TECHNICAL DATA SHEET

VALSIR® WASTE SYSTEMS

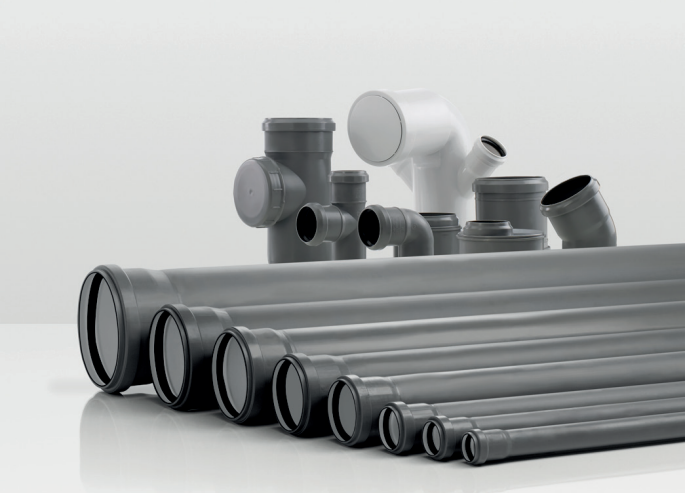
PP3

valsir®
QUALITY FOR PLUMBING

PP3

The product

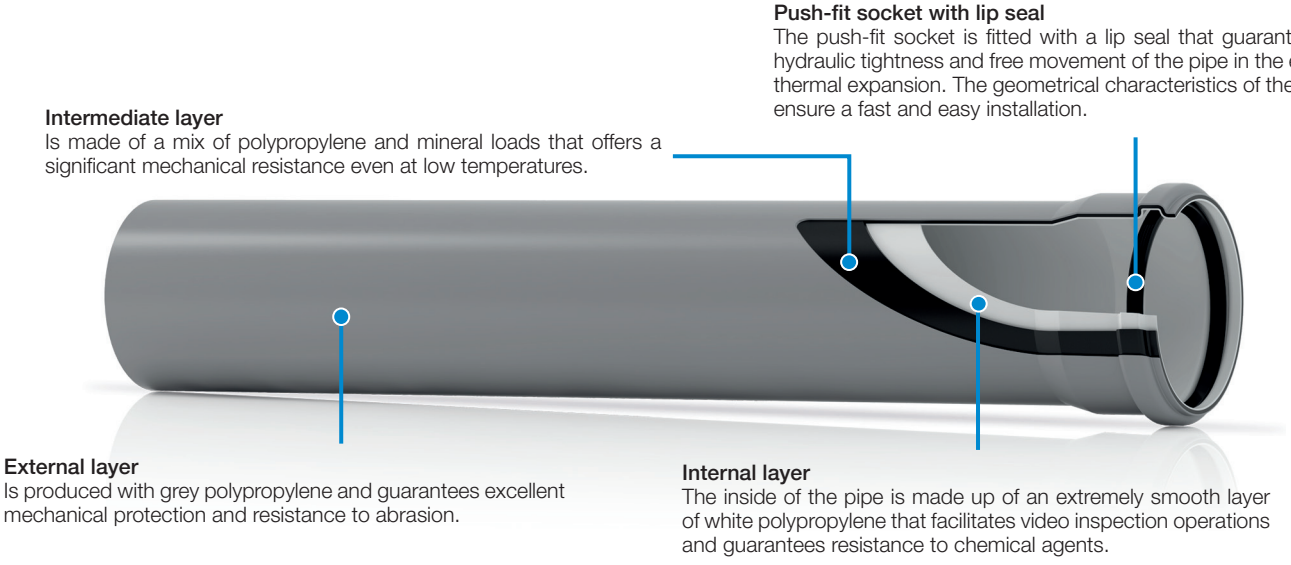
Valsir® PP3 is composed of triple layer pipes, fittings and accessories for the construction of waste, ventilation and rainwater drainage systems.
The extremely light weight and simple connections, thanks to the push-fit sockets with rubber seals, make it the most practical and economical solution for the construction of waste systems inside buildings for civil and industrial use, hospitals and hotels.
The pipes, characterised by a white internal surface, simplify video camera pipe inspection.



Characteristics

- Absolute guarantee of watertight joints, thanks to the elastomeric seal (factory fitted), that do not require the use of any special tools, glues or solvents.
- The white internal surface facilitates video camera pipe inspection.
- The special material mix that composes the intermediate layer of the pipes increases the crushing and impact resistance of the pipes at low temperatures. The particular characteristics of the material also provide a good sound insulating performance, one of the best when compared with products in the same category.
- Extremely fast and easy to install thanks to the light weight of the products.
- Range of diameters from OD 32 mm to OD 160 mm, wide choice of special pieces and accessories that allow the construction of any type of system and the connection to waste systems in different materials such as cast iron, PE, PVC, etc.
- The material is not affected by stray currents and is compatible with the majority of chemical substances normally present in waste waters.
- An high abrasion resistance and extremely smooth internal surfaces guarantee minimal pressure losses and no deposit formation.
- Pipes are available in various lengths (from 150 mm to 5 m) and by using the dual socketed pipes and fittings (sliding double socket) material wastage is avoided.

Figure Layering of the pipe.



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Technical details

Table Typical technical details.

Property	Value	Test method
Pipe material	Homopolymer polypropylene for internal and external layers, mix of polypropylene and mineral loads for the intermediate layer	-
Fitting material	Fitting material[2]	-
Seal material	SBR rubber	
Colour	Fittings: Grey RAL 7037. Pipes: Grey RAL 7037 for the external layer, Black for the intermediate layer, White for the internal layer.	-
Diameters	32÷160 mm	-
Application	High and low temperature waste and drainage systems inside the building or anchored externally to the walls of the building (application area B) or laid directly in concrete; ventilation of waste systems; gravity rainwater drainage systems.	-
Connections	Connection with push-fit socket with rubber seal.	-
Minimum temperature of use	-10°C	-
Maximum temperature of waste water	+95°C (intermittent) +80°C (continuous)	-
Minimum pressure	Not suitable for drainage systems under negative pressure	-
Maximum pressure	+1.5 bar[1]	-
Composition of waste water	pH 2÷12	-
Soundproofing performance[3]	$L_{SC,A}$=17 dB(A) with flow of 2 l/s, measurement performed on ground floor, behind the installation wall with 2 clips per floor	-
	L_{IN}=20 dB(A) with flow of 2 l/s, measurement performed on ground floor, behind the installation wall with 2 clips per floor	-
Density at 23°C	pipes: > 940 kg/m^3 (medium thickness) > 1800 kg/m^3 (intermediate layer) fittings: > 900 kg/m^3	EN ISO 1183-2
Melt Index 230/2.16 kg	< 3.0 g/10 min	EN ISO 1133
Elasticity modulus	1650 MPa	ISO 527-2
Tensile strength	≥ 22 MPa	ISO 527-2
Ultimate elongation	≥ 500%	ISO 6259-3
Crystalline melting temperature	≥ 160°C	EN 728
VICAT B temperature (50N)	95°C	ISO 306
Linear heat expansion coefficient	0.11 mm/m·K	-
UV resistance	Suitable for use outdoors[4]. Suitable to be stored outdoors (for periods not exceeding 18 months).	-
Halogen content	Halogen-free	-
Fire resistance	D-s3,d2	EN 13501-1
Reference construction standard	EN 1451-1	-
Packaging	Pipes in wooden frames with strapping for large diameters, in bundles tied with plastic elements for other diameters, in cardboard boxes for small diameters and reduced lengths. Fittings in cardboard boxes.	-

(1) This product line is suitable for gravity waste systems, the value indicated therefore refers to the maximum pressure that can be applied during system testing at 20°C.
(2) The fittings are the same product line PP.
(3) For greater detail refer to chapter 2 “Noise in waste systems”.
(4) Provided protected from direct sunlight, for example, using a special protective paint.

Application field

The Valsir® PP3 pipes and fittings meet the requirements of the EN 1451 Standard and can be used inside buildings destined for residential and industrial use and, in particular, for these following purposes:

a) Waste pipes for domestic waste waters (low and high temperature).
b) Ventilation pipes connected to the waste pipes previously indicated.
c) Discharge of rain water inside the structure of the building.

As prescribed in the European Standard EN 1451 the Valsir® PP3 pipes are suitable for applications identified with the "B" marking that identifies pipes and fittings for use inside the building or outside, anchored to the wall.

Dimensions

The nominal diameters, the nominal wall thickness and relative tolerances of the Valsir® PP3 pipes are indicated in the following table. These values are in compliance with those set by the standards currently in force.

Table Dimensional characteristics of the pipes.

Nominal diameter DN [mm]	External diameter OD [mm]	Thickness s [mm]	Series S	Application area
32	$32\ ^{+0.3}_{0}$	$1.8\ ^{+0.4}_{0}$	20	B
40	$40\ ^{+0.3}_{0}$	$1.8\ ^{+0.4}_{0}$	20	B
50	$50\ ^{+0.3}_{0}$	$1.8\ ^{+0.4}_{0}$	20	B
70	$75\ ^{+0.4}_{0}$	$1.9\ ^{+0.4}_{0}$	20	B
90	$90\ ^{+0.4}_{0}$	$2.2\ ^{+0.5}_{0}$	20	B
100	$110\ ^{+0.4}_{0}$	$2.7\ ^{+0.5}_{0}$	20	B
125	$125\ ^{+0.4}_{0}$	$3.1\ ^{+0.6}_{0}$	20	B
150	$160\ ^{+0.5}_{0}$	$3.9\ ^{+0.6}_{0}$	20	B

Note: The tolerances indicated are specified in the reference standard EN 1451.

Connection systems

Different methods can be used for connecting the pipes and/or fittings in polypropylene:

- Connection with push-fit socket.
- Connection with a slip sleeve.

Approvals:

The approvals of Valsir® waste systems are available on the website: www.valsir.com

Marking

Figure Pipe marking.

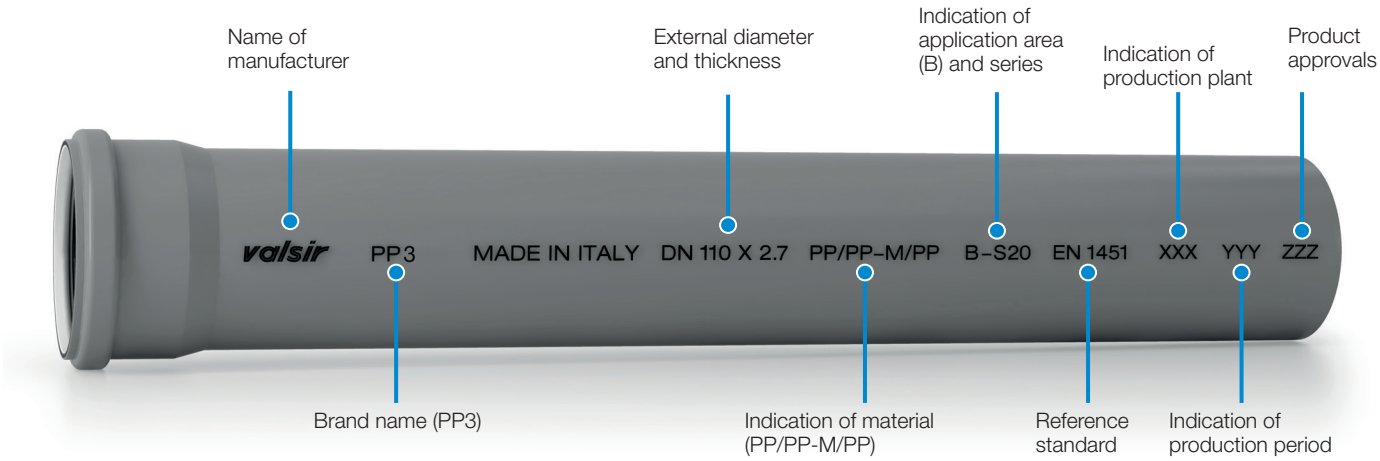
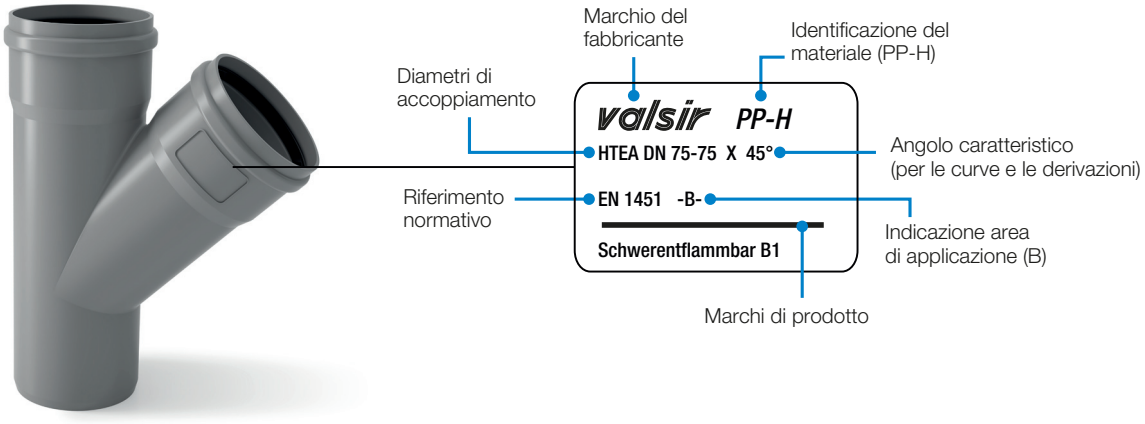
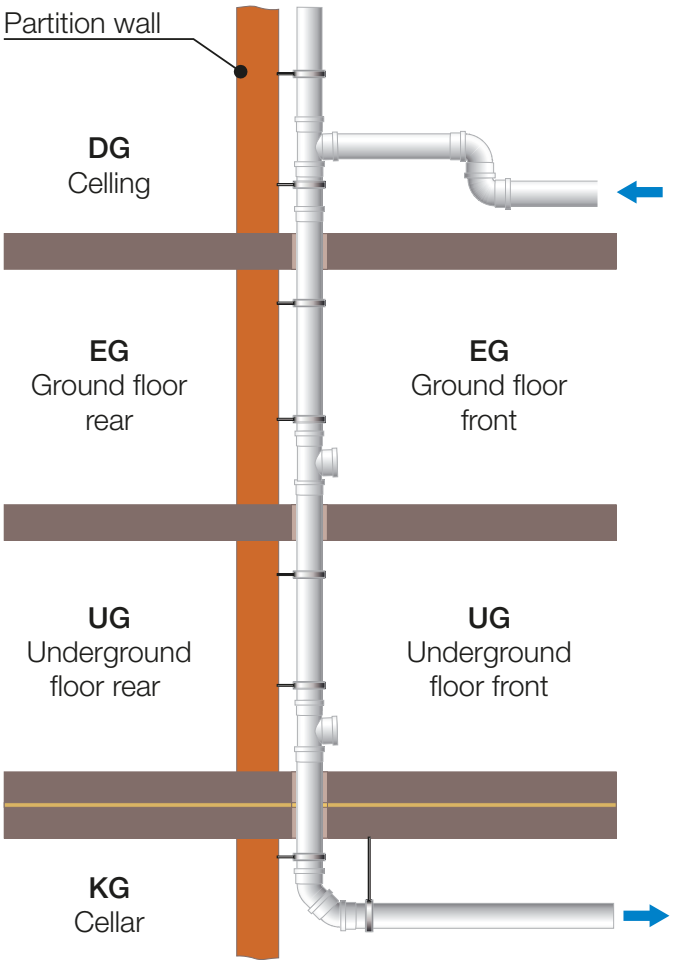


Figure Fitting marking.



Acoustic performance: the test methods

The reference standards used for the tests are UNI EN 14366:2004 and DIN 4109:1989 (together with DIN 52219:1993) that specify the measurement methods and the evaluation of the results. The test building is made up of a completely insulated room with thick walls made of a sound absorbing material of high quality.
It is a real buildings with four floors (with an internal height of 3050 mm), two of which, indicated in the figure as EG and UG, are the reference floors for noise detection divided by a wall made of concrete with a weight of 220 kg/m^2 (250 kg/m^2 for the European Standard UNI EN 14366) to which a waste stack is anchored.
The measurement floors are each divided into two rooms: the front room is where the pipe is installed, the back room contains no installation and picks up the noise vibrations transferred to the partition wall; the back rooms have a volume of 70.4 m^3 (surface area of about 23 m^2) while the front rooms are 52.6 m^3 (surface area of about 17 m^2).



The waste flow (continuous) is ensured by means of a pumping station that guarantees a precision of 5% and which supplies different levels of flow in relation to the internal diameter of the pipe as can be seen in Table 2.7
The acoustic pressure levels are measured in third octaves with frequencies from 100 Hz to 5000 Hz.

Measurement flow in relation to the dimensions of the waste pipe to be tested.

Internal diameter of the pipe [mm]	70 ≤ Di < 100	100 ≤ Di < 125	125 ≤ Di < 150
Measurement flows [l/s]	0.5 - 1	0.5 - 1 - 2 - 4	0.5 - 1 - 2 - 4 - 8

The acoustic results

The testing campaign involved numerous tests being carried out in 1997, 1998, 2004, 2006 and 2014 and the excellent results obtained following the development of the Valsir® waste systems are indicated in the diagrams and tables which follow. The tests were carried out both with 2 clips per floor and with 1 clip per floor as the latter represents the typical installation configuration in residential buildings. Consider that the values obtained were rounded up to whole numbers as requested by the reference standards.

Table Levels of sound pressure measured behind the installation wall for the Valsir® PP3 110x2.7 pipe, measurements performed and formulated by the Fraunhofer Institute of Stuttgart (Germany).

Test pipes: Valsir® PP3						
Test conditions	Measurement floor	Flow rate of water				Reference standard (Certificate)[c]
		0.5 l/s	1 l/s	2 l/s	4 l/s	
		Sound level				
Index $L_{SC,A}$ measured behind the installation wall, with 2 clips per floor, pipe diameter OD 110 mm	UG	<10 dB(A)	13 dB(A)	17 dB(A)	23 dB(A)	EN 14366
Index L_{IN} measured behind the installation wall, with 2 clips per floor, pipe diameter OD 110 mm	EG UG	10 dB(A) 12 dB(A)	14 dB(A) 16 dB(A)	17 dB(A) 20 dB(A)	23 dB(A) 26 dB(A)	DIN 4109
Index L_{IN} measured behind the installation wall, with 1 clip per floor, pipe diameter OD 110 mm	EG UG	10 dB(A) 11 dB(A)	12 dB(A) 14 dB(A)	16 dB(A) 18 dB(A)	22 dB(A) 24 dB(A)	DIN 4109

PLUMBING

WASTE SYSTEMS

SUPPLY SYSTEMS

GAS SYSTEMS

FLUSH SYSTEMS

BATHROOM SYSTEMS

TRAPS

RADIANT SYSTEMS

DRAINAGE SYSTEMS

HRV SYSTEM

ACADEMY

BUILDING

SEWER SYSTEMS

WATER TREATMENT

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