

Institution for testing, supervision and certification, officially recognized by the building supervisory authority. Approvals of new building materials, components and types of construction
Research, development, demonstration and consulting in the fields of building physics

Directors
Univ.-Prof. Dr. Gerd Hauser
Univ.-Prof. Dr. Klaus Sedlbauer

Test report P-BA 65/2011e

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

Client: Dizayn Teknik Plastik Boru ve Elemanları San Tic. A.Ş.
Atatürk Mahallesi İnönü Caddesi No:6 34522
Kıraç-Esenyurt
ISTANBUL
34522
TÜRKİYE

Test specimen: Wastewater installation system "Dizayn Atıksu Çok Sessiz Boru (Triplex)" (manufacturer: Dizayn) mounted with pipe clamps "Bismat 1000 SX100 SL125" by Walraven.

Contents: Table 1: Summary of test results
Figures 1 to 3: Detailed results
Figure 4 and 5: Test set-up
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.

Any publication of this document in part is subject to written permission by the Fraunhofer Institute of Building Physics (IBP).

Stuttgart, June 7, 2011

Responsible Test Engineer: Head of Laboratory:

Dipl.-Ing.(FH) J. Mohr Dr. rer. nat. E. Weber



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

P-BA 65/2011e
Table 1

- Client:** Dizayn Teknik Plastik Boru ve Elemanları San Tic. A.Ş., Atatürk Mahallesi İnönü Caddesi No:6 34522, Kiraç-Esenyurt, ISTANBUL, 34522, TÜRKİYE
- Test specimen:** Wastewater installation system (test specimen S 10374-01) consisting of "Dizayn Atıksu Çok Sessiz Boru (Triplex)" plastic pipes (manufacturer: Dizayn) and fittings mounted with acoustic pipe clamps with elastomer inlay "Bismat 1000 SX100 SL125" by 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 (90°), 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 the client.
 - Pipe system "Dizayn Atıksu Çok Sessiz Boru (Triplex)": Size OD 110, 3 layer pipe with attached sleeve. Material polypropylene, wall thickness 3.4 mm, weight 1.4-1.5 kg/m, density 1.23 g/cm³. One-layer fittings: Size OD 110, material polypropylene, wall thickness 2.7 mm, density 1.12 g/cm³. Connection of the pipes by plug-on socket connection.
 - Acoustic pipe clamps "Bismat 1000 SX100 SL125": structure born sound insulating support attachment consisting of supporting and fixing clips. Fixed to the installation wall with a fastening plate and with dowels and thread rods. To avoid contact between supporting clamps (SL) and the pipe, SL clamps in dimension DN 125 were used (Fig. 5).
- 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 EN 14366; noise excitation by stationary 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 "Dizayn Atıksu Çok Sessiz Boru (Triplex)" with pipe clamps "Bismat 1000 SX100 SL125"					
	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		47	50	51	53
Installation sound level L_{in} [dB(A)] measured in the basement test-room UG rear		11	16	16	20
Airborne sound pressure level $L_{a,A}$ [dB(A)] ¹⁾		47	50	51	53
Structure-born sound characteristic level $L_{sc,A}$ [dB(A)] ¹⁾		<10	14	14	18

¹⁾ Evaluation according to EN 14366.

Date of tests: May 9, 2011

- Comments:**
- The requirements of DIN 4109 only apply for the Installation sound level L_{in} measured in test room UG rear.
 - Sound levels below 10 dB(A) are not mentioned in the test report, since they are subject to an increased measurement uncertainty and moreover are not noticeable in a normal living environment.
 - 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.

 **Fraunhofer**
IBP

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.

Stuttgart, June 7, 2011

Head of Laboratory:

