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Forschung, Entwicklung,
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den Gebieten der Bauphysik

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Test report P-BA 100/2012e

Determination of the Acoustic Performance of a Wastewater Installation System in the Laboratory

Client: KALDE KLIMA ORTA BASINC FITTINGS VE VALF SAN. A.S
Adnan kahveci mah. Büyükdere cad. no:20
Beylikdüzü-Istanbul
TURKIYE

Test specimen: Wastewater installation system consisting of "kalde-mute PIPE PP/PP-MR/PP 110x6.3" plastic pipes with fittings "kalde-mute" (manufacturer: Kalde Klima A.Ş.) mounted with pipe clamps "Bismat 1000" (manufacturer: Walraven)

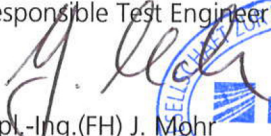
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	Annex A:	Measurement set-up, noise excitation, acoustic parameters
	Annex F:	Evaluation of measurements
	Annex P:	Description of test facility

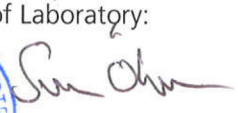
The tests were performed in a laboratory accredited by the German Accreditation System for Testing (DAP, file no. PL-3743.26) according to standard EN ISO/IEC 17025.

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Stuttgart, October 12, 2012

Responsible Test Engineer: Head of Laboratory:


Dipl.-Ing.(FH) J. Mohr


Dr. rer. nat. L. Weber



Determination of the installation sound level L_{in} in the laboratory

P-BA 100/2012e

Table 1

- Client:** KALDE KLIMA ORTA BASINC FITTINGS VE VALF SAN. A.S, Adnan kahveci mah. Büyükdere cad. no:20, Beylikdüzü-İstanbul, TURKIYE
- Test specimen:** Wastewater installation system (test specimen S 10491-01) consisting of "kalde-mute PIPE PP/PP-MR/PP 110x6.3" plastic pipes and fittings "kalde-mute" (manufacturer: Kalde Klima A.Ş.) mounted with pipe clamps "Bismat 1000" (manufacturer: Walraven)
- 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 and a horizontal drain section. The inlet tees in the basement and in the ground floor were closed by lids supplied by the manufacturer. The pipe system was mounted by a technical firm.
 - Pipe system "kalde-mute PIPE PP/PP-MR/PP 110x6.3": size OD 110, three-layer pipe without sleeve, material inner and outer layer PP, middle layer PP-MR. Wall thickness 6.3 mm, density 1.4 gr/cm³, weight: 3.2 kg/m. One-layer fittings: Material PP-MR, wall thickness 5.3 mm, density 1.71 g/cm³ (data supplied by the manufacturer). Connection of the straight pipes with double socket fittings.
 - Acoustic pipe clamps "Bismat 1000" (figure 5): Structure born sound insulating support attachment consisting of Bismat SL guidance clamp and Bismat SX Socket clamp. In each storey (EG and UG) respectively two pipe clamps were installed. A loose clamp Bismat SL in the upper wall area and a Bismat 1000 double clamp (SX and SL) in the lower wall area. Two prevent contact to the pipe, the guidance clamp (SL) and the loose clamp (SL) were mounted with 15 mm space between the locking tabs of the clamp (two spacers on each side). The clamps were fixed to the installation wall with an adjustable wall plate with dowels and thread rods.
- 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 following German standard DIN 4109 and EN 14366; noise excitation by constant water flow with 0.5 l/s, 1.0 l/s, 2.0 l/s and 4.0 l/s (details in Annexes A and F).

Results:

Waste water system "kalde-mute PIPE PP/PP-MR/PP 110x6.3" with pipe clamps "Bismat 1000" (mounting details see test set-up)					
	Flow rate [l/s]	0.5	1.0	2.0	4.0
Installation sound level L_{in} [dB(A)] measured in the basement test-room UG front		44	47	49	51
Installation sound level L_{in} [dB(A)] measured in the basement test-room UG rear		14	15	16	18
Airborne sound pressure level $L_{a,A}$ [dB(A)] ¹⁾		44	47	49	51
Structure-borne sound characteristic level $L_{sc,A}$ [dB(A)] ¹⁾		12	13	14	16

¹⁾ Evaluation according to EN 14366.

Date of tests: May 2, 2012

- Comments:**
- The requirements of DIN 4109 only apply for the test room UG rear.
 - For the experimental setup investigated in the test facility the used supporting and fixing clips Bismat 1000 normally doesn't guarantee a realistic load transmission. Consequently, in case of practical application in a real building significant higher levels of installation noise may be expected.



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Stuttgart, October 12, 2012
Head of Laboratory:

J.V. Sun