Fraunhofer
IBP

Institution for testing, supervision and certification, officially recognized by the building supervisory authority. Approvals of new building materials, components and types of construction

Director
Prof. Dr. Philip Leistner
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Test Report P-BA 124/2020e

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

Client: Nicoll Polska Sp. z o.o.
Ul. Energetyczna 6
56-400 Oleśnica
POLAND

Aliaxis Nederland B.V.
P.O. Box 7149
5980 AC Panningen
The Netherlands

Hereinafter refered to "Aliaxis Companies".

Test object: Wastewater installation system consisting of plastic pipes and fittings "dBlue DN 110 x 3.4, PP-ML: PP/PP-MD/PP, 10-03-2020" with pipe clamps with elastic inlay "dBlue Clamp" (manufacturer: Aliaxis Companies), mounted as supporting and fixing clamp.

Content:

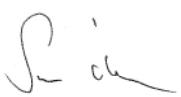
Test date: The measurement was carried out on July 07, 2020 in the test facilities of the Fraunhofer Institute for Building Physics in Stuttgart.

Stuttgart, October 28, 2020

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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ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-11140-11-01

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

P-BA 124/2020e

Results sheet 1

Client: Aliaxis Companies

Test specimen: Wastewater installation system consisting of plastic pipes and fittings "dBlue DN 110 x 3.4, PP-ML: PP/PP-MD/PP, 10-03-2020" with pipe clamps with elastic inlay "dBlue Clamp" (manufacturer: Aliaxis Companies), mounted as supporting and fixing clamp. Test object no.: 11445-01; 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 (88°), two 45°-basement bends with intermediate calming section (25 cm) 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 "dBlue DN 110 x 3.4, PP-ML: PP/PP-MD/PP, 10-03-2020": Three-layer pipe with attached sleeve. Internal layer: PP copo; medial layer: PP MD, external layer: PP copo. Wall thickness 3.7 mm, weight 1.56 kg/m, density 1.33 g/cm³, values measured by IBP. One-layer fittings: PP MD, wall thickness 3.6 mm, density 1.15 g/cm³, values measured by IBP. Connection of the pipes by plug-on socket connection. Information supplied by the client.
  - Pipe clamps "dBlue Clamp" (figure 5): Steel pipe clamp with elastomeric insert and with one-sided closure, mounted as supporting and fixing clamp. In every storey (EG and UG) two pipe clamps were mounted: In the upper wall area a single guidance clamp with 3 spacers (3 x 6 mm) on one side of the clamp. In the lower wall area a double clamp consisting of a supporting/guidance clamp with 3 spacers (3 x 6 mm) on one side of the clamp and above a fixing clamp without spacers closed with 3 Nm (completely closed). The supporting and guidance clamps were fixed to the installation wall with dowels and thread rods. The fixing clamp had no contact to the wall (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 4109-1:2018-01 and VDI 4100:2012-10 (details in Annexes A, F and V).

Result:

Test specimen: Wastewater installation system consisting of plastic pipes and fittings "dBlue DN 110 x 3.4, PP-ML: PP/PP-MD/PP, 10-03-2020" with pipe clamps with elastic inlay "dBlue Clamp" (manufacturer: Aliaxis Companies), mounted as supporting and fixing clamp.		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	47	50	52	53
Structure-borne sound characteristic level $L_{sc,A}$ [dB(A)] **according to EN 14366** for the basement test-room	UG rear	<10	13	13	16
Installation sound level $L_{AFeq,n}$ [dB(A)] **following DIN 4109** in the basement test-room	UG front	47	50	52	53
	UG rear	13	16	17	20
Installation sound level $\overline{L_{AFeq,nT}}$ [dB(A)] **following VDI 4100** in the basement test-room	UG front	45	47	50	50
	UG rear	<10	13	13	16

Test date: July 07, 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).

Fraunhofer IBP

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Stuttgart, July 22, 2020
Head of Laboratory