

Test Report P-BA 257/2020e

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

Client: Polifusion S.A.
Cacique Colín 2525
Lampa, Región Metropolitana
Chile

Test object: Wastewater system consisting of straight plastic pipes and fittings
"Insonore Pipe System, 110x 3.8 IP-R100, 15.07.20" (manufacturer:
Polifusion S.A.), and acoustic pipe clamps with elastic inlay "Polifusion
IPS, DN 110 mm" (manufacturer: Polifusion), mounted as acoustic
double clamps.

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, compliance with requirements
	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 December 02, 2020 in the test
facilities of the Fraunhofer Institute for Building Physics in Stuttgart.

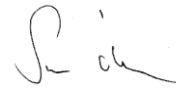
Stuttgart, 18 February 2021

Responsible Test Engineer:



B.Sc. (FH) O. Born

Head of Laboratory:



M.BP. Dipl.-Ing.(FH) S. Öhler

The test was carried out in a laboratory, accredited according to DIN EN ISO/IEC 17025:2018 by DAkkS. The
accreditation certificate is D-PL-11140-11-01.

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Results sheet 1

- Client:** Polifusion S.A., Cacique Colín 2525, Lampa, Región Metropolitana, Chile
- Test specimen:** Wastewater system consisting of straight plastic pipes and fittings "Insonore Pipe System, 110x 3.8 IP-R100, 15.07.20" (manufacturer: Polifusion S.A.), and acoustic pipe clamps with elastic inlay "Polifusion IPS, DN 110 mm" (manufacturer: Polifusion), mounted as acoustic double clamps. Test object no.: 11651-01; see figure 4 and 5.
- Test set-up:**
- The pipe system was mounted according to figure 4 (see also Annex A).
 - The system consisted of wastewater pipes (nominal size OD 110), three inlet tees (87°, curved), two 45°-basement bends and a horizontal drain section. The inlet tees in the basement and in the ground floor were closed by lids supplied by the manufacturer.
 - Pipe system: "Insonore Pipe System, 110 x 3.8 IP-R100, 15.07.20". Three-layer pipes: Material PP, wall thickness 4.1 mm, weight 1.38 kg/m, density 1.01 g/cm³, values measured by IBP. One-layer fittings: Material PP, wall thickness 4.5 mm, density 1.00 g/cm³, values measured by IBP. Straight pipes without shaped sockets. Connection of the straight pipes with couplers (double sockets). Fittings with shaped sockets on each side.
 - Pipe clamps: Acoustic pipe clamps (double clamps) "Polifusion IPS, DN 110 mm" (manufacturer: Polifusion) with elastic inlay, Shore-A ~76. In each storey (EG and UG) respectively one double clamp (supporting and fixing clamp) was installed at the lower wall area and one guidance clamp at the upper wall area. The clamps were closed completely (quick lock). The clamps were fixed to the installation wall with dowels and thread rods (figure 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, mass per unit area of the ceiling: 440 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 DIN EN 14366: 2020-02)
- Test method:** The measurements were performed according to DIN EN 14366: 2020-02; 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:

<u>Test specimen:</u> Wastewater system consisting of straight plastic pipes and fittings "Insonore Pipe System, 110 x 3.8 IP-R100, 15.07.20" (manufacturer: Polifusion S.A.), and acoustic pipe clamps with elastic inlay "Polifusion IPS, DN 110 mm" (manufacturer: Polifusion), mounted as acoustic double clamps.		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	45	47	50	52
Structure-borne sound characteristic level $L_{sc,A}$ [dB(A)] according to EN 14366 for the basement test-room	UG rear	<10	11	15	20
Installation sound level $L_{Aeq,n}$ [dB(A)] following DIN 4109 in the basement test-room	UG front	45	47	50	52
	UG rear	<10	13	17	22
Installation sound level $\overline{L_{Aeq,nT}}$ [dB(A)] following VDI 4100 in the basement test-room	UG front	43	45	47	50
	UG rear	<10	10	13	19

Test date: December 02, 2020

- Notes:**
- For comparing test results with requirements note Annex A.
 - 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.
 - The above-mentioned measurement results require careful assembly of the pipe clamps (see test set-up).



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Stuttgart, 18 February 2021
Head of Laboratory