch the video of the carriage in action

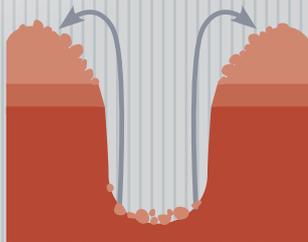
TOPAZ® adapts to ground movements

TOPAZ® joints are able to absorb major deviations: 6°. This goes for the locked and unlocked versions alike. The considerable socket length also reduces the risks of separation.

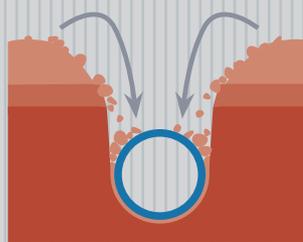
TOPAZ® thus shows very good performance in case of ground movement.



The advantages of ECO-LAYING with TOPAZ® Natural soils preserved



Excavating natural soils

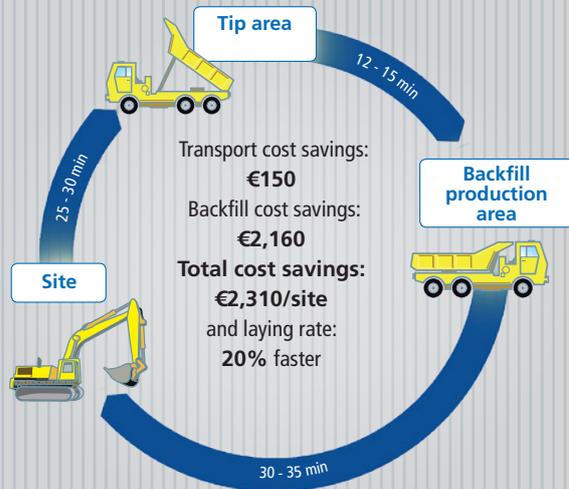


Reusing natural soils



Resurfacing

The design of the TOPAZ® pipes enables ECO-LAYING with natural backfills and reduced trench width. This leads to considerable cost savings regarding purchase and transport of raw materials. 500 m of ECO-LAID piping saves a tonne of CO₂ gas emissions!



ECO-LAYING cost savings

- Embedding: **Less added material.**
- Transport: **Fewer truck round trips, lower CO₂ emission levels.**
- Ductile cast iron: **Endlessly recyclable.**
- Clamping: **No concrete abutments, lower CO₂ emission levels.**

Over and above the reduced CO₂ emission levels and the cost savings, PAM ECO-LAYING helps to avoid nuisance for the people living nearby and preserve the resources of the natural soils.

Did you know?

"The French code of public works contracts now requires public purchasers to take sustainable development concerns into account when determining the requirements to be met." (art. 5)
Sustainable development concerns are also set out in the following articles:

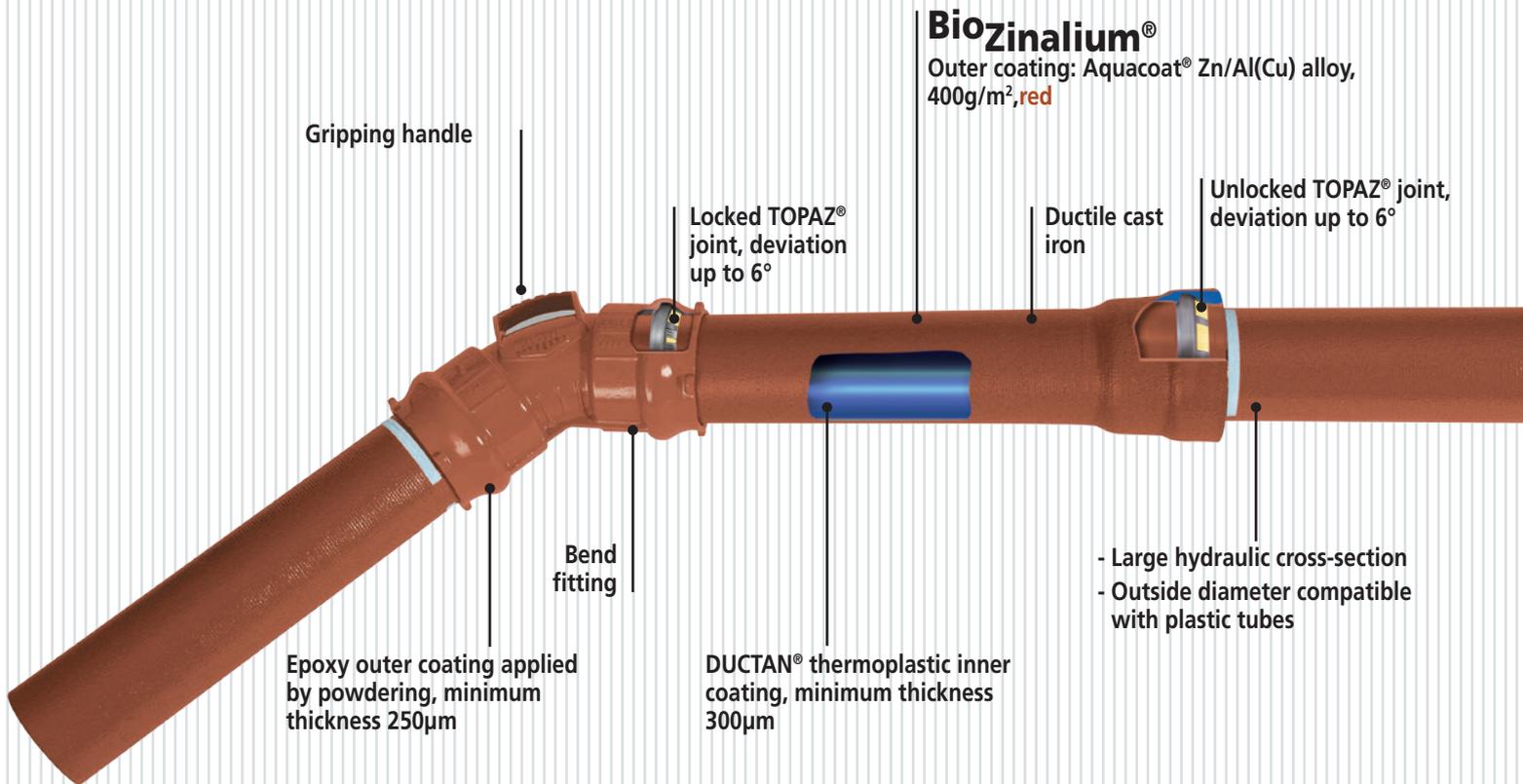
- Art. 6: Definition of requirements for public purchasers.
- Art. 14: Conditions governing execution of contracts.
- Art. 45: Bidders' know-how in the field of protection of the environment.
- Art. 53: Bid selection criteria.

Source: www.ecoresponsabilite.environnement.gouv.fr/article.php?id_article=584



TOPAZ® - the complete solution

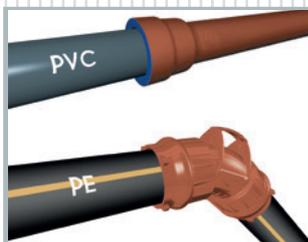
A full range of fittings and accessories



TOPAZ® IS COMPATIBLE WITH PLASTIC TUBES AND THEIR ACCESSORIES

TOPAZ® pipes and fittings are designed to be compatible with plastic tubes and their accessories.

In compliance with standards, the spigot ends of PVC or PEhd tubes can be inserted in TOPAZ® pipes or fittings, with or without locking.





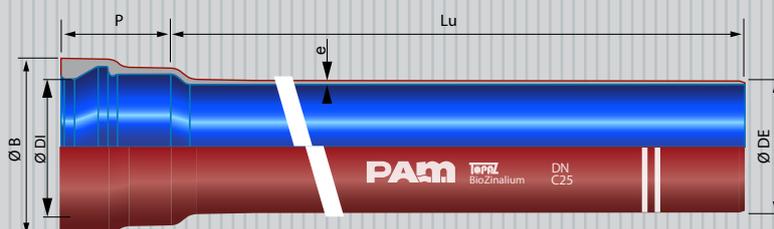
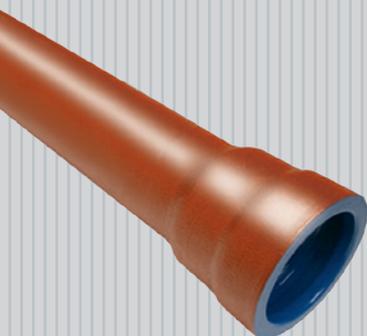
TOPAZ
DIN/OD 75
DIN 30155

Product catalogue

TOPAZ® RANGE: pipe



TOPAZ® pipe



DN/OD	Ø DE	Lu	Class	e	Ø DI	P	Ø B	PFA	Weight per metre	Reference Pipe only	TOPAZ® pipe reference with unlocked TOPAZ® joint	TOPAZ® pipe reference with Vi locked TOPAZ® joint
mm	mm	m		mm	mm	mm	mm	bar	kg/m			
75	75	6	25	3.0	77.7	82	113	25	5.1	ZXL75H60TP	ZXL75H60TP-E00	ZXL75H60TP-E06
90	90	6	25	3.0	92.7	84	130.2	25	6.2	ZXL90H60TP	ZXL90H60TP-E00	ZXL90H60TP-E06
110	110	6	25	3.0	112.8	87	149.5	25	7.6	ZXM11H60TP	ZXM11H60TP-E00	ZXM11H60TP-E06
125	125	6	25	3.1	128	92	164	25	8.6	ZXM12H60TP	ZXM12H60TP-E00	ZXM12H60TP-E06
140	140	6	25	3.1	143.1	94.4	183	25	10.0	ZXM14H60TP	ZXM14H60TP-E00	ZXM14H60TP-E06
160	160	6	25	3.2	163.3	97.5	202	25	11.8	ZXM16H60TP	ZXM16H60TP-E00	ZXM16H60TP-E06

Pipe abbreviations:

- DN: Nominal diameter.
- Lu: Useful length, in m.
- e: cast iron thickness, in mm.
- ØDE: Nominal outer body diameter, in mm.
- ØDI: Nominal inner diameter of the socket entrance, in mm.
- P: Nominal socket depth, in mm.
- ØB: Nominal diameter of the socket neck, in mm.
- Weight: Total weight per metre (including Ductan® coating and socket), determined using the nominal thicknesses, in kg/m.
- Reference: Commercial Saint-Gobain PAM reference.

TOPAZ® RANGE: Joint rings

TOPAZ® joint ring, unlocked, for TOPAZ® cast iron pipes and fittings



DN/OD	L	M	Ø B	Weight kg	Reference
mm					
75	13.8	8.5	100.2	0.060	JXL75BB
90	13.7	8.4	116.0	0.068	JXL90BB
110	13.7	9.4	136.3	0.082	JXM11BB
125	16.5	8.9	153.8	0.108	JXM12BB
140	18.1	9.8	173.0	0.130	JXM14BB
160	18.0	9.8	193.0	0.170	JXM16BB

* Connection (unlocked) possible for PVC-U and PVC-BO tubes in a TOPAZ® cast iron pipe fitted with a TOPAZ® joint ring

TOPAZ® Vi joint ring, locked, for TOPAZ® cast iron pipes and fittings only



DN 75 to 125



DN 140 to 160

DN/OD	L	M	Ø B	Weight kg	Reference
mm					
75	13.8	8.5	100.2	0.068	JXL75CB
90	13.7	8.4	116	0.077	JXL90CB
110	13.7	9.4	136.3	0.093	JXM11CB
125	16.5	8.9	153.8	0.118	JXM12CB
140	18.1	9.8	173	0.168	JXM14CB
160	18	9.8	193	0.221	JXM16CB

TOPAZ® ViP (plastic) joint ring, locked, for TOPAZ® fittings and PVC-U, PE, PVC-BO tubes*



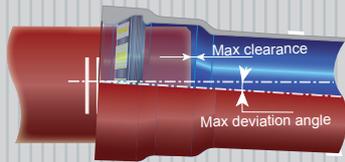
DN/OD	L	M	Ø B	Weight kg	Reference
mm					
75	13.8	8.5	100.2	0.060	JTL75CB
90	13.7	8.4	116	0.077	JTL90CB
110	13.7	9.4	136.3	0.093	JTM11CB
125	16.5	8.9	153.8	0.118	JTM12CB
140	18.1	9.8	173	0.130	JTM14CB
160	18	9.8	193	0.170	JTM16CB

* In the case of PVC-BO tubes, locking with TOPAZ® ViP joint rings is only possible with PN16 tubes.

TOPAZ® RANGE: Joints

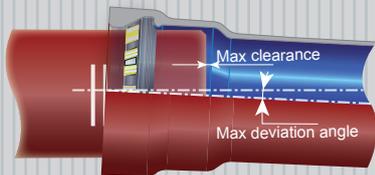


TOPAZ® joint for TOPAZ® pipes



DN/OD mm	Angular deviation degrees	PFA bar	Reference pipe and joint
75	6	25	ZXL75H60TP-E00
90	6	25	ZXL90H60TP-E00
110	6	25	ZXM11H60TP-E00
125	6	25	ZXM12H60TP-E00
140	6	25	ZXM14H60TP-E00
160	6	25	ZXM16H60TP-E00

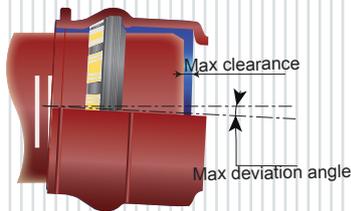
TOPAZ® Vi joint for TOPAZ® pipes



DN/OD mm	Angular deviation degrees	PFA bar	Reference pipe and joint
75	6	16	ZXL75H60TP-E06
90	6	16	ZXL90H60TP-E06
110	6	16	ZXM11H60TP-E06
125	6	16	ZXM12H60TP-E06
140	6	16	ZXM14H60TP-E06
160	6	16	ZXM16H60TP-E06

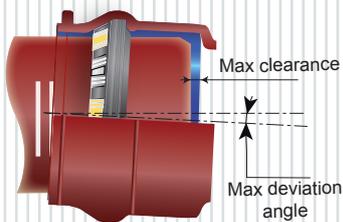
TOPAZ® RANGE: Joints

TOPAZ® joint for TOPAZ® fittings



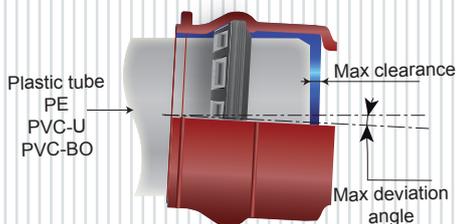
DN/OD mm	Angular deviation degrees	PFA bar	Reference fitting and joint
75	6	25	Fitting Ref -E00
90	6	25	Fitting Ref -E00
110	6	25	Fitting Ref -E00
125	6	25	Fitting Ref -E00
140	6	25	Fitting Ref -E00
160	6	25	Fitting Ref -E00

TOPAZ® Vi joint for TOPAZ® fittings



DN/OD mm	Angular deviation degrees	PFA bar	Reference fitting and joint
75	6	16	Fitting Ref -E06
90	6	16	Fitting Ref -E06
110	6	16	Fitting Ref -E06
125	6	16	Fitting Ref -E06
140	6	16	Fitting Ref -E06
160	6	16	Fitting Ref -E06

TOPAZ® ViP (plastic) joint for TOPAZ® fittings



DN/OD mm	Angular deviation, degrees	Reference fitting and joint
75	6	Fitting Ref -E15
90	6	Fitting Ref -E15
110	6	Fitting Ref -E15
125	6	Fitting Ref -E15
140	6	Fitting Ref -E15
160	6	Fitting Ref -E15

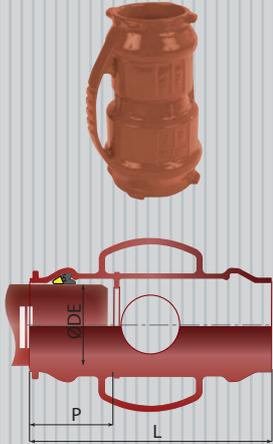
Acceptable operating pressure (PFA)

Materials	Tube PN10	Tube PN16
PVC-U	PFA 10 bar	PFA 16 bar
PE	PFA 10 bar	PFA 16 bar
PVC-BO*	-	PFA 10 bar

* - It is not possible to use locked TOPAZ® ViP joint rings for PVC-BO PN10 tubes.
 - It is possible to use locked TOPAZ® ViP joint rings for PVC-BO PN16 tubes.
 In this case, the acceptable operating pressure of the joint is 10 bar.

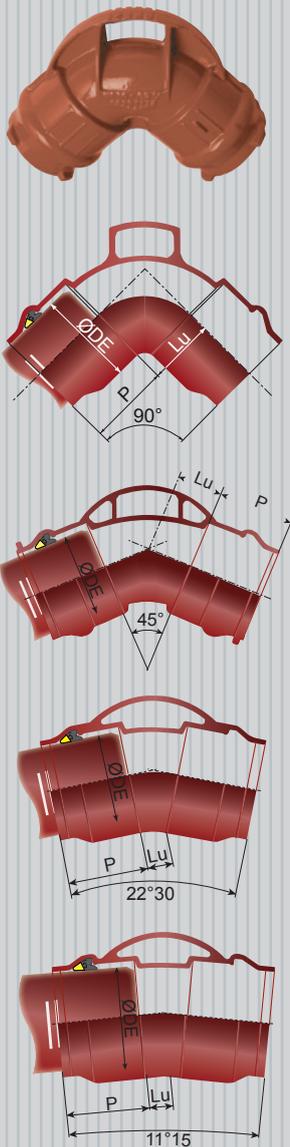


TOPAZ® semi-sliding collar



DN/OD	Ø DE	P	L	Weight kg	Reference fitting only	Reference Collar TOPAZ® with TOPAZ® non Vi joint rings	Reference Collar TOPAZ® with TOPAZ® Vi joint rings	Reference Collar TOPAZ® with TOPAZ® ViP joint rings
mm								
75	75	87.0	254	5.3	ZXL75MMFF	ZXL75MMFF-E00	ZXL75MMFF-E06	ZXL75MMFF-E15
90	90	92.5	265	6.3	ZXL90MMFF	ZXL90MMFF-E00	ZXL90MMFF-E06	ZXL90MMFF-E15
110	110	99.0	275	7.3	ZXM11MMFF	ZXM11MMFF-E00	ZXM11MMFF-E06	ZXM11MMFF-E15
125	125	104.0	295	8.8	ZXM12MMFF	ZXM12MMFF-E00	ZXM12MMFF-E06	ZXM12MMFF-E15
140	140	108.0	305	9.0	ZXM14MMFF	ZXM14MMFF-E00	ZXM14MMFF-E06	ZXM14MMFF-E15
160	160	114.0	315	10.7	ZXM16MMFF	ZXM16MMFF-E00	ZXM16MMFF-E06	ZXM16MMFF-E15

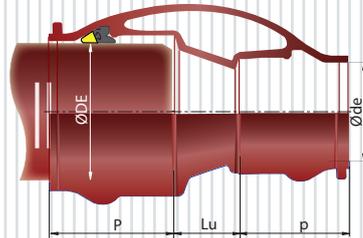
TOPAZ® bend



Angle Degrees	DN/OD	Ø DE	P	Lu	Weight kg	Reference fitting only	Reference TOPAZ® bend with TOPAZ® non-Vi joint rings	Reference TOPAZ® bend with TOPAZ® Vi joint rings	Reference TOPAZ® bend with TOPAZ® ViP joint rings
	mm								
90° 1/4	75	75	87.0	70	4.40	ZXL75CAFF	ZXL75CAFF-E00	ZXL75CAFF-E06	ZXL75CAFF-E15
	90	90	92.5	75	5.50	ZXL90CAFF	ZXL90CAFF-E00	ZXL90CAFF-E06	ZXL90CAFF-E15
	110	110	99.0	85	7.10	ZXM11CAFF	ZXM11CAFF-E00	ZXM11CAFF-E06	ZXM11CAFF-E15
	125	125	104.0	110	8.80	ZXM12CAFF	ZXM12CAFF-E00	ZXM12CAFF-E06	ZXM12CAFF-E15
	140	140	108.0	110	9.50	ZXM14CAFF	ZXM14CAFF-E00	ZXM14CAFF-E06	ZXM14CAFF-E15
45° 1/8	160	160	114.0	130	12.30	ZXM16CAFF	ZXM16CAFF-E00	ZXM16CAFF-E06	ZXM16CAFF-E15
	75	75	87.0	45	4.20	ZXL75CBFF	ZXL75CBFF-E00	ZXL75CBFF-E06	ZXL75CBFF-E15
	90	90	92.5	50	5.10	ZXL90CBFF	ZXL90CBFF-E00	ZXL90CBFF-E06	ZXL90CBFF-E15
	110	110	99.0	60	6.20	ZXM11CBFF	ZXM11CBFF-E00	ZXM11CBFF-E06	ZXM11CBFF-E15
	125	125	104.0	65	7.00	ZXM12CBFF	ZXM12CBFF-E00	ZXM12CBFF-E06	ZXM12CBFF-E15
22°30' 1/16	140	140	108.0	70	8.65	ZXM14CBFF	ZXM14CBFF-E00	ZXM14CBFF-E06	ZXM14CBFF-E15
	160	160	114.0	70	10.30	ZXM16CBFF	ZXM16CBFF-E00	ZXM16CBFF-E06	ZXM16CBFF-E15
	75	75	87.0	25	3.40	ZXL75CDFF	ZXL75CDFF-E00	ZXL75CDFF-E06	ZXL75CDFF-E15
	90	90	92.5	30	4.40	ZXL90CDFF	ZXL90CDFF-E00	ZXL90CDFF-E06	ZXL90CDFF-E15
	110	110	99.0	30	5.50	ZXM11CDFF	ZXM11CDFF-E00	ZXM11CDFF-E06	ZXM11CDFF-E15
11°15' 1/32	125	125	104.0	30	6.60	ZXM12CDFF	ZXM12CDFF-E00	ZXM12CDFF-E06	ZXM12CDFF-E15
	140	140	108.0	35	6.97	ZXM14CDFF	ZXM14CDFF-E00	ZXM14CDFF-E06	ZXM14CDFF-E15
	160	160	114.0	35	9.20	ZXM16CDFF	ZXM16CDFF-E00	ZXM16CDFF-E06	ZXM16CDFF-E15
	75	75	87.0	25	3.50	ZXL75CEFF	ZXL75CEFF-E00	ZXL75CEFF-E06	ZXL75CEFF-E15
	90	90	92.5	25	3.80	ZXL90CEFF	ZXL90CEFF-E00	ZXL90CEFF-E06	ZXL90CEFF-E15
11°15' 1/32	110	110	99.0	30	5.80	ZXM11CEFF	ZXM11CEFF-E00	ZXM11CEFF-E06	ZXM11CEFF-E15
	125	125	104.0	30	6.70	ZXM12CEFF	ZXM12CEFF-E00	ZXM12CEFF-E06	ZXM12CEFF-E15
	140	140	108.0	30	7.00	ZXM14CEFF	ZXM14CEFF-E00	ZXM14CEFF-E06	ZXM14CEFF-E15
	160	160	114.0	35	9.10	ZXM16CEFF	ZXM16CEFF-E00	ZXM16CEFF-E06	ZXM16CEFF-E15

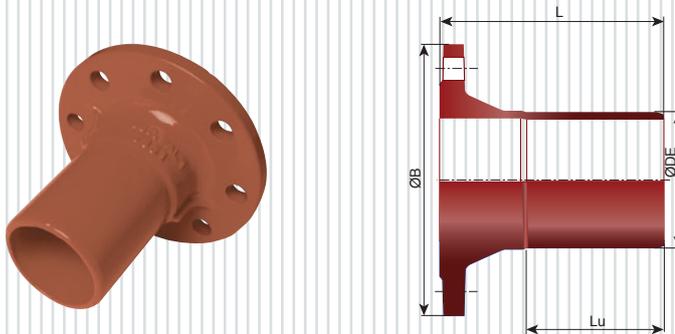
TOPAZ® RANGE: Fittings

TOPAZ® taper



DN/OD	Ø DE	Ø de	P	p	Lu	Weight kg	Reference fitting only	Reference TOPAZ® taper with TOPAZ® non-Vi joint rings	Reference TOPAZ® taper with TOPAZ® Vi joint rings	Reference TOPAZ® taper with TOPAZ® VIP joint rings
mm										
90	90	75	92.5	87.0	40.0	3.70	ZXL90VE0CFF	ZXL90VE0CFF-E00	ZXL90VE0CFF-E06	ZXL90VE0CFF-E15
110	110	75	99.0	87.0	50.0	4.60	ZXM11VE0CFF	ZXM11VE0CFF-E00	ZXM11VE0CFF-E06	ZXM11VE0CFF-E15
110	110	90	99.0	92.5	50.5	5.00	ZXM11VE0DFF	ZXM11VE0DFF-E00	ZXM11VE0DFF-E06	ZXM11VE0DFF-E15
125	125	75	104.0	87.0	55.0	5.10	ZXM12VE0CFF	ZXM12VE0CFF-E00	ZXM12VE0CFF-E06	ZXM12VE0CFF-E15
125	125	90	104.0	92.5	50.0	5.20	ZXM12VE0DFF	ZXM12VE0DFF-E00	ZXM12VE0DFF-E06	ZXM12VE0DFF-E15
125	125	110	104.0	99.0	45.0	5.50	ZXM12VE0EFF	ZXM12VE0EFF-E00	ZXM12VE0EFF-E06	ZXM12VE0EFF-E15
140	140	90	108.0	92.5	50.0	5.51	ZXM14VE0DFF	ZXM14VE0DFF-E00	ZXM14VE0DFF-E06	ZXM14VE0DFF-E15
140	140	110	108.0	99.0	45.0	5.91	ZXM14VE0EFF	ZXM14VE0EFF-E00	ZXM14VE0EFF-E06	ZXM14VE0EFF-E15
140	140	125	108.0	104.0	45.0	6.29	ZXM14VE0GFF	ZXM14VE0GFF-E00	ZXM14VE0GFF-E06	ZXM14VE0GFF-E15
160	160	75	114.0	87.0	65.0	6.50	ZXM16VE0CFF	ZXM16VE0CFF-E00	ZXM16VE0CFF-E06	ZXM16VE0CFF-E15
160	160	90	114.0	92.5	60.0	7.00	ZXM16VE0DFF	ZXM16VE0DFF-E00	ZXM16VE0DFF-E06	ZXM16VE0DFF-E15
160	160	110	114.0	99.0	55.0	7.40	ZXM16VE0EFF	ZXM16VE0EFF-E00	ZXM16VE0EFF-E06	ZXM16VE0EFF-E15
160	160	125	114.0	104.0	50.0	7.80	ZXM16VE0GFF	ZXM16VE0GFF-E00	ZXM16VE0GFF-E06	ZXM16VE0GFF-E15

TOPAZ® flange spigot



DN/OD	Ø DE	DN flange spigot	Lu	L	Ø B PN10-16	Weight kg	Reference fitting only PN10-16
mm							
75	75	60	98	158	175	3.85	ZXL75BU1CFF
75	75	65	98	158	185	4.15	ZXL75BU1DFF
90	90	80	102	167	200	4.70	ZXL90BU1EFF
110	110	100	110	180	220	6.00	ZXM11BU1FFF
125	125	125	114	188	250	7.90	ZXM12BU1GFF
140	140	125	119	190	250	8.56	ZXM14BU1GFF
160	160	150	127	197	285	12.10	ZXM16BU1JFF

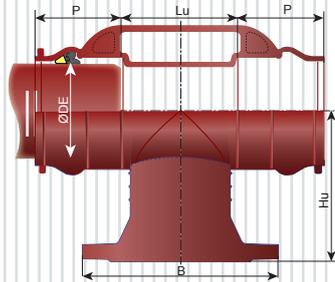
TOPAZ® flange socket



DN/OD	Ø DE	DN flange	P	Lu	Ø B PN10-16	Weight kg	Reference fitting only PN10-16	Reference TOPAZ® flange socket with TOPAZ® non-Vi joint ring	Reference TOPAZ® flange socket with TOPAZ® Vi joint ring	Reference TOPAZ® flange socket with TOPAZ® ViP joint ring
mm										
75	75	60	87.0	58	175	5.00	ZXL75BE1CFF	ZXL75BE1CFF-E00	ZXL75BE1CFF-E06	ZXL75BE1CFF-E15
75	75	65	87.0	58	185	5.30	ZXL75BE1DFF	ZXL75BE1DFF-E00	ZXL75BE1DFF-E06	ZXL75BE1DFF-E15
90	90	80	92.5	68	200	5.50	ZXL90BE1EFF	ZXL90BE1EFF-E00	ZXL90BE1EFF-E06	ZXL90BE1EFF-E15
110	110	100	99.0	68	220	6.70	ZXM11BE1FFF	ZXM11BE1FFF-E00	ZXM11BE1FFF-E06	ZXM11BE1FFF-E15
125	125	125	104.0	66	250	8.20	ZXM12BE1GFF	ZXM12BE1GFF-E00	ZXM12BE1GFF-E06	ZXM12BE1GFF-E15
140	140	125	108.0	62	250	9.15	ZXM14BE1GFF	ZXM14BE1GFF-E00	ZXM14BE1GFF-E06	ZXM14BE1GFF-E15
160	160	150	114.0	68	285	11.00	ZXM16BE1JFF	ZXM16BE1JFF-E00	ZXM16BE1JFF-E06	ZXM16BE1JFF-E15

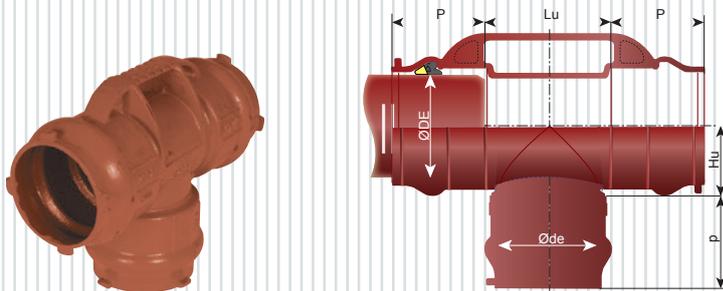
TOPAZ® RANGE: Fittings

TOPAZ® flange Tee with 2 sockets



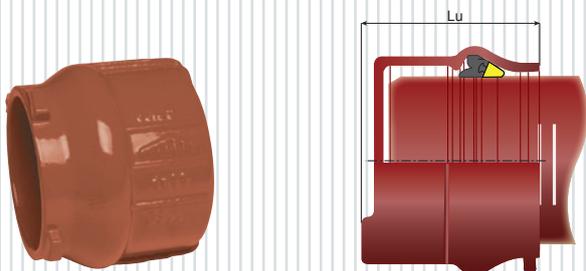
DN/OD	Ø DE	DN flange	P	Lu	Hu	Ø B PN 10-16	Weight kg	Reference fitting only PN10-16	Reference TOPAZ® Tee 2 sockets with TOPAZ® non-Vi joint rings	Reference TOPAZ® Tee 2 sockets with TOPAZ® Vi joint rings	Reference TOPAZ® Tee 2 sockets with TOPAZ® VIP joint rings
mm											
75	75	40	87.0	60	130	150	5.80	ZXL75TD1AFF	ZXL75TD1AFF-E00	ZXL75TD1AFF-E06	ZXL75TD1AFF-E15
		60	87.0	85	140	175	7.80	ZXL75TD1CFF	ZXL75TD1CFF-E00	ZXL75TD1CFF-E06	ZXL75TD1CFF-E15
		65	87.0	85	140	185	8.20	ZXL75TD1DFF	ZXL75TD1DFF-E00	ZXL75TD1DFF-E06	ZXL75TD1DFF-E15
90	90	40	92.5	65	135	150	6.80	ZXL90TD1AFF	ZXL90TD1AFF-E00	ZXL90TD1AFF-E06	ZXL90TD1AFF-E15
		60	92.5	90	155	175	8.60	ZXL90TD1CFF	ZXL90TD1CFF-E00	ZXL90TD1CFF-E06	ZXL90TD1CFF-E15
		65	92.5	90	160	185	8.70	ZXL90TD1DFF	ZXL90TD1DFF-E00	ZXL90TD1DFF-E06	ZXL90TD1DFF-E15
		80	92.5	105	160	200	9.40	ZXL90TD1EFF	ZXL90TD1EFF-E00	ZXL90TD1EFF-E06	ZXL90TD1EFF-E15
110	110	40	99.0	65	145	150	7.60	ZXM11TD1AFF	ZXM11TD1AFF-E00	ZXM11TD1AFF-E06	ZXM11TD1AFF-E15
		60	99.0	90	165	175	9.40	ZXM11TD1CFF	ZXM11TD1CFF-E00	ZXM11TD1CFF-E06	ZXM11TD1CFF-E15
		65	99.0	90	160	185	9.50	ZXM11TD1DFF	ZXM11TD1DFF-E00	ZXM11TD1DFF-E06	ZXM11TD1DFF-E15
		80	99.0	105	170	200	11.00	ZXM11TD1EFF	ZXM11TD1EFF-E00	ZXM11TD1EFF-E06	ZXM11TD1EFF-E15
		100	99.0	125	170	220	12.20	ZXM11TD1FFF	ZXM11TD1FFF-E00	ZXM11TD1FFF-E06	ZXM11TD1FFF-E15
125	125	40	104.0	65	160	150	9.20	ZXM12TD1AFF	ZXM12TD1AFF-E00	ZXM12TD1AFF-E06	ZXM12TD1AFF-E15
		60	104.0	90	160	175	10.80	ZXM12TD1CFF	ZXM12TD1CFF-E00	ZXM12TD1CFF-E06	ZXM12TD1CFF-E15
		65	104.0	90	160	185	11.10	ZXM12TD1DFF	ZXM12TD1DFF-E00	ZXM12TD1DFF-E06	ZXM12TD1DFF-E15
		80	104.0	105	170	200	11.50	ZXM12TD1EFF	ZXM12TD1EFF-E00	ZXM12TD1EFF-E06	ZXM12TD1EFF-E15
		100	104.0	125	180	220	12.20	ZXM12TD1FFF	ZXM12TD1FFF-E00	ZXM12TD1FFF-E06	ZXM12TD1FFF-E15
		125	104.0	150	180	250	15.00	ZXM12TD1GFF	ZXM12TD1GFF-E00	ZXM12TD1GFF-E06	ZXM12TD1GFF-E15
140	140	40	108.0	65	160	150	9.34	ZXM14TD1AFF	ZXM14TD1AFF-E00	ZXM14TD1AFF-E06	ZXM14TD1AFF-E15
		60	108.0	90	180	175	11.04	ZXM14TD1CFF	ZXM14TD1CFF-E00	ZXM14TD1CFF-E06	ZXM14TD1CFF-E15
		65	108.0	90	180	185	11.20	ZXM14TD1DFF	ZXM14TD1DFF-E00	ZXM14TD1DFF-E06	ZXM14TD1DFF-E15
		80	108.0	105	185	200	12.35	ZXM14TD1EFF	ZXM14TD1EFF-E00	ZXM14TD1EFF-E06	ZXM14TD1EFF-E15
		100	108.0	125	195	220	14.03	ZXM14TD1FFF	ZXM14TD1FFF-E00	ZXM14TD1FFF-E06	ZXM14TD1FFF-E15
		125	108.0	150	200	250	16.28	ZXM14TD1GFF	ZXM14TD1GFF-E00	ZXM14TD1GFF-E06	ZXM14TD1GFF-E15
160	160	40	114.0	65	170	150	11.30	ZXM16TD1AFF	ZXM16TD1AFF-E00	ZXM16TD1AFF-E06	ZXM16TD1AFF-E15
		60	114.0	90	190	175	12.90	ZXM16TD1CFF	ZXM16TD1CFF-E00	ZXM16TD1CFF-E06	ZXM16TD1CFF-E15
		65	114.0	90	190	185	12.90	ZXM16TD1DFF	ZXM16TD1DFF-E00	ZXM16TD1DFF-E06	ZXM16TD1DFF-E15
		80	114.0	105	200	200	14.30	ZXM16TD1EFF	ZXM16TD1EFF-E00	ZXM16TD1EFF-E06	ZXM16TD1EFF-E15
		100	114.0	125	205	220	16.40	ZXM16TD1FFF	ZXM16TD1FFF-E00	ZXM16TD1FFF-E06	ZXM16TD1FFF-E15
		125	114.0	150	210	250	18.00	ZXM16TD1GFF	ZXM16TD1GFF-E00	ZXM16TD1GFF-E06	ZXM16TD1GFF-E15
		150	114.0	175	220	285	20.30	ZXM16TD1JFF	ZXM16TD1JFF-E00	ZXM16TD1JFF-E06	ZXM16TD1JFF-E15

TOPAZ® Tee with 3 sockets



DN/OD	Ø DE	Ø de	P	p	Lu	Hu	Weight kg	Reference fitting only	Reference TOPAZ® Tee 3 sockets with TOPAZ® non-Vi joint rings	Reference TOPAZ® Tee 3 sockets with TOPAZ® Vi joint rings	Reference TOPAZ® Tee 3 sockets with TOPAZ® ViP joint rings
mm											
75	75	75	87.0	87.0	85	52	5.60	ZXL75TE0CFF	ZXL75TE0CFF-E00	ZXL75TE0CFF-E06	ZXL75TE0CFF-E15
90	90	75	92.5	87.0	90	60	6.30	ZXL90TE0CFF	ZXL90TE0CFF-E00	ZXL90TE0CFF-E06	ZXL90TE0CFF-E15
		90	92.5	92.5	105	56	6.80	ZXL90TE0DFF	ZXL90TE0DFF-E00	ZXL90TE0DFF-E06	ZXL90TE0DFF-E15
110	110	75	99.0	87.0	90	70	8.00	ZXM11TE0CFF	ZXM11TE0CFF-E00	ZXM11TE0CFF-E06	ZXM11TE0CFF-E15
		90	99.0	92.5	105	67	7.80	ZXM11TE0DFF	ZXM11TE0DFF-E00	ZXM11TE0DFF-E06	ZXM11TE0DFF-E15
		110	99.0	99.0	134	67	8.70	ZXM11TE0EFF	ZXM11TE0EFF-E00	ZXM11TE0EFF-E06	ZXM11TE0EFF-E15
125	125	75	104.0	87.0	90	75	8.80	ZXM12TE0CFF	ZXM12TE0CFF-E00	ZXM12TE0CFF-E06	ZXM12TE0CFF-E15
		90	104.0	92.5	105	74	9.20	ZXM12TE0DFF	ZXM12TE0DFF-E00	ZXM12TE0DFF-E06	ZXM12TE0DFF-E15
		110	104.0	99.0	125	74	10.00	ZXM12TE0EFF	ZXM12TE0EFF-E00	ZXM12TE0EFF-E06	ZXM12TE0EFF-E15
		125	104.0	104.0	150	74	11.00	ZXM12TE0GFF	ZXM12TE0GFF-E00	ZXM12TE0GFF-E06	ZXM12TE0GFF-E15
140	140	110	108.0	99.0	125	82	10.55	ZXM14TE0EFF	ZXM14TE0EFF-E00	ZXM14TE0EFF-E06	ZXM14TE0EFF-E15
		125	108.0	104.0	150	82	11.46	ZXM14TE0GFF	ZXM14TE0GFF-E00	ZXM14TE0GFF-E06	ZXM14TE0GFF-E15
		140	108.0	108.0	155	82	11.90	ZXM14TE0HFF	ZXM14TE0HFF-E00	ZXM14TE0HFF-E06	ZXM14TE0HFF-E15
160	160	110	114.0	99.0	125	92	13.00	ZXM16TE0EFF	ZXM16TE0EFF-E00	ZXM16TE0EFF-E06	ZXM16TE0EFF-E15
		125	114.0	104.0	140	92	13.60	ZXM16TE0GFF	ZXM16TE0GFF-E00	ZXM16TE0GFF-E06	ZXM16TE0GFF-E15
		160	114.0	114.0	175	92	15.10	ZXM16TE0JFF	ZXM16TE0JFF-E00	ZXM16TE0JFF-E06	ZXM16TE0JFF-E15

TOPAZ® cap



DN	Ø DE	Lu	Weight kg	Reference fitting only	Reference TOPAZ® cap with TOPAZ® non-Vi joint ring	Reference TOPAZ® cap with TOPAZ® Vi joint ring	Reference TOPAZ® cap with TOPAZ® ViP joint ring
mm							
75	75	101	1.60	ZXL75BHFF	ZXL75BHFF-E00	ZXL75BHFF-E06	ZXL75BHFF-E15
90	90	107	2.00	ZXL90BHFF	ZXL90BHFF-E00	ZXL90BHFF-E06	ZXL90BHFF-E15
110	110	113	2.20	ZXM11BHFF	ZXM11BHFF-E00	ZXM11BHFF-E06	ZXM11BHFF-E15
125	125	118	2.95	ZXM12BHFF	ZXM12BHFF-E00	ZXM12BHFF-E06	ZXM12BHFF-E15
140	140	122	3.00	ZXM14BHFF	ZXM14BHFF-E00	ZXM14BHFF-E06	ZXM14BHFF-E15
160	160	128	4.30	ZXM16BHFF	ZXM16BHFF-E00	ZXM16BHFF-E06	ZXM16BHFF-E15

TOPAZ® RANGE: Laying

BLUTRAK® laying trolley for narrow trenches



Designation	Weight kg	Reference
Parent and child carriages + accessories	201	237026
Box	55	Contact us

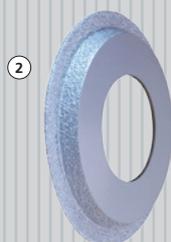
BluCut cutting and chamfering machine



Recommended by Saint-Gobain PAM

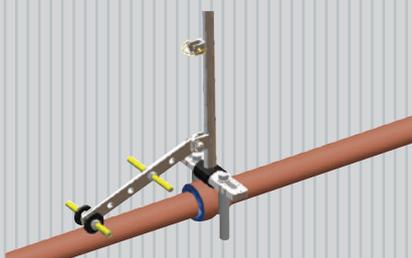
- Light, safe, self-guided
- Clean, ultra-fast cuts and chamfers
- Perfectly square on
- Powered by a 230 V 50-60 Hz electricity supply

Designation	Weight kg	DE cast iron pipe cutting range	Max. thickness	Reference
		mm		
BluCut cutting and chamfering machine	6	15-170	8	247236



Designation	Reference
① X140 cutting disc	239786
② X140 cutting and chamfering disc	247237

Tool for assembling



Designation	Weight kg	Reference
Blujack	25	246471

Supplied with a 1,000 daN strap



Repair products for TOPAZ® pipes



Area	Designation	Packaging	Reference	
① Outside	Aquacoat TAG32® / TOPAZ®	0.75 kg tin	240990	
② Cuts	EUROKOTE 4820 brown-red	1 kg tin	184653	
		kit of 5 x 50 ml syringes	220817	
	Repair kit TOPAZ®	Pair of gloves	1	250714
		Brush	5	
		Abrasive paper 80	5	
		Blow torch	1	
Kit of 5 x 50ml syringes of EUROKOTE 4820 brown-red	1			
Plastic ferrule for syringes	10			

Repair products for TOPAZ® fittings



Area	Designation	Weight kg	Reference
① Inside	EUROKOTE 4820 brown-red	1 kg tin	184653
		kit of 5 x 50 ml syringes	220817
② Outside	EUROKOTE 4820 brown-red	1 kg tin	184653
		kit of 5 x 50 ml syringes	220817

TOPAZ® lubricating paste



Designation	Weight kg	Reference
BLUTOP® / TOPAZ® lubricating paste	0.85 kg tin	214611

Quality management

Reference standards

The Saint-Gobain PAM Quality Assurance system is based on standard EN ISO 9001, which certifies control of the manufacturing processes (design, development, production, installation and associated services, etc.).

All the factories in charge of making the products in the PAM range hold that certification, which is granted by an outside organization.

The Saint-Gobain PAM products comply with the national and international NF, EN and ISO standards.

Compliance with these standards is certified by outside organizations.

These standards define the products or services in terms of results; each product, pipe or fitting is factory tested individually, during an internal pressure test.

Quality management

The Saint-Gobain PAM quality management system complies with standard ISO 9001 regarding design, manufacture and sales of the TOPAZ® range.



Environmental management

The sites making the pipes and fittings in the TOPAZ® range hold ISO 14001 certification.

European standards

The following European standards apply to the TOPAZ® range:

- EN 805 (design),
- EN 681-1 (joint packing),
- EN 12842 (fittings),
- EN 14901 (coatings on fittings).

Investing in a **PAM** pipeline system means:



Pont-à-Mousson factory - Blast furnace operator

Choosing design and production “Made in Europe”

Saint-Gobain PAM in Europe:

- factories in France, Germany, Great Britain, Spain, Italy and Czech Republic
- 4,500 employees
- 1 research centre
- 1,500 patents



DID YOU KNOW?

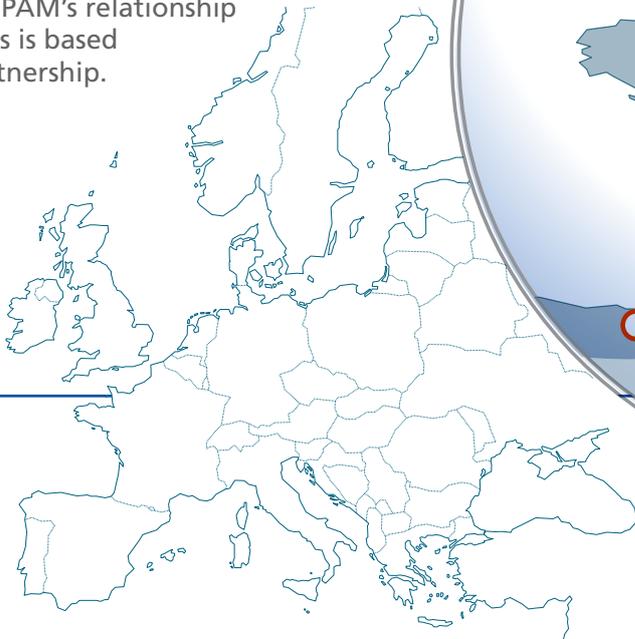
1 industrial job generates
3 service jobs

(Source: French National Institute
of Statistics and Economic Studies).

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