

TECHNICAL DATA SHEET

VALSIR® WASTE SYSTEMS

TRIPPLUS



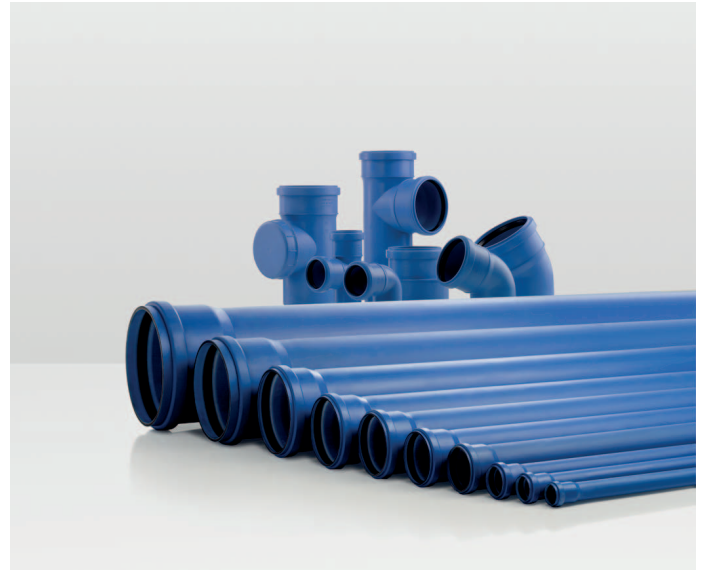
valsir®
QUALITY FOR PLUMBING

The product

The Valsir Triplus® system is suitable for the construction of high and low temperature waste systems, for the ventilation of waste systems and for rainwater drainage inside civil and industrial buildings, hospitals, hotels, etc.

Thanks to its mechanical resistance the system is also suitable for use in central dust collection systems.

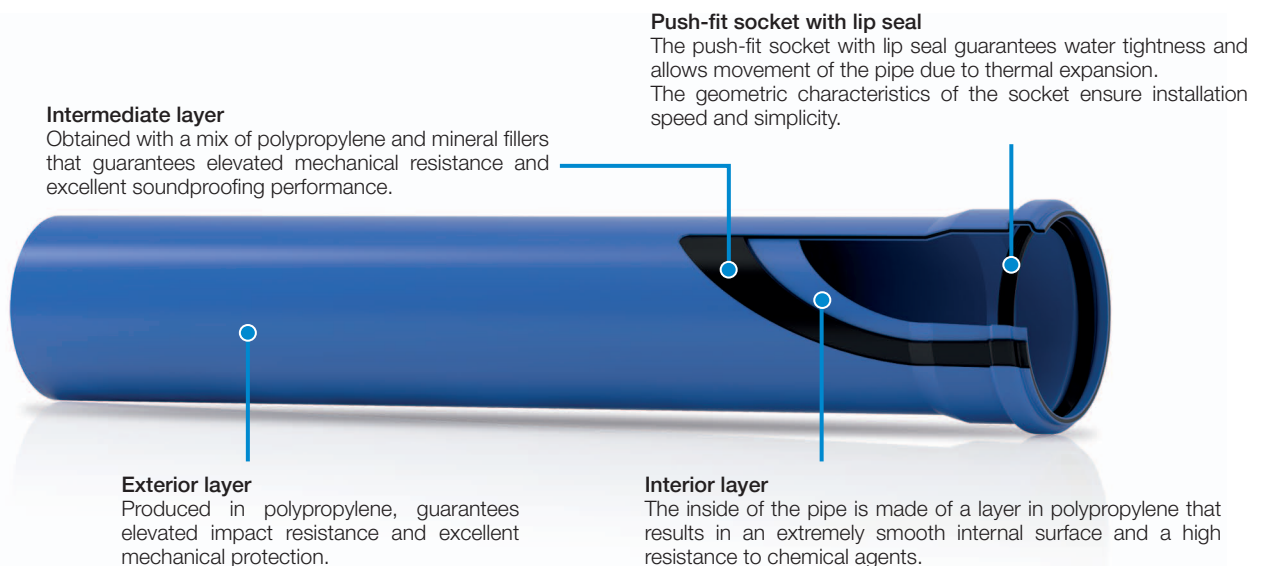
The pipes are composed of three layers of material, which, when put together, give the pipes high mechanical characteristics at low temperatures and an excellent soundproofing performance.



Characteristics

- Excellent sound insulation performance; the system reduces noise to just 12 dB(A) with a flow of 2 l/s.
- 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.
- Extremely fast and easy to install thanks to the light weight of the products.
- Wide range of diameters from OD 32 mm to OD 250 mm and the availability of transition accessories for connection to existing waste systems in different materials such as cast iron, PE, PVC, etc.
- Excellent impact resistance even at low temperatures thanks to the triple-layer structure.
- High resistance to a wide range of chemical compounds also at high temperatures; not affected by stray currents.
- 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 3 m) and by using the dual socketed pipes and fittings (sliding double socket) material wastage is avoided.

Figure Layering of the pipe.



Technical details

Table Typical technical details.

Property	Value	Test method
Pipe material	Homopolymer polypropylene for the internal and external layers, mix of polypropylene and mineral loads for the intermediate layer	-
Fitting material	Homopolymer polypropylene + mineral charges	-
Seal material	SBR rubber	-
Colour	Fittings: Light blue RAL 5015. Pipes: Light blue RAL 5015 for the internal and external layers, Black for the intermediate layer.	-
Sizes	32÷250 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	Push-fit socket connection with rubber seal.	-
Minimum temperature of use	-25°C	-
Maximum temperature of waste water	+95°C (intermittent) +80°C (continuous)	-
Minimum pressure	-800 mbar ⁽¹⁾	-
Maximum pressure	+1.5 bar ⁽²⁾	-
Composition of waste water	pH 2÷12	-
Soundproofing performance ⁽³⁾	$L_{SC,A}$ =12 dB(A) with flow of 2 l/s, measurement performed on ground floor, behind the installation wall with 2 clips per floor	EN 14366
	L_{IN} =15 dB(A) with flow of 2 l/s, measurement performed on ground floor, behind the installation wall with 2 clips per floor	DIN 4109
	$R_w + C_{tr}$ 42 without pipe cladding and with 13 mm plasterboard wall and 75 mm R1.5 insulation, evaluation made with flow of 2 and 4 l/s.	Building Code of Australia (Part F5.6)
Density at 23°C	pipes: > 1200 kg/m ³ (medium thickness) > 1800 kg/m ³ (intermediate layer) fittings: > 1400 kg/m ³	EN ISO 1183-2
Melt Index 230/2.16	< 5.0 g/10 min	EN ISO 1133
Elasticity modulus	1500 MPa	ISO 527-2
Tensile strength	≥ 18 MPa	ISO 527-2
Ultimate elongation	≥ 600%	ISO 6259-3
Crystalline melting temperature	≥ 160°C	EN 728
Linear heat expansion coefficient	0.08 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	Euroclass D-s3,d0	EN 13501-1
Reference construction standard	EN 1451-1 - AS7671:2003 - DIBt z42.1-426	-
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) The system is suitable for the creation of collection systems and vacuum waste systems. The values indicated refer to 20°C.

(2) The system is suitable for gravity waste and drainage systems, the value indicated refers therefore to the maximum pressure that can be applied during system testing at 20°C.

(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 Triplus® pipes and fittings meet the requirements of the EN 1451 Standard and can be used inside buildings for residential and industrial use and in particular for the following applications:

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

Followings in the European Standard EN 1451 the Valsir Triplus® pipes are suitable for applications identified with the “B” marking that identifies pipes and fittings for use inside the building or outside, anchored to a wall.

Dimensions

The diameters, the wall thickness and the relative tolerances of the Valsir Triplus® pipes are indicated in the following table.

Table Pipe dimensional characteristics.

Nominal diameter DN [mm]	External diameter OD [mm]	Thickness s [mm]	Series S	Application area
30	32 $^{+0.3}_0$	1.8 $^{+0.4}_0$	16	B
40	40 $^{+0.3}_0$	1.8 $^{+0.4}_0$	16	B
50	50 $^{+0.3}_0$	1.8 $^{+0.4}_0$	16	B
70	75 $^{+0.4}_0$	2.6 $^{+0.5}_0$	14	B
90	90 $^{+0.4}_0$	3.1 $^{+0.6}_0$	14	B
100	110 $^{+0.4}_0$	3.4 $^{+0.6}_0$	16	B
125	125 $^{+0.4}_0$	3.9 $^{+0.6}_0$	16	B
150	160 $^{+0.5}_0$	4.9 $^{+0.7}_0$	16	B
200	200 $^{+0.5}_0$	6.2 $^{+0.6}_0$	16	B
250	250 $^{+0.5}_0$	7.7 $^{+0.8}_0$	16	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:

- Connection with push-fit socket.
- Connection with sliding sleeve.

Approvals:

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

Marking

Figure Pipe marking.

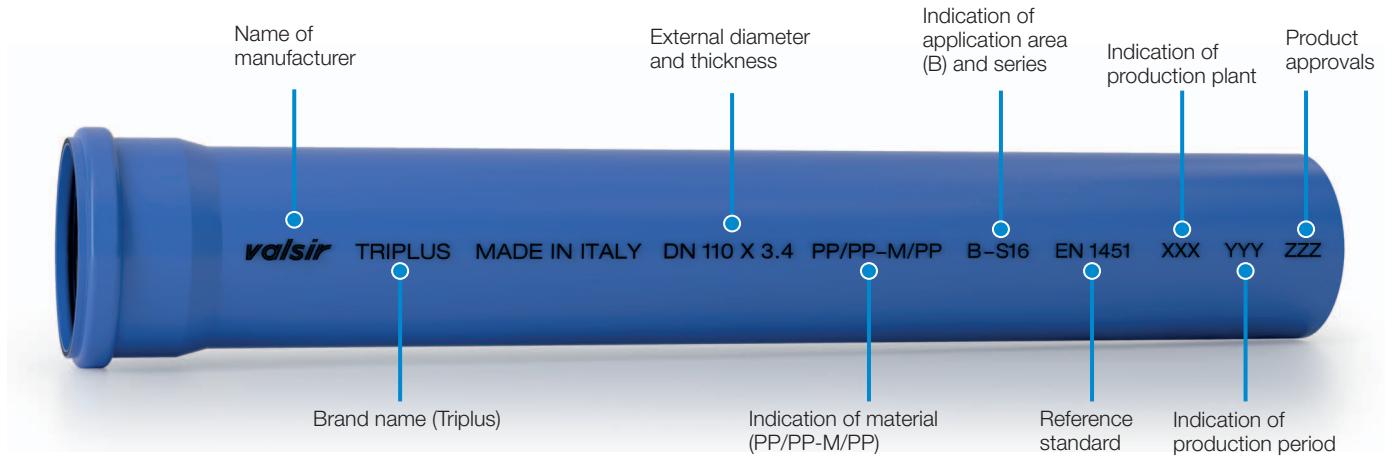
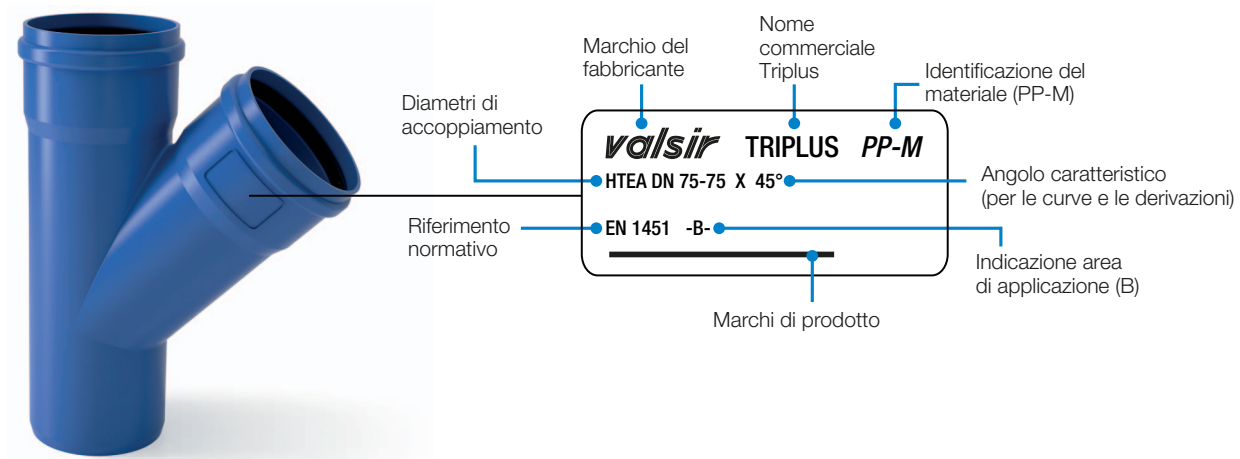


Figure Fitting marking.

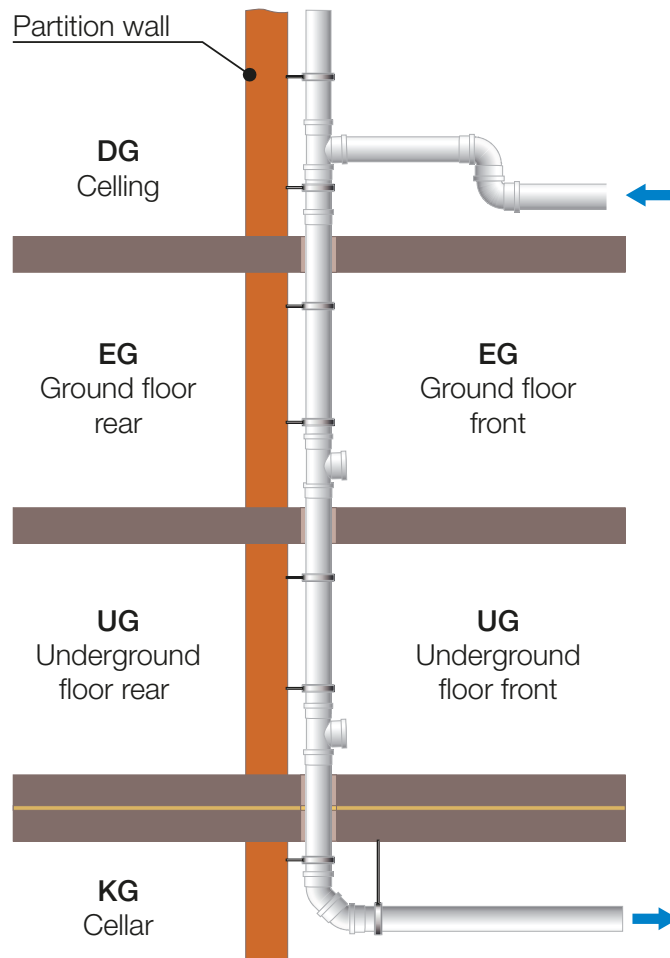


Acoustic performance: the test methods

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/m² (250 kg/m² 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 m³ (surface area of about 23 m²) while the front rooms are 52.6 m³ (surface area of about 17 m²).



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]	$70 \leq Di < 100$	$100 \leq Di < 125$	$125 \leq Di < 150$
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 Triplus® 110x3.6 pipe, measurements performed and formulated by the Fraunhofer Institute of Stuttgart (Germany).

Test pipes: Valsir Triplus®						
Test conditions	Measurement floor	Flow rate of water				Reference standard (Certificate) ^(b)
		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	1 dB(A)	6 dB(A)	12 dB(A)	16 dB(A)	EN 14366
Index L_{IN} measured behind the installation wall, with 2 clips per floor, pipe diameter OD 110 mm	EG	3 dB(A)	8 dB(A)	12 dB(A)	19 dB(A)	DIN 4109
	UG	4 dB(A)	9 dB(A)	15 dB(A)	19 dB(A)	
Index L_{IN} measured behind the installation wall, with 1 clip per floor, pipe diameter OD 110 mm	EG	1 dB(A)	5 dB(A)	10 dB(A)	16 dB(A)	DIN 4109
	UG	2 dB(A)	6 dB(A)	11 dB(A)	15 dB(A)	

PLUMBING

WASTE SYSTEMS



SUPPLY SYSTEMS



GAS SYSTEMS



FLUSH SYSTEMS



BATHROOM SYSTEMS



TRAPS



RADIANT SYSTEMS



DRAINAGE SYSTEMS



HRV SYSTEM



ACADEMY



SEWER SYSTEMS



WATER TREATMENT



BUILDING

valsir[®]
QUALITY FOR PLUMBING

VALSIR S.p.A.
Località Merlaro, 2
25078 Vestone (BS) - Italy
Tel. +39 0365 877.011
Fax +39 0365 81.268
e-mail: valsir@valsir.it

www.valsir.com

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