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Bauphysik

Bauaufsichtlich anerkannte Stelle
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Zulassung neuer Baustoffe, Bauteile
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Forschung, Entwicklung,
Demonstration und Beratung auf
den Gebieten der Bauphysik

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Test report P-BA 49/2009e

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

Client: Gulf Dura Industries Ltd.
P.O. Box 31375 Ras Al Khaimah
United Arab Emirates

Test specimen: Wastewater installation system consisting of "DRAINO CONCEPT SILENT" plastic pipes and fittings (manufacturer: Gulf Dura Industries Ltd.) mounted with pipe clamps "Bismat 1000" (manufacturer: Walraven).

Contents:

Stuttgart, May 5, 2009

Responsible Test Engineer: Head of Laboratory:

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

P-BA 49/2009e

Table 1

Client: Gulf Dura Industries Ltd., P.O. Box 31375 Ras Al Khaimah, United Arab Emirates

Test specimen: Wastewater installation system (test specimen S 10141-01) consisting of "DRAINO CONCEPT SILENT" plastic pipes and fittings (manufacturer: Gulf Dura Industries Ltd.) 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, an 88°-basement bend 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 "DRAINO CONCEPT SILENT" size OD 110, three layer pipe, material reinforced PP-B, wall thickness 5.3 mm, density 1.6 g/cm³. One-layer fittings with attached sleeve, size OD 110, material: reinforced PP-B, wall thickness 5.3 mm, density 1.8 g/cm³. Connection of the fittings by plug-on socket connection. Connection of the straight pipes by plug-on sleeves (Values are manufacturer's information.)
- Pipe clamps "Bismat 1000": 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. In every storey (UG and EG) two pipe clamps were installed: below the Bismat 1000 double clamp and above a loose clamp without contact to the pipe (Figure 4).

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 DIN EN 14366: 2005-02)

Test method: The measurements were performed following German standard DIN 52 219: 1993-07 and DIN 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 "DRAINO CONCEPT SILENT" (manufacturer Gulf Dura Industries Ltd.) with pipe clamps "Bismat 1000"				
Flow rate [l/s]	0,5	1,0	2,0	4,0
Installation sound level L_{ln} [dB(A)] measured in the basement test-room UG front	42	47	49	50
Installation sound level L_{ln} [dB(A)] measured in the basement test-room UG rear	6	9	15	18
Airborne sound pressure level $L_{a,A}$ [dB(A)] [1]	42	47	49	50
Structure-born sound characteristic level $L_{sc,A}$ [dB(A)] [1]	4	7	13	15

[1] Evaluation according to DIN EN 14366.

Date of tests: March 18, 2009

Comments:
- The requirements of DIN 4109 only apply to the installation sound level L_{ln} measured in the test room UG rear.
- By using supporting and fixing clips the details of attachment strongly affects the acoustical properties of the system. Only if the assembly instructions of the manufacturer are obeyed exactly and the weight of the system is distributed evenly on all fastening elements, a reproducible acoustical behaviour is reached. Otherwise possibly strong deviations from the measured values may occur.

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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, May 5, 2009

Head of Laboratory: i.V.