Schallprüfbericht

DÄMMGULAST® Schienenprofil

gültig für

DÄMMGULAST® Schienenprofil für MPR-Systemschiene

SG-Bauakustik

Institut für schalltechnische Produktoptimierung

Test Report

No. 1989-002-22 dated 28.11.2022

Improvement Factor of MPR system rails with DÄMMGULAST® rail profiles in Laboratory

Client: MÜPRO Services GmbH
Borsigstraße 14
65202 Wiesbaden

Test Object: Ventilation duct, laid on MPR system rails (41/41/2.5) with DÄMMGULAST® rail profiles made of EPDM

Contract: Ascertainment of the improvement factor of the noise of ventilation ducts by installing MPR system rails with DÄMMGULAST® rail profiles in accordance with DIN EN ISO 3822-1

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1. Definition of Project and General Details

1.1 Definition of Project

MÜPRO Services GmbH, Wiesbaden, produces and sells, among other things, the product MPR system rails, into which suitable DÄMMGULAST® rail profiles made of EPDM can be inserted. On the MPR system rails ventilation ducts can be placed. The product is offered in different formats. The measurements were carried out with the profile (41/41/2.5). The wall thickness is 2,5 mm.

In terms of product specifications, MPR system rails were suspended with M10 threaded rods from two corresponding wall brackets (attachment distance approx. 1.000 mm), which are screwed to the test stand wall, with rigid screw connections. A ventilation duct made of galvanized sheet steel (width x height x length = 500 mm x 250 mm x 1.500 mm) was placed on the MPR system rails. To determine the degree of improvement, the measurements were carried out with and without DÄMMGULAST® rail profiles made of EPDM inserted into the MPR system rails. When measuring with DÄMMGULAST® rail profiles, these were also used for the threaded rods.

The investigations were carried out using a small hammer mill to excite structure-borne noise in the construction. The degree of improvement between rigid and decoupled support was determined.

1.2 Messnorm

Measurements were carried out in accordance with:

- DIN EN ISO 3822-1 „Akustik - Prüfung des Geräuschverhaltens von Armaturen und Geräten der Wasserinstallation im Laboratorium – Teil 1: Messverfahren“ (ISO 3822-1: 1999+Amd1:2008), Deutsche Fassung EN ISO 3822-1:1999+A1:2008

1.3 Client Requesting Test

MÜPRO Services GmbH
Borsigstraße 14
65205 Wiesbaden

1.4 Manufacturer of Test Arrangement

SG-Bauakustik
Mainstraße 15
45478 Mülheim an der Ruhr

2. Measuring Arrangement and Assessment Principles

MPR system rails were suspended with M10 threaded rods from two corresponding wall brackets (attachment distance approx. 1.000 mm), which are screwed to the test stand wall, with rigid screw connections. A ventilation duct made of galvanized sheet steel (width x height x length = 500 mm x 250 mm x 1.500 mm) was placed on the MPR system rails. The measurements were carried out with the profile (41/41/2.5). The wall thickness is 2,5 mm.

To determine the improvement factor, the measurements were carried out with and without DÄMMGULAST® rail profiles made of EPDM inserted into the MPR system rails. When measuring with DÄMMGULAST® rail profiles, these were also used for the threaded rods.

The test arrangement can be found in the photo documentation in enclosures 1 and 2.

The measurements were carried out using a small hammer mill to excite structure-borne noise in the construction. The factor of improvement between rigid and decoupled connection was determined.

3. Execution of Measuring

To determine the improvement factor of the construction, the ventilation duct was stimulated using a small hammer mill (Missel hammer mill). Except for the excitation of the ventilation duct, the measurement corresponds to the specifications of DIN EN ISO 3822-1.

The volume in the diffuse sound field of the measuring room is determined using an evaluation filter in accordance with DIN EN 60 651 by averaging the received values from three measurements in each case. In addition to the transmission values when the ventilation duct was excited, the background noises prevailing in the measuring room were also determined in the 6 octave center frequencies examined from 125 Hz to 4000 Hz. These were so minor that no corrections were necessary.

The following measurements were carried out:

Measurement 1:

decoupled installation:	ventilation duct, placed on MPR system rails (41/41/2.5) with DÄMMGULAST® rail profiles made of EPDM
rigid installation:	ventilation duct, placed on MPR system rails (41/41/2.5)

4. Measuring Results

The results for the tested arrangement can be seen in enclosure 3 of this report. In conclusion the tested configuration gives the values listed in the following table 1.

Table 1: Measuring values from 23.11.2022

Centre Frequency of Octave band f in Hz	**125**	**250**	**500**	**1000**	**2000**	**4000**	**Mean value**
Reverb. Time in V = 74.5 m^3 large measuring room T in s	1,88	1,65	1,18	1,31	1,38	1,31	T_m = 1,45 s
Extraneous noise level in measuring room when carrying out tests L_b in dB	19,8	12,7	5,6	6,6	8,1	9,6	16,2 dB(A)
Reference Value Sound level in measuring room with rigid support of the ventilation duct, $L_{s,starr}$ in dB							
linear level	61,6	65,1	63,5	55,8	50,2	38,6	
A-weighted level	45,5	56,5	60,4	55,8	51,4	39,6	**63,2 dB(A)**
Meas. values test objects Sound level in the measuring room with decoupled support of the ventilation duct, $L_{s,entk.}$ in dB,							
linear level	37,9	44,7	43,8	33,8	25,4	11,1	
A-weighted level	21,8	36,1	40,7	33,8	26,6	12,1	**42,8 dB(A)**
Improvement Factor Improvement measuring rigid to decoupled support $L_{IN} = L_{s,starr} - L_{s,entk.}$ in dB							
Measurement 1	23,7	20,4	19,7	22,0	24,8	27,5	**20,4 dB(A)**

When using the DÄMMGULAST® rail profiles made of EPDM in relation to the rigid support of the ventilation duct, the improvement is:

Measurement 1: Ventilation duct laid on MPR system rails (41/41/2.5)
with DÄMMGULAST® rail profiles made of EPDM
VM L_{IN} = 20 dB(A)

Mülheim an der Ruhr, 28.11.2022

Stefan Grüll

Photo documentation

Enclosure 1

Fig. 1: Reference: ventilation duct, placed on MPR system rails (41/41/2.5) without DÄMMGULAST® rail profiles

Fig. 2: Reference: ventilation duct, placed on MPR system rails (41/41/2.5) without DÄMMGULAST® rail profiles

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Fig. 3: Ventilation duct, placed on MPR system rails (41/41/2.5) with DÄMMGULAST® rail profiles

Fig. 4: Ventilation duct, placed on MPR system rails (41/41/2.5) with DÄMMGULAST® rail profiles

Measurement of Water Appliance Noises in the Laboratory

according to DIN EN ISO 3822-1, 07.2009

Enclosure 3

Client: MÜPRO Services GmbH, Borsigstraße 14, 65205 Wiesbaden

Test object: Ventilation duct (B x H x L = 500 mm x 250 mm x 1.500 mm) placed on MPC system rails (41/41/2.5) with DÄMMGULAST® rail profiles made of EPDM

Operation: Stimulated with Missel hammer mill

Evaluation:

Measurement of the noise transmission at octave centre frequencies f = 125 to 4000 Hz and calculation of the diffence between "rigid" and "decoupled" aupport of the ventilation duct, Measurement on 23.11.2022, air temperature in test stand: 19.8 °C, relative humidity: 57.0 %, **Measurement 1**

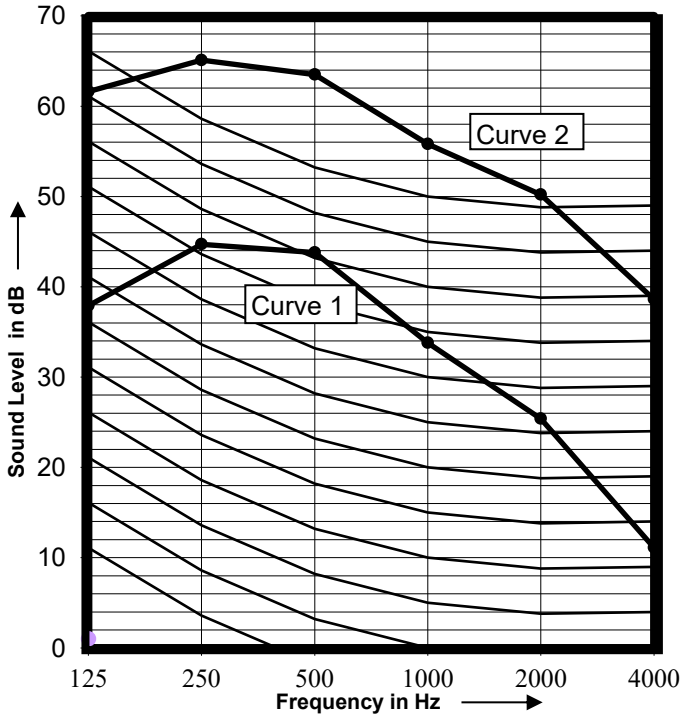
Schematic diagram for build-up of test object:

Test Criteria:

Volume test room:	V	= 74.5 m³
Aver. reverb. time:	$\overline{T}_N$	= 1.45 s
Area measuring wall:	F	= 8.20 m²
Area density:	g_F	= 232 kg/m²
Length measuring pipe:	L	= 1,5 m
Format:	F	= 500 x 250 mm

Decoupling insert: **DÄMMGULAST Washer**

Measuring diagram:



Evaluation:

Curve 1: Noise transmission with decoupled support

L_{IN} = 63 dB(A)

Curve 2: Noise transmission with riggid support

L_{IN} = 43 dB(A)

Improvement:

Frequency f [Hz]	125	250	500	1000	2000	4000
VM L_{IN} [dB]	23,7	20,4	19,7	22,0	24,8	27,5

A-Evaluation L_{IN} = 20 dB(A)

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