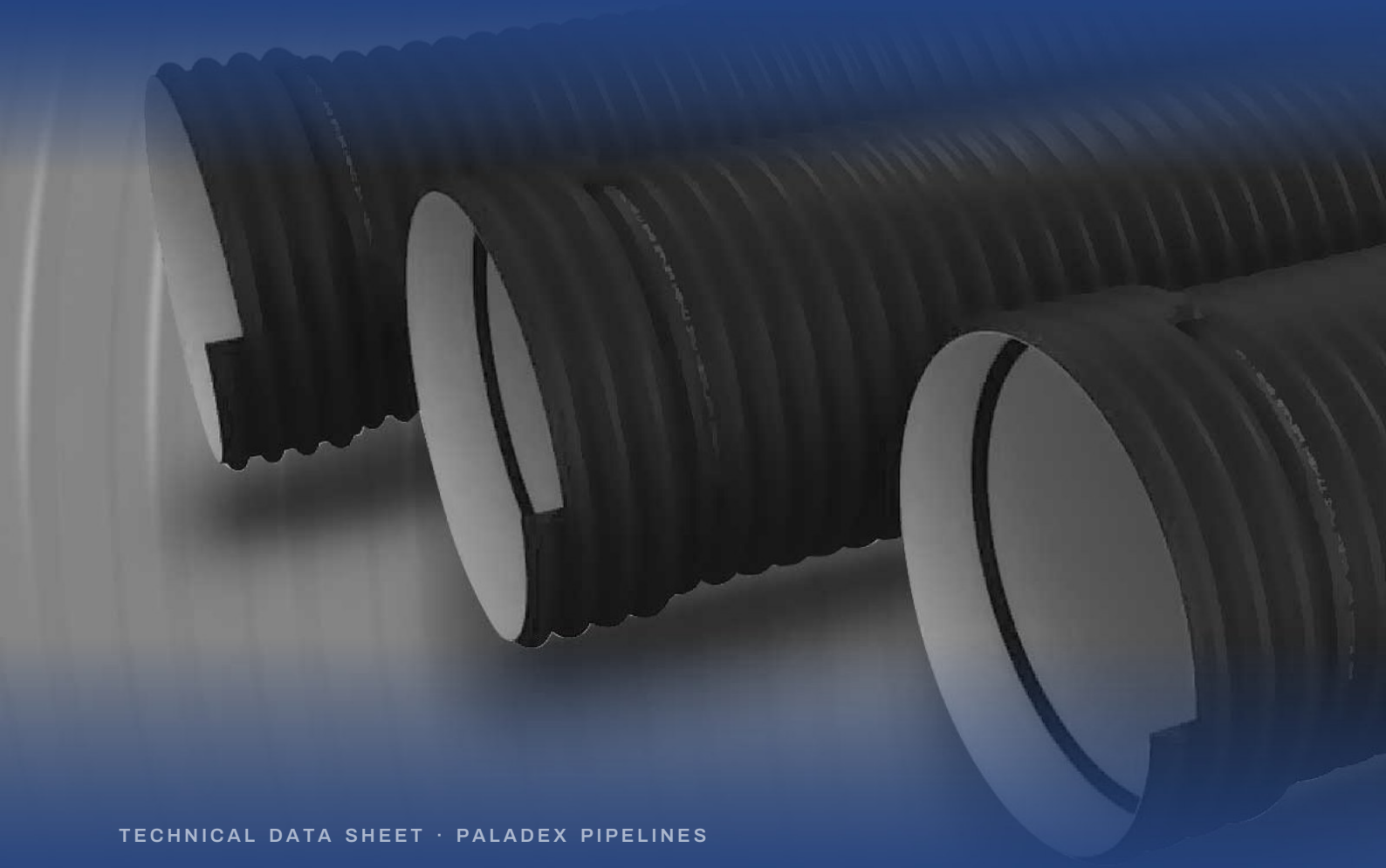
PALADERI
INNOVAZIONE COSTANTE



TECHNICAL DATA SHEET · PALADEX PIPELINES

PALADEX pipes

Spiral-wound composite pipe in galvanised steel and polyethylene for sewerage, stormwater, irrigation networks, tunnel ventilation, embankment crossings, storage tanks and stormwater detention tanks.

INTERNAL DIAMETER	RING STIFFNESS	PIPE LENGTH	PRODUCT STANDARD
DN/ID from 300 to 3000 mm	**SN 4, SN 8, SN 12, SN 16, SN 20 (EN ISO 9969)**	**from 1.00 to 13.40 m**	**UNI 11434, application area U**

Technical data

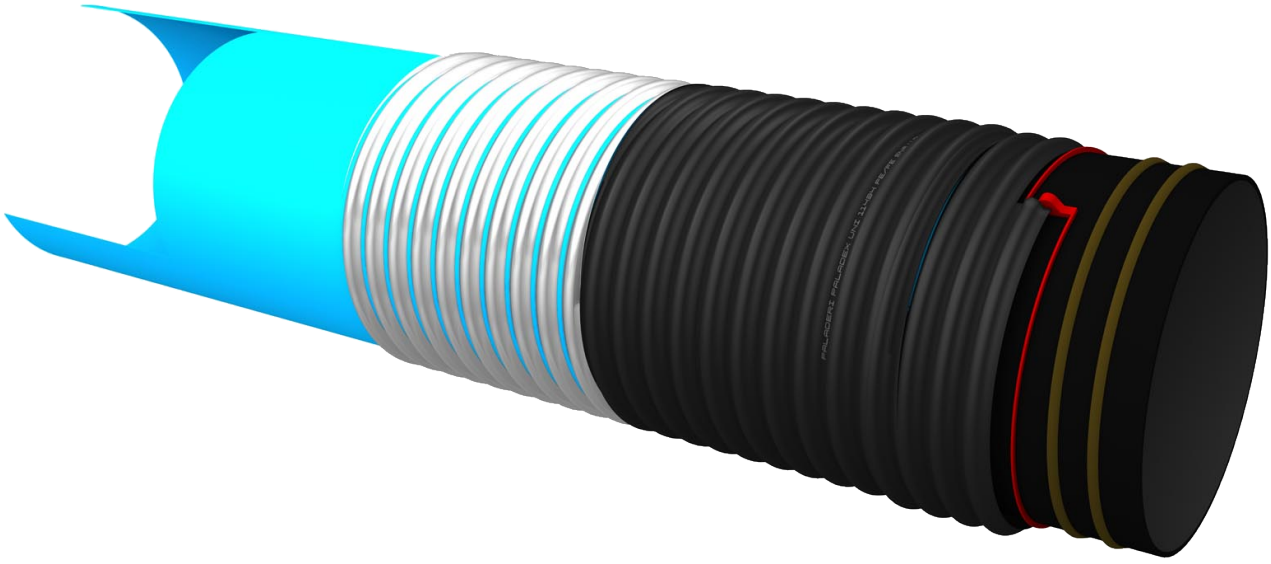
Material	**Galvanised steel DX51D+Z (UNI EN 10346) and high-density polyethylene**
Internal diameter	**DN/ID from 300 to 3000 mm**
Ring stiffness	**SN 4, SN 8, SN 12, SN 16, SN 20 (EN ISO 9969)**
Pipe length	**from 1.00 to 13.40 m**
Product standard	**UNI 11434, application area U**
Reinforcement	**Continuous omega-profiled galvanised steel strip DX51D+Z, UNI EN 10346**
Wall	**Smooth inner layer and structured outer wall in polyethylene, steel coated with polyethylene primer**
Joints	**Socket, coupling, extrusion welding, flange**
Watertightness	**UNI EN 1277, EPDM seals to UNI EN 681**
Average weight DN 1200 SN 8	**70 kg/m**
Recycled material	**at least 30% by weight of the plastic component**

General characteristics

Obsolete and undersized sewer networks, increasingly intense rainfall and frequent hydrogeological instability call for pipes able to carry higher flows and withstand the internal and external stresses to which a drainage system is subjected.

The PALADEX pipe combines the qualities of polyethylene (abrasion resistance, light weight, minimal roughness coefficient, chemical inertness, ease of installation) with those of steel, whose **elastic modulus is about 200 times higher**. The omega profile and the combination of the two materials deliver higher performance than structured-wall pipes made of thermoplastic alone and than traditional GRP, concrete, cast iron or vitrified clay pipes used for the same applications.

Wall structure



The pipe is produced by continuous helical winding of polyethylene and an omega-profiled galvanised steel strip. The Bi-adhesive Bonding Process (BBP) bonds the elements together.

The cross-section consists of an inner polyethylene layer, a structured polyethylene outer wall and a galvanised steel core coated with a **polyethylene-based primer**, which ensures the homogeneity and perfect adhesion of the components.

Thanks to the steel, the pipe achieves **crush resistance values of up to 20 kN/m²**, never before obtained by large-diameter pipes made of thermoplastic alone, with a smaller external diameter, less raw material and better long-term behaviour under constant load.

Size range

DN/DI (mm)	Indicative external diameter (mm)	Metres per truck (approx.)
300	335	499.8
400	437	297.5
500	544	190.4
600	650	142.8
700	760	107.1
800	870	107.2
900	970	80.4
1000	1080	67.0
1100	1180	53.6
1200	1300	40.2
1300	1411	26.8
1400	1523	26.8
1500	1633	13.4
1600	1736	13.4
1800	1955	13.4
2000	2170	13.4
2200	2390	13.4
2400	2605	on request
2500	2806	on request
2800	3007	on request
3000	3208	on request

Intermediate diameters of 1700, 1900, 2100, 2300 and 2600 mm are also available. Stiffness classes SN 8, SN 16 and SN 20 are listed as standard; SN 4 and SN 12 on request.

The UNI 11434 standard

In January 2012 UNI published the UNI 11434 standard for spiral-wound polyethylene pipes with a steel component fully embedded in the wall and a smooth internal surface, for sewerage, stormwater and ventilation ducts. Italy was the **first European country to adopt a specific standard** for this technology.

In drafting it, the working group appointed by Uniplast took as references ASTM F2435, the Israeli IS 5302, the IIP RP 1.1/CO specification, the French specification 17/07-190, the German DIN 16961 and EN 13476. Ring stiffness is calculated according to EN ISO 9969.

Frequently asked questions

What is a PALADEX steel and polyethylene pipe?

It is a spiral-wound composite pipe: an omega-profiled galvanised steel strip is wound helically and fully embedded between two layers of high-density polyethylene. The steel provides stiffness, while the polyethylene protects against corrosion and gives a smooth internal surface.

Which diameters and stiffness classes are available?

The internal diameter ranges from 300 to 3000 mm. The ring stiffness classes, calculated to EN ISO 9969, are SN 4, SN 8, SN 12, SN 16 and SN 20; higher classes are available on request.

Which standard do PALADEX pipes comply with?

The Italian standard UNI 11434, which covers spiral-wound polyethylene pipes with steel reinforcement fully embedded in the wall, for sewerage, stormwater and ventilation ducts (marking U).

How much does a PALADEX pipe weigh compared with other materials?

A PALADEX DN/ID 1200 pipe in class SN 8 weighs on average 70 kg/m, compared with around 120 kg/m for a spiral-wound pipe in polyethylene only and over 1900 kg/m for a reinforced concrete pipe.

How are the pipes joined?

With a socket and EPDM seal, with a pre-welded internal coupling, with internal extrusion welding (from DN 1400) or with flanges (up to DN 1000). All systems ensure watertightness to UNI EN 1277.

Are PALADEX pipes suitable for pressure pipelines?

No, they are pipes for gravity networks and buried non-pressure drainage. Nevertheless, in laboratory tests the joints have withstood pressures well above the limits set by the standard.

Indicative data, subject to change without notice. The Paladeri technical department is available for sizing and selecting the right solution.

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