

Determination of the airborne sound insulation and sound absorption of Plastrex noise barrier TG38mm

Requested by	Plastrex Europe Oü Ain Roosma Laki 32 12915 Tallin Estonia ain@neular.ee tel. +372 50 48 228
Order ref.	RRQPT 190026-01
Contact person	Eurofins Expert Services Oy Pekka Sipari Kemistintie 3 02150 Espoo pekkasipari@eurofins.fi tel +358 400764849
Task	Determination of the airborne sound insulation and sound absorption of a Plastrex noise barrier TG38mm
Background	Plastrex Europe Oü has bought the business activities of OÜ Rexist Grupp (declararation of the customer in Appendix 4) and wanted the test report VTT-S-105812-13 to be renewed by new company and product name. According to customer, the product itself has not changed. This report has the same technical content as the earlier test report.
Structure of the specimen	Photos of the structure and details of the noise barrier specimen are shown in Appendix 2.
Installation	<p>The noise barrier specimen was installed 11.6.2013 by the customer into the measurement opening (with dimensions 4000 mm by 3000 mm) between two reverberation rooms KH1 and KH2. For sound insulation measurement the specimen was sealed to the opening with mineral wool, sealant mass and wooden beads.</p> <p>The same noise barrier element was used when the sound absorption was measured during the same day. In the measurement the specimen was installed by VTT Expert Services Ltd:s personnel on the floor of a reverberation room KH 3.</p>
Date and place of testing	The sound insulation and sound absorption of the noise barrier was tested June of testing 11.6 – 17.6.2013 by the personnel of VTT Expert Services Ltd at VTT.
Medhod and equipment	The airborne sound reduction index of the specimen was determined by means of two-channel sound pressure level measurement with two fixed sources and moving

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microphones. The sound reduction index R was measured in accordance with *EN ISO 10140-2:2010* [1] in one third octave bands and the single number rating DL_R and category was determined in accordance with *EN 1793-2* and *EN 1793-3* [2 and 3].

Sound absorption and sound absorption coefficients α_{Si} in one-third octave bands were measured according to standard *EN ISO 354* [4]. The single number rating DL_α and category was determined in accordance with *EN 1793-1* [5].

Reverberation room dimensions and measuring equipment are presented in Appendix 3.

Results

The individual measuring result are presented in Appendix 1. The categorisation of the PlastRex noise barrier is as follows:

Plastrex noise barrier TG28mm.Thickness of polymer planks 38 mm, surface mass c. 30 kg/m²		
Sound insulation	DL_R (dB) and Category	31 B3
Sound absorption	DL_α (dB) and Category	0 A1

Pekka Sipari

Product manager

Mikko Nyman

Product manager

The report is electronically signed

Eurofins Expert Services Ltd. is notified body No. NB 0809.

FINAS Finnish Accreditation Service has accredited our laboratory (T001, Eurofins Expert Services Ltd) to perform the tests marked with asterix.

Distribution

Customer

Electronically approved

References

[1] *EN ISO 10140-2:2010 Acoustics - Measurement of sound insulation in buildings and of building elements - Part 2: Laboratory measurements of airborne sound insulation of building elements*

[2] *EN 1793-2 Road traffic noise reducing devices. Test method for determining the acoustic performance. Intrinsic characteristics of airborne sound insulation*

[3] *EN 1793-3 Road traffic noise reducing devices. Test method for determining the acoustic performance. Normalized traffic noise spectrum*

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- [4] *EN ISO 354 Acoustics - Measurement of sound absorption in a reverberation room*
[5] *EN 1793-1 Road traffic noise reducing devices. Test method for determining the acoustic performance. Intrinsic characteristics of sound absorption*

Appendices

Appendix 1
Appendix 2
Appendix 3

Results
Photos
Reverberation rooms and equipments

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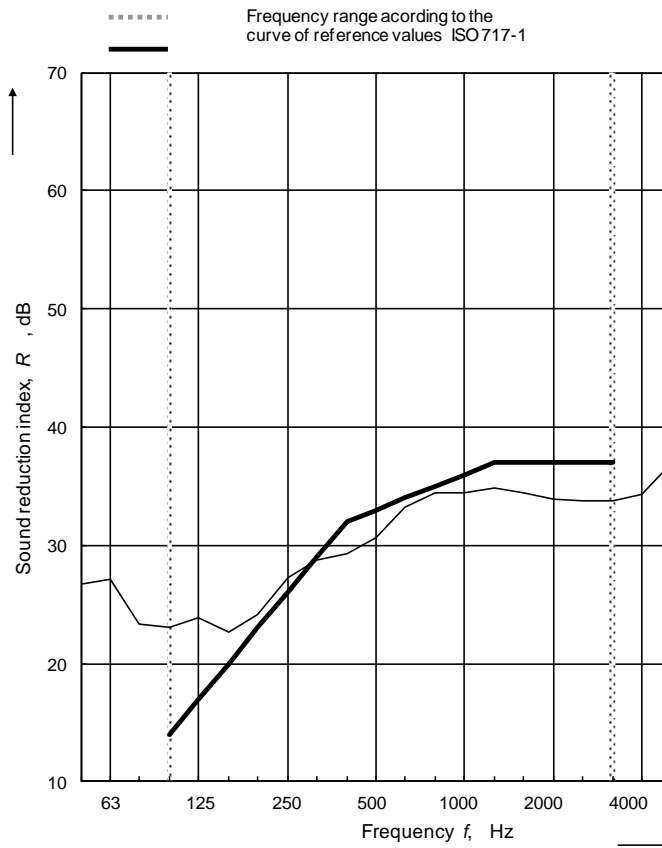
Client: Plastrex Group
Tallin Estonia

Product identification: Noise barrier Plastrex TG38mm

Test specimen mounted by: Client
Date of test: 11.6.2013

Areas of test specimen: 12 m²
Air temp. in the test rooms: 21 °C
Air humidity in the test rooms: 57 %
Source room volume: 102 m³
Receiving room volume: 131 m³

Frequency <i>f</i> Hz	<i>0</i> One-third octave dB
50	26,7
63	27,1
80	23,3
100	23,1
125	23,9
160	22,7
200	24,2
250	27,2
315	28,8
400	29,3
500	30,7
630	33,2
800	34,5
1000	34,4
1250	34,8
1600	34,5
2000	33,9
2500	33,7
3150	33,8
4000	34,3
5000	37,0



Rating according to ISO 717-1: $R_w(C;C_{tr}) = 33 (0;-2) \text{ dB};$ Evaluation based on laboratory measurement results obtained by an engineering method	According to EN1793-2 and EN1793-3: $DL_R = 31 \text{ dB(A)}$ CATEGORY: B3
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Sound absorption and class / Road traffic noise

Ordere Plastrex Group Oü

Ordere Ain Roosma

Volume of the rev. Room 201 m³

Area of inside surfaces 209 m²

Sample area 11,8 m²

Measuring date 11.6.2013

Measuring place Eurofins TH1

Tested by V.Joensuu

Temperature and relative humidity of rev. Room

Task Determination of absorption coefficient

Empty 21 °C 57 %

Oktave valus and class (ISO 11654:1997)

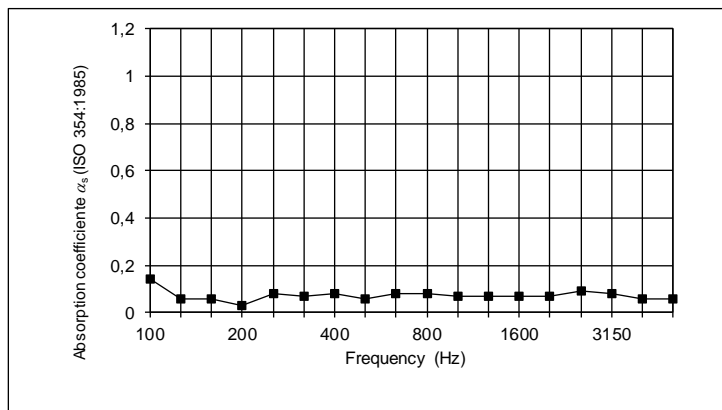
Sample 21 °C 57 %

Sample Plastrex noise barrier TG38mm

Structure Noise barrier with steel postss and 38mm thick plastic planks

Surface mass 29.5 kg/m²

Test arrang: Sample tightly on the floor



Frequency (Hz)	T ₁ (s)	T ₂ (s)	α_s
100	5,04	3,99	0,14
125	5,62	5,01	0,06
160	5,47	4,92	0,06
200	4,78	4,51	0,03
250	5,19	4,53	0,08
315	5,17	4,53	0,07
400	4,68	4,14	0,08
500	4,53	4,13	0,06
630	4,96	4,33	0,08
800	5,12	4,46	0,08
1000	5,17	4,53	0,07
1250	4,87	4,36	0,07
1600	4,32	3,87	0,07
2000	3,87	3,53	0,07
2500	3,59	3,23	0,09
3150	3,21	2,93	0,08
4000	2,72	2,56	0,06
5000	2,28	2,18	0,06

Absorption road traffic noise

$DL_{\alpha} = 0$ dB
Class A1

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PHOTOS



Photo 1. Steel frame for installation of planks to test opening



Photo 2. Steel frame thickness



Photo 3. Installation of the steel post in middle width of specimen. In middle post mineral wool strips were used. Planks were sealed with sealing mass only from the sending side to installing frames.



Photo 3. Absorption measurement

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Measuring equipment and reverberation room dimensions / Sound insulation

Measuring equipment	Name	Serial No.
Condenser microphone	B&K (Brüel&Kjær) 4134	2415044
Condenser microphone	B&K (Brüel&Kjær) 4134	2527717
Microphone preamplifier	B&K 2639	2025241
Microphone preamplifier	B&K 2639	2554550
Rotating microphone boom	B&K 3923	1678216
Rotating microphone boom	B&K 3923	2630663
Power amplifier	Yamaha MX-1000	
Loudspeakers	Sinmarc V121L	
Real-time analyser	Norsonic 830	12717
Sound calibrator	B&K 4228	1704462

Reverberation room dimensions	Floor	Height	Volume
Source room KH1	4.7 m x 5.8 m	3.7 m	102 m ³
Receiving room KH2	5.0 m x 6.5 m	4.0 m	131 m ³

Thickness of the concrete walls, floors and ceilings of the reverberation rooms is 0.25 m

Measuring equipment and reverberation room dimensions / Sound absorption

Measuring equipment	Name	Serial No.
Condenser microphone	B&K (Brüel&Kjær) 4134	2527717
Microphone preamplifier	B&K 2660	2554550
Rotating microphone boom	B&K 3923	2630663
Power amplifier	Peavey PV 2600	
Loudspeakers	Sinmarc V121L	
Real-time analyser	Norsonic 830	12717
Sound calibrator	B&K 4228	1704462

Reverberation room dimensions	Floor	Height	Volume
Reverberation room KH3	5.95 m x 7.20 m	4.70 m	201 m ³

Thickness of the concrete walls, floors and ceilings of the reverberation rooms is 0.25 m

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DECLARATION OF CUSTOMER

neular

**Plastrex Europe OÜ
Laki tn 32
12915 Tallinn, Harjumaa
Estonia**

15.02.2019**To Whom it may concern**

Plastrex Europe hereby declares that it owns the production equipment, documentation, raw materials and technology of the Rexest Grupp and continues to manufacture Rexest Grupp products according to the same technology, documentation and methodologies.


**Ilo Rannu
CEO
Plastrex Europe**

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