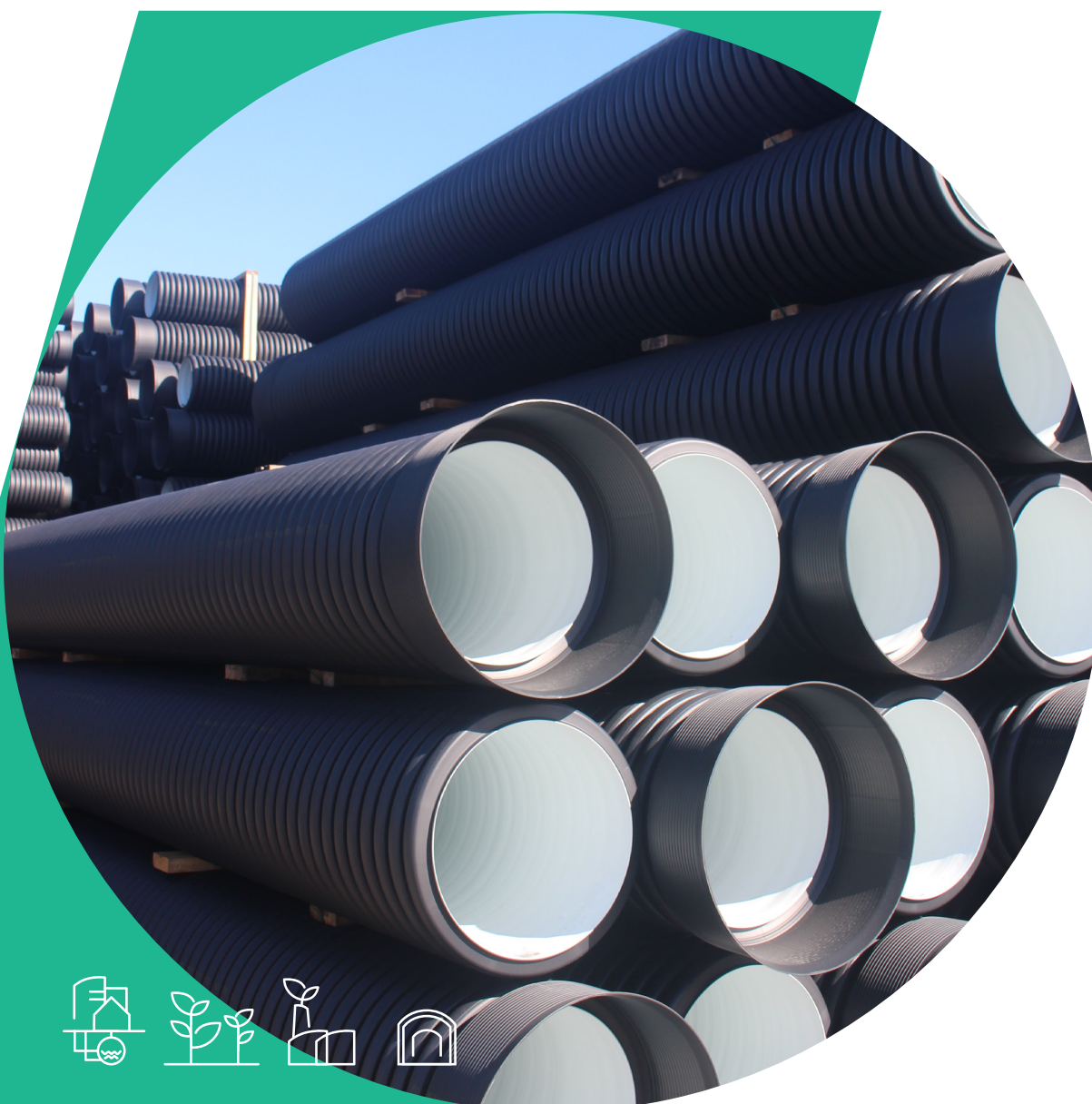


Solutions for a green future

AMBIDUR
CD12R03



www.politejo.com

The best thermoplastic solutions for infrastructure networks



Politejo Group was founded in 1978, as an industry specialized in the manufacture of thermoplastic solutions and its main activity is the production of pipes and plastic accessories for the water supply, waste water, irrigation, electricity and telecommunications.

Our strategy is based on the constant innovation of products and services, with a skilled team, able to understand the needs associated with the various sectors and present highly reliable solutions, longevity that allow the conservation of water resources and the environment.

The success of Politejo Group is based on the profile of its employees, with a family-oriented management, due to the strategic location of its manufacturing units and their complete solutions.

This profile enabled a notable growth throughout the last 40 years, and currently Politejo Group is present in Angola, Brazil, Spain, Mozambique and Portugal, with a view to expanding to new locations.

AMBIDUR



1. Manufacturing process

AMBIDUR pipes with a smooth inner wall and corrugated outer wall are produced in polypropylene (PP) or polyethylene (PE) using a co-extrusion process.

After the raw material has undergone internal quality control, it is stored until required for production. Once transferred to the dosing silos, the mixture, to which the necessary additives have been added to enable processing of the product, feeds the extruders. These transform the material for both layers, bringing it to a workable state by applying temperature and pressure, thereby plasticising the polymer.

The material passes through the extrusion die and then into the corrugator, where the pipe is formed to its final dimensions, with a smooth inner layer and a corrugated outer layer. Finally, the product is marked and its final parameters are checked.

AMBIDUR corrugated fittings are manufactured either by injection moulding or by fabrication. In the injection moulding process, the raw material is heated and plasticised in the barrel of the injection moulding machine before being transferred into the mould, where the fitting is formed. The fitting is then cooled, removed from the mould and inspected.

Fabricated fittings are manufactured from pipe sections that are welded together to meet the specific requirements of each customer.

2. Product types

AMBIDUR corrugated pipes and fittings can be used in a variety of applications and are intended for underground, non-pressure plastic piping systems for drainage and sewerage.



Type	Standard
Pipes/Fittings	EN 13476-3: Plastics piping systems for non-pressure underground drainage and sewerage

3. Quality and environment

The different companies within the Group hold management system and product certifications.

For information on the respective valid certificates, please contact our Sales Department or visit our website: www.politejo.com



4. Product marking and certificates

The product certificates according to the commercial product range are shown below.

Commercial Range	Certification Body	Certificate	Marking
Ambidur	AENOR	AENOR 001/XXX	AENOR 001/XXX POLITEJO AMBIDUR PP/PE DN ____ SN ____ UNE-EN 13476-3 (DATE CODE) BATCH (BATCH CODE)
	SGS	SGS PT09/XXX	POLITEJO AMBIDUR PP/PE DN ____ SN ____ EN 13476-3 (DATE CODE) SGS PT 09/XXX (BATCH CODE)



5. Product characteristics and testing

AMBIDUR pipes feature a smooth inner layer and a corrugated outer layer in a contrasting colour, with different dimensions depending on their ring stiffness (SN). They offer good chemical resistance and high mechanical resistance to diametral compression, allowing them to be installed at significant depths.

The following characteristics are particularly noteworthy:

- **High mechanical resistance to deformation:** Ring stiffness of 8 and 16 kN/m²;
- **High impact resistance;**
- **100% watertightness** for diametral deflections below 5% and angular deflections below 1%, under the test conditions defined by EN ISO 13259;
- **Lighter weight:** lighter than conventional pipes made from other materials used for drainage and sewerage, such as cast iron, fibre cement, reinforced concrete, mass concrete, steel-lined concrete, vitrified clay, etc.;
- **Smoother inner surface:** their low roughness coefficient compared with other materials results in lower head losses;
- **Resistance to chemical agents:** in general, plastic pipes are more resistant to chemical attack than other solutions used in sewerage networks, such as metals, concrete, etc.;
- **High flexibility:** allows the pipes to withstand soil loads and additional loads above the pipe without breaking. When properly compacted soil provides lateral support, the pipe can deform slightly to accommodate these loads;
- **Low modulus of elasticity:** compared with other materials such as metals;
- **Corrosion resistant:** plastic pipes are resistant to corrosion, which is one of their major advantages compared with other solutions that are susceptible to oxidation;
- **Non-toxic:** do not alter the odour or taste of water;
- **Standardised:** manufactured in accordance with UNE and ISO standards and covered by quality certifications;
- **100% recyclable;**
- **Durability:** service life of 50 years under proper installation conditions.



1) Mass concrete sewer pipe; 2) Reinforced concrete sewer pipe; 3) Ductile iron sewer pipe; 4) Vitrified clay sewer pipe;

5.1. Raw material characteristics

Characteristic	Unit	PP	PE
Modulus of elasticity	MPa	≥ 1400	≥ 900
Average density	g/cm ³	≈ 0,9	≈ 0,96
Coefficient of thermal expansion	mm/m°C	0,14	0,22
Thermal conductivity	Kcal/hm°C	0,2	0,50

5.2. Product testing

Test	Standard	Parameters
Appearance, colour, dimensional control and marking	EN 13476-3	In accordance with the standard
Ring stiffness	EN ISO 9969	≥ 8 / 16 KN/m ²
Ring flexibility	EN ISO 13968	No cracks or breaks
Impact resistance	EN ISO 3127	TIR ≤ 10%
Oven test	ISO 12091	The pipe shall show no delamination, cracks or bubbles
Watertightness	EN ISO 13259	No leakage
Creep ratio	EN ISO 9967	≤ 4

The tests shaded in the table above form an integral part of the 3.1 certificate.
When required, please contact our Sales Department.

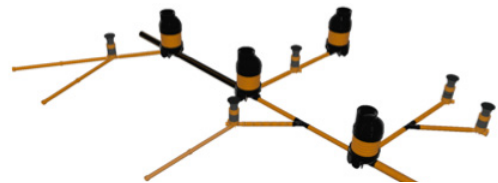
6. Product range

6.1. AMBIDUR Pipe

The available and certified range of AMBIDUR pipes is presented below.

Diameter (mm)		Socket length	Certificates			
DN (mm)	DI min.(mm)	(mm)	SN8 (PE)	PE-SN16	PP-SN8	PP-SN16
125	105	35	SGS	-	SGS	SGS
160	134	42	SGS	-	SGS	SGS
200	167	50	SGS	-	AENOR/SGS	SGS
250	209	55	SGS	-	AENOR/SGS	SGS
315	263	62	SGS	-	AENOR/SGS	SGS
400	335	70	SGS	-	AENOR/SGS	SGS
500	418	80	SGS	-	AENOR/SGS	SGS
630	527	93	SGS	-	AENOR/SGS	SGS
800	669	110	SGS	-	AENOR/SGS	SGS
1000	837	130	SGS	-	AENOR/SGS	SGS
1200	1005	150	SGS	-	AENOR/SGS	SGS
Colour		Inner layer	White	Grey	White	Grey
		Outer layer	Orange/Black	Orange	Orange/Black	Orange

The **AMBIDUR** solution is designed for domestic and industrial sewerage systems, as well as stormwater drainage networks. It is a complete and versatile solution comprising **corrugated pipes, connection fittings, and thermoplastic manholes and inspection chambers.**



6.2. AMBIDUR Fittings

The AMBIDUR connection fittings, which use elastomeric sealing ring compression joints, are presented below.



Elbow 45°



Elbow 90°



Reduction
Branches



End Cap



Tê



Coupler

7. Jointing system

The jointing method for AMBIDUR pipes and fittings consists of fitting a rubber sealing ring onto the male end to be connected, followed by lubrication of both the male end and the inner surface of the socket.

The male end is then inserted into the socket, compressing the sealing ring to provide the required watertightness up to 0.5 bar.

Before fitting the sealing ring into the pipe profile, the socket and sealing ring must be cleaned to remove sand and any other substances that could interfere with correct installation.

The lips of the sealing ring must be positioned so as to facilitate insertion of the pipe, as shown in the following figures.

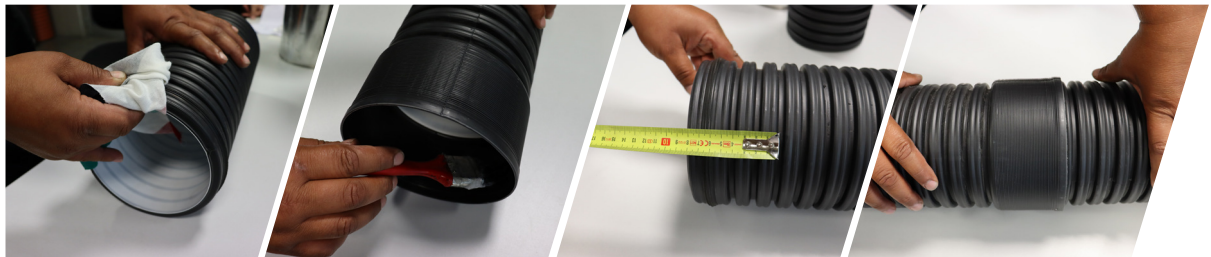
During jointing, if pressure needs to be applied to the pipe socket, it is recommended that a short section of pipe be inserted inside the socket beforehand.

We recommend carrying out a watertightness test in accordance with EN 1610, providing the contractor with full confidence in the work performed. The test may be carried out using either the water or air method.

When making the joint, all surfaces must be clean, lubricated and free from impurities.

Depending on the connection diameter, jointing may be carried out with or without mechanical equipment.

The assembly procedure for small-diameter pipes is shown below.

**1**

IMPORTANT: Before fitting the sealing ring into the pipe profile, carefully clean the socket and the corrugation where the sealing ring will be positioned, in order to remove sand and any other substances that could interfere with correct installation.

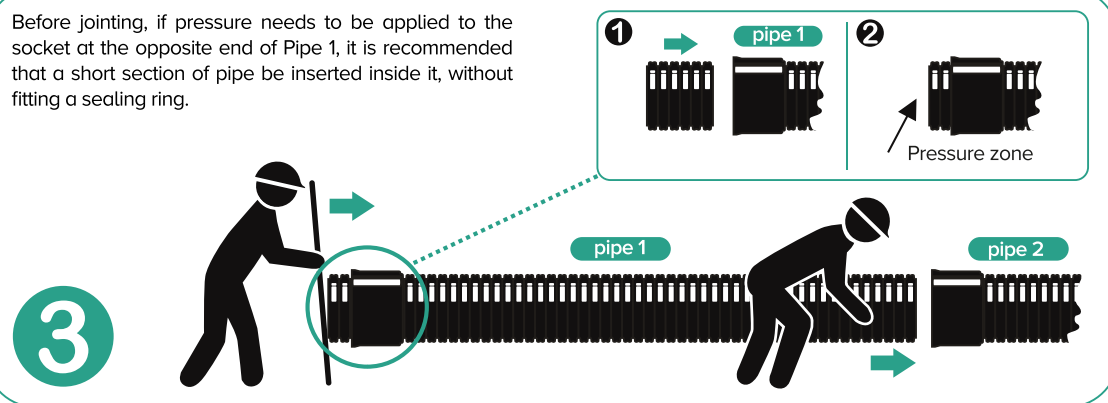
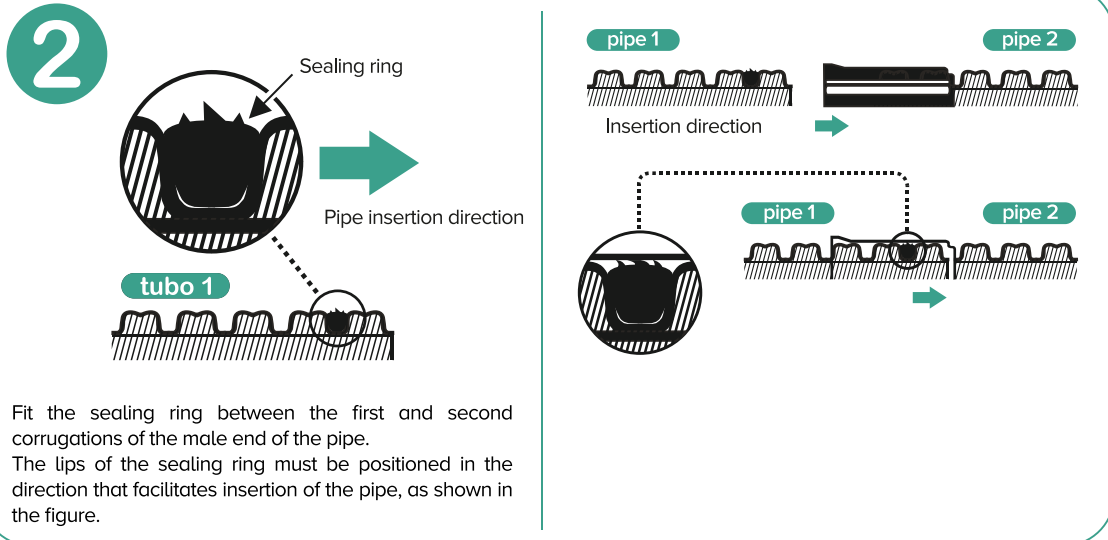
IMPORTANT: Before assembling the pipes, the sealing ring must be coated with a suitable lubricant.

When installing AMBIDUR pipes, the following factors must be taken into consideration:

- Minimum trench depth and width;
- Levelling of the trench bed;
- Pipe alignment;
- Backfill material and compaction levels.



If you have any questions, consult the manufacturer before starting installation.



8. Field of application

The AMBIDUR solution is mainly intended for the following applications:

- Wastewater networks;
- Stormwater drainage networks;
- Industrial discharges;
- Other applications.

The AMBIDUR system, comprising pipes, fittings, manholes and inspection chambers, was developed to address major challenges in sewerage works, ensuring 100% watertightness and providing simple and quick installation, thereby reducing installation and operating costs.

The AMBIDUR system was developed as a solution to produce pipes with greater stiffness while using less raw material, through the use of corrugated profiles. As a result, these pipes are more competitive in terms of cost reduction compared with other plastic piping solutions.

Thanks to its excellent mechanical, chemical and hydraulic properties, the design of this solution provides a hydraulically smooth flow regime. Its resistance to corrosion reduces the need for system rehabilitation and repairs, while fluid movement provides a self-cleaning action that helps prevent deposits and incrustation.

9. Handling, transport and storage

During the loading, transport, unloading and storage of the pipes, good practices and appropriate equipment must be used to ensure their structural integrity and prevent damage.

9.1. Handling

During unloading, contact between the pipes and the ground should be avoided. The pipes must be placed on a horizontal surface free from contact points that could cause damage. Sudden unloading and impacts to the pipes must be avoided.

At low temperatures, additional care must be taken to avoid heavy impacts that could easily damage the pipes, as impact resistance is reduced at low temperatures.

9.2. Transport

AMBIDUR pipes are supplied on pallets or, occasionally, loose in the case of small quantities. Loading and transport of the pipes must be carried out with the utmost care.

When loading the truck, the position of the pipe socket must be taken into consideration, ensuring that it is not subjected to excessive load points.

The pipes must be laid on a horizontal surface free from contact points that could damage them. Pipes with greater stiffness, diameter and weight must be placed at the bottom of the load, with the remaining pipes placed on top. When transported loose, smaller pipes may be placed inside pipes of a larger diameter.

9.3. Storage

The pipe storage area should preferably be covered, level and free from contact points or objects that could cause deformation. The number of stacked pallets must be limited to ensure safe storage conditions.

The pipes must be positioned with their sockets alternating, avoiding excessive loads on the socket area and ensuring that the pipes are adequately supported along the remainder of their length.

AMBIDUR pipes must be protected from UV radiation, particularly during periods of high UV exposure when long-term storage is expected.

Exposure to UV radiation may reduce impact resistance and cause discolouration. The use of an opaque cover that allows air circulation is recommended.



10. Installation instructions

This chapter provides some recommendations for the installation of AMBIDUR pipes.

Installation must follow the good practices recommended by the applicable standards, ensuring a maximum ovalisation of less than 5% in order to guarantee watertightness.

10.1. Buried installations

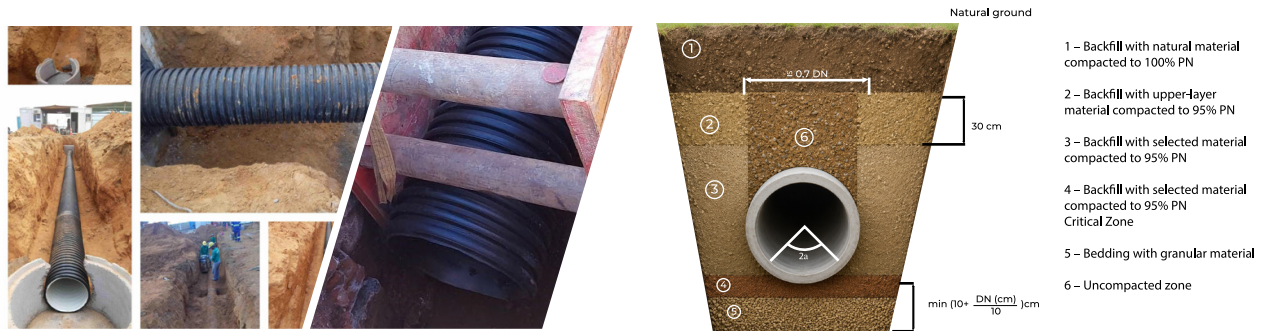
The installation of AMBIDUR pipelines must comply with the applicable general standards. Their service life and proper performance are directly related to the care taken during installation and the correct application of trench construction techniques. This does not replace the need for proper system design, taking into account the materials to be used and the correct design and installation of anchoring points.

The horizontal distance between the pipe and foundations/underground installations must be at least 0.4 m under normal circumstances. A minimum separation of 0.2 m between water pipes and cables is recommended. Drinking water pipelines must not be located beneath sewerage or drainage pipelines.

It is recommended that the male end of the pipe be inserted in the direction of fluid flow, in accordance with the recommended dimensions.

Suitable materials must be used for trench backfilling. Fine-grained material should be used for the trench bed and the initial backfill layers. Extreme care must be taken during compaction to ensure that the corrugations are completely filled. The selected materials must be compacted in layers and with the utmost care to prevent excessive pipe deformation in the short or medium term.

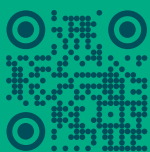
A typical trench layout is shown in the figure below.



The following factors should be taken into consideration when constructing the trench:

- Pipe diameter;
- Type of trench;
- Depth (minimum recommended depth: 0.9 m);
- Trench width (pipe diameter plus 20–30 cm on each side);
- Topography and soil classification;
- Static and moving loads;
- Anchoring points;
- Groundwater level.

For further information regarding mechanical and hydraulic calculations, please contact our Sales Department.



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