

Test Report P-BA 90/2018e

Determination of the Acoustic Performance of a Wastewater Installation System in the Laboratory according to EN 14366

Client: Pipelife Austria GmbH & Co KG
IZ NOE-Sued - Strasse 1
Objekt 27
2355 Wr. Neudorf
Austria

Test object: Wastewater system " PIPELIFE MASTER 3 PLUS, 110x3.0, PP, 28 FEB 18" (manufacturer: Pipelife Austria GmbH & Co KG), nominal size OD 110, consisting of straight plastic pipes, fittings and acoustic pipe clamps "Bismat 1000" (manufactured by Walraven). Installation of the pipe clamps see test setup.

Content:	Results sheet 1:	Summary of test results
	Figures 1 to 3:	Detailed results
	Figures 4 and 5:	Test set-up
	Annex A:	Measurement set-up, noise excitation, acoustic parameters
	Annex F:	Evaluation of measurements
	Annex P:	Description of the test facility
	Annex V:	Assessment according to VDI 4100

Test date: The measurement was carried out on May 8, 2018 in the test facilities of the Fraunhofer Institute for Building Physics in Stuttgart.

Stuttgart, July 9, 2018

Responsible Test Engineer:

Head of Laboratory:

Dipl.-Ing.(FH) J. Mohr

M.BP. Dipl.-Ing.(FH) S. Öhler

The test was carried out in a laboratory, accredited according to DIN EN ISO/IEC 17025:2005 by DAkks. The accreditation certificate is D-PL-11140-11-01.

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Results sheet 1

Client: Pipelife Austria GmbH & Co KG, IZ NOE-Sued - Strasse 1, Objekt 27, 2355 Wr. Neudorf, Austria

Test specimen: Wastewater system " PIPELIFE MASTER 3 PLUS, 110x3.0, PP, 28 FEB 18" (manufacturer: Pipelife Austria GmbH & Co KG), nominal size OD 110, consisting of straight plastic pipes, fittings and acoustic pipe clamps "Bismat 1000" (manufactured by Walraven). Installation of the pipe clamps see test setup. Test object S 11224-01; see figure 4 and 5.

Test set-up:

- The pipe system was mounted according to figure 4 and 5 (see also Annex A).
- The system consisted of wastewater pipes (nominal size OD 110), three inlet tees (87°), two 45°-basement bends and a horizontal drain section. The inlet tees in the basement and in the ground floor were closed by plugs supplied by the manufacturer.
- Pipe system: " PIPELIFE MASTER 3 PLUS, 110x3.0, PP, 28 FEB 18": Three-layer pipes with shaped pipe sockets: Material PP, wall thickness 3.2 mm, weight 1.2 kg/m, density 1.14 g/cm³, values measured by IBP. One-layer fittings: Material PP, wall thickness 3.5 mm, density 1.29 g/cm³, values measured by IBP. Plug connection of the pipes and fittings (shaped pipe sockets).
- Pipe clamps: Acoustic pipe clamps "Bismat 1000" (manufactured by Walraven): Structure-borne sound insulating support attachment consisting of supporting and fixing clamps. Fixed to the installation wall with a wall plate and with dowels and thread rods. In every storey (EG and UG) respectively two clamps were installed. At the upper wall area one "Bismat 1000" loose clamp was mounted (supporting clamp SL, DN 100). At the lower wall area one double clamp consisting of supporting clamp (SL, DN 100) and fixing clamp (SX, DN 100) was installed. To prevent contact to the pipe, the loose clamp and the supporting clamps were mounted with two spacers on each side (2 x 7.5 mm, black). See figure 4 and 5.

The wastewater installation system was mounted by a technician under the authority of Fraunhofer IBP.

Test facility: Installation test facility P12, mass per unit area of the installation wall: 220 kg/m². Installation rooms: sub-basement (KG), basement (UG) front, ground floor (EG) front and top floor (DG), measuring rooms: UG front, UG rear (details in Annex P and EN 14366: 2005-02).

Test method: The measurements were performed according to EN 14366:2005-02; noise excitation by steady water flow with 0.5 l/s, 1.0 l/s, 2.0 l/s and 4.0 l/s. Additional evaluation for comparison with requirements following German standards DIN 4109:2018-01 and VDI 4100:2012-10 (details in Annexes A, F and V).

Result:

Test specimen: Wastewater system " PIPELIFE MASTER 3 PLUS, 110x3.0, PP, 28 FEB 18" (manufacturer: Pipelife Austria GmbH & Co KG), nominal size OD 110, consisting of straight plastic pipes, fittings and acoustic pipe clamps "Bismat 1000" (manufactured by Walraven). Installation of the pipe clamps see test setup.	Flow rate [l/s]				
	0.5	1.0	2.0	4.0	
Airborne sound pressure level $L_{a,A}$ [dB(A)] according to EN 14366 for the basement test-room	UG front	44	48	51	54
Structure-borne sound characteristic level $L_{sc,A}$ [dB(A)] according to EN 14366 for the basement test-room	UG rear	<10	<10	12	16
Installation sound level $L_{AFeq,n}$ [dB(A)] following DIN 4109 in the basement test-room	UG front	44	48	51	54
	UG rear	<10	10	15	19
Installation sound level $\overline{L_{AFeq,nT}}$ [dB(A)] following VDI 4100 in the basement test-room	UG front	41	46	48	52
	UG rear	<10	<10	11	15

Test date: May 8, 2018

Notes:

- For comparing test results with requirements note Annex A.
- The above-mentioned measurement results require careful assembly of the pipe clamps (see test set-up).
- Sound levels below 10 dB(A) are not mentioned in the official test report, since they are subject to an increased measurement uncertainty and moreover are not noticeable in a normal living environment.



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Stuttgart, July 9, 2018
Head of Laboratory: