SIA «R & D AKUSTIKA»

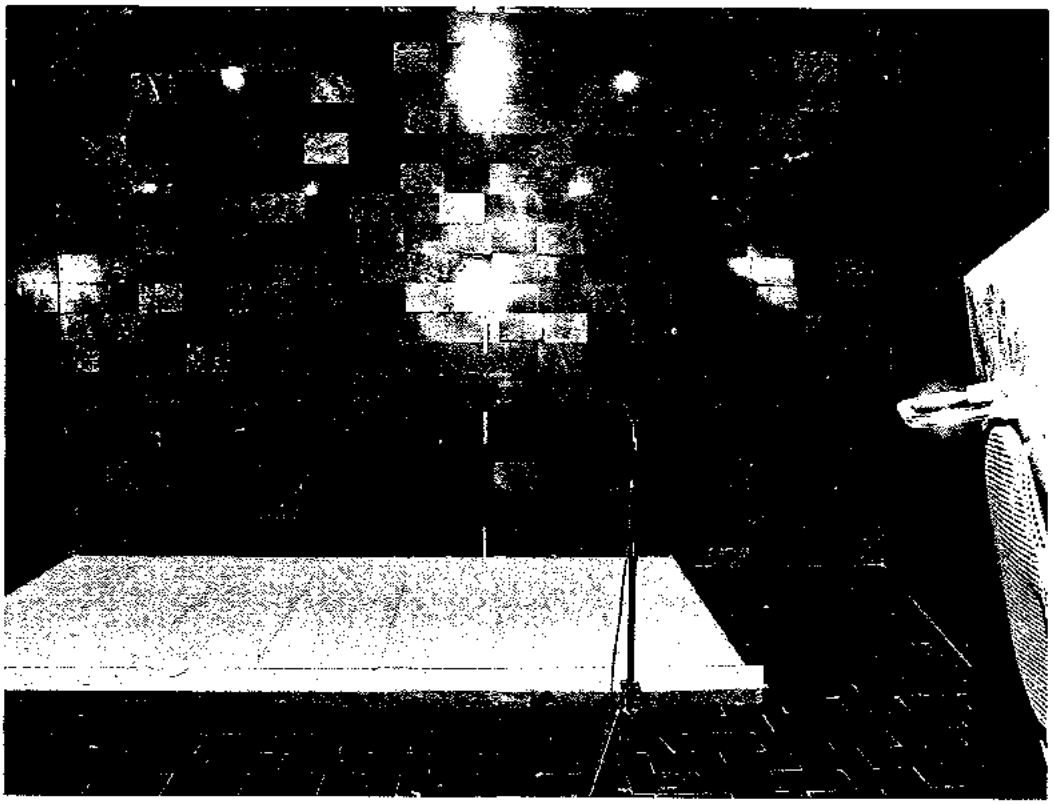
LATVIJAS REPUBLIKA, LV - 1067, RĪGA, KURZEMES PROSPEKTS 3, *Reģistr. Nr.:* LV 010310045
Fax. +371 67815008, ☎ 371 67815007 mob. ☎ +371 29217605, E-mail: rd.akustika@apollo.lv

CUSTOMER: "CEWOOD" SIA (Latvia)

"C O N F I R M"
Chairmen of board "R & D Akustika" Ltd.
_____/ J. SAPROVSKIS /
December 09, 2016.

Cemented wood wool panels sound absorption coefficient testing report

No 806 / 2016 – AL 8.4



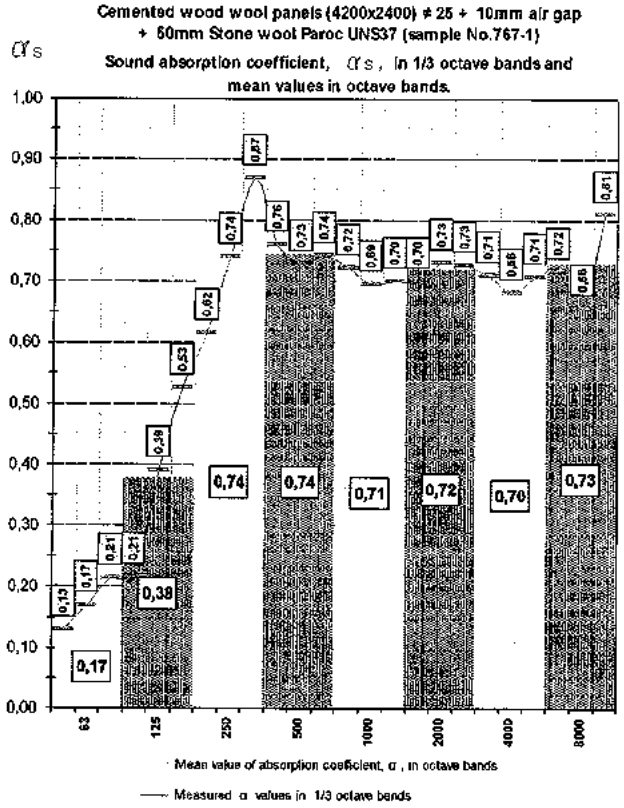
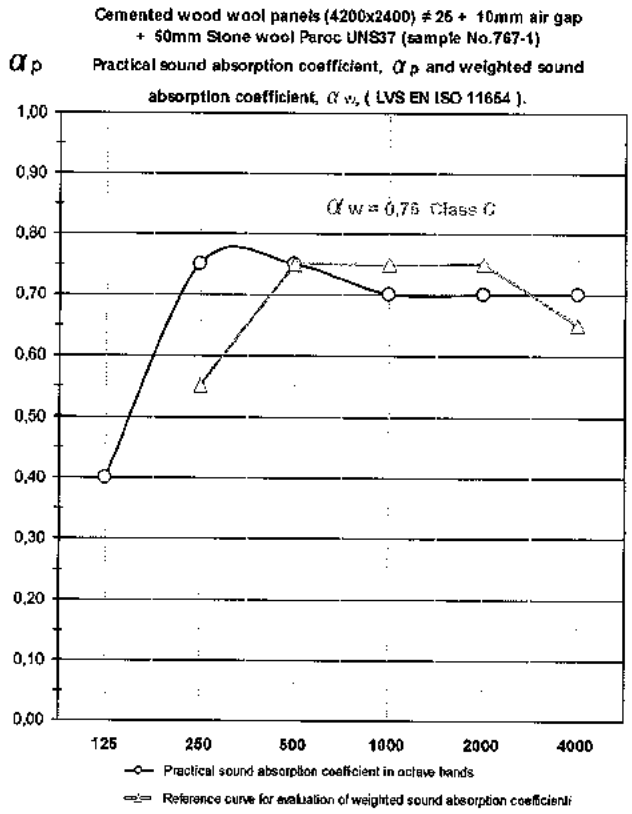


Fig. 13



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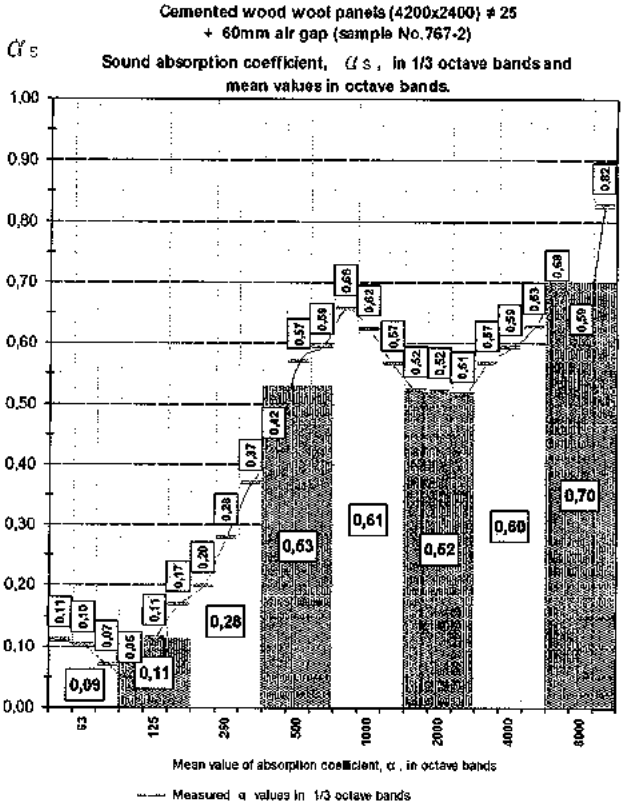

Fig. 15

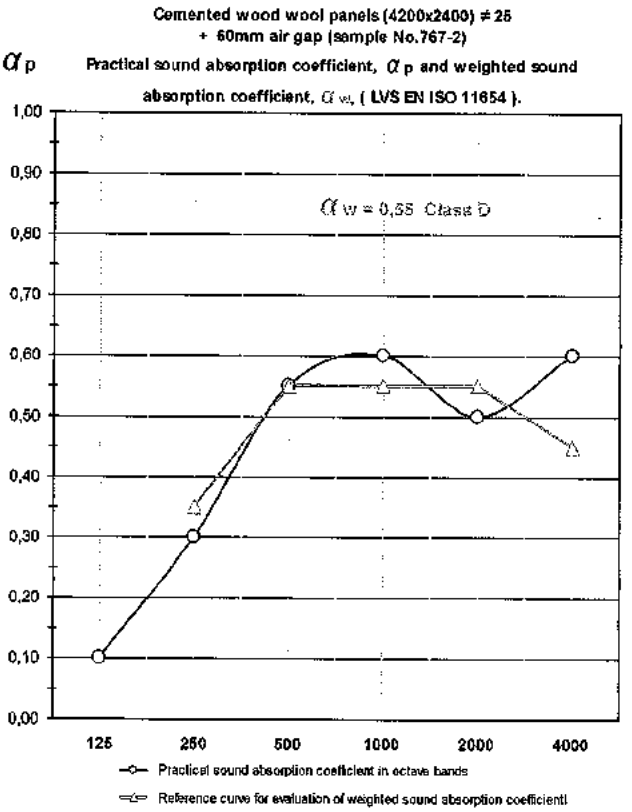

Fig. 16

Testing report

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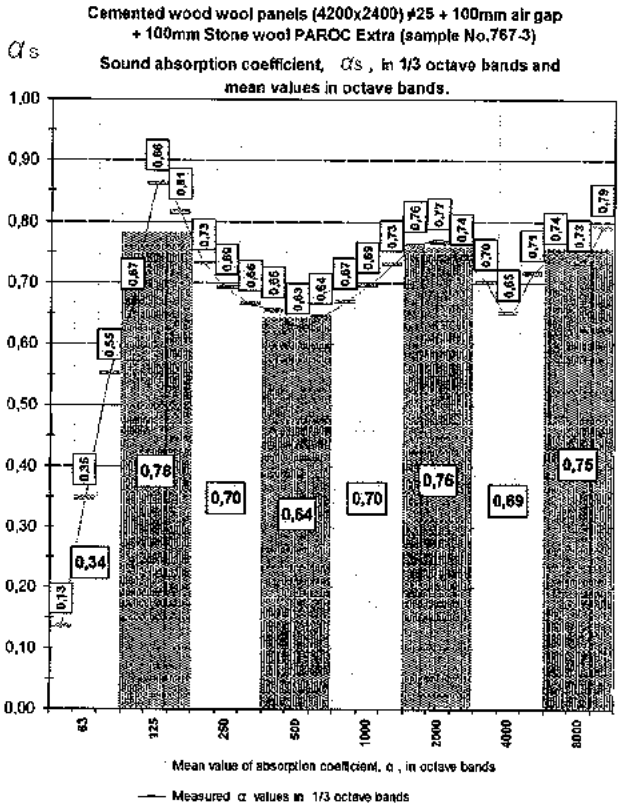

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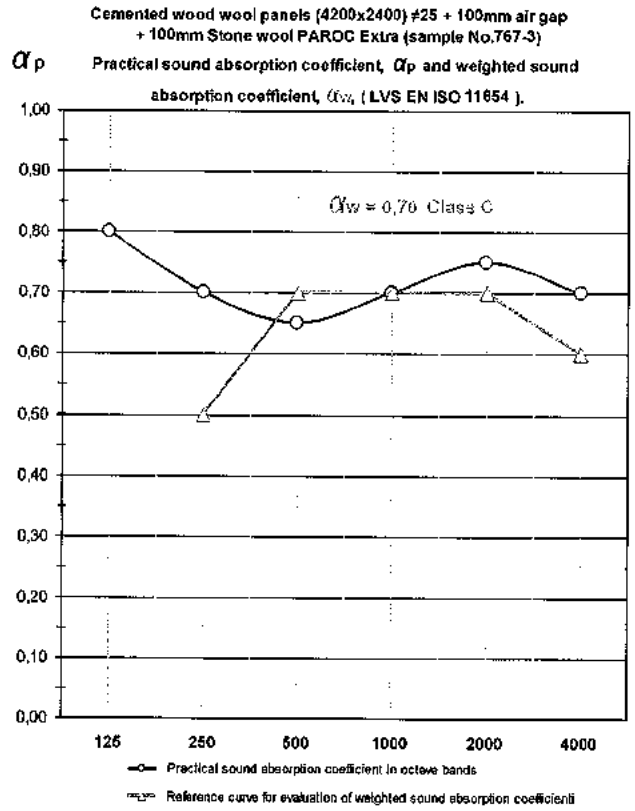

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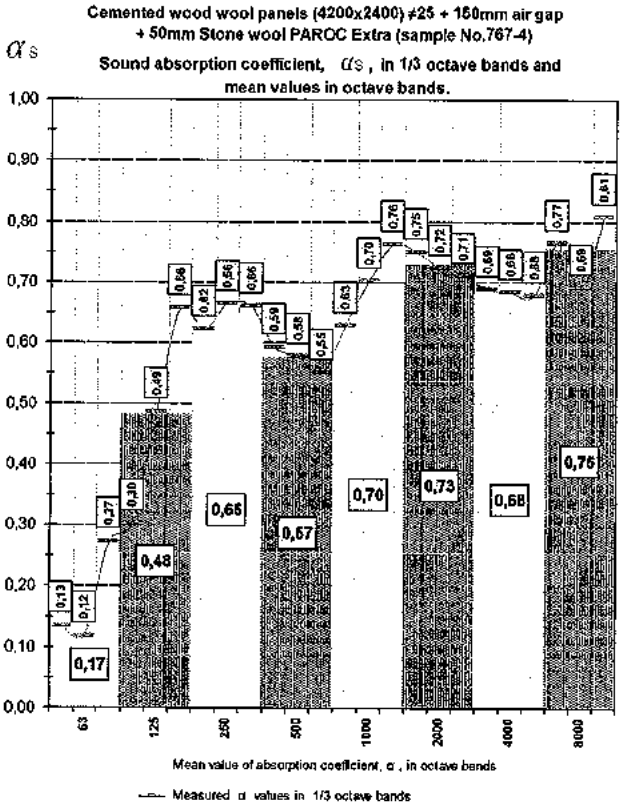


Fig. 19

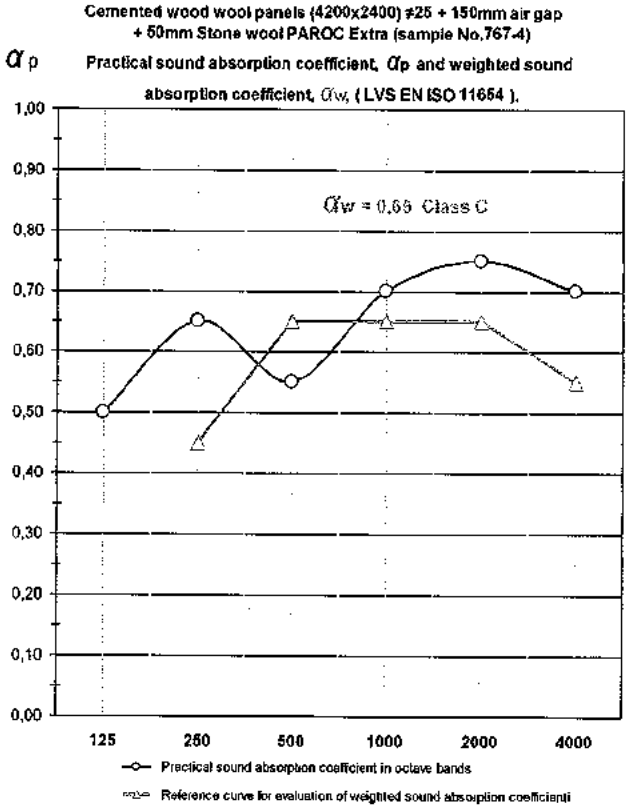


Fig. 20

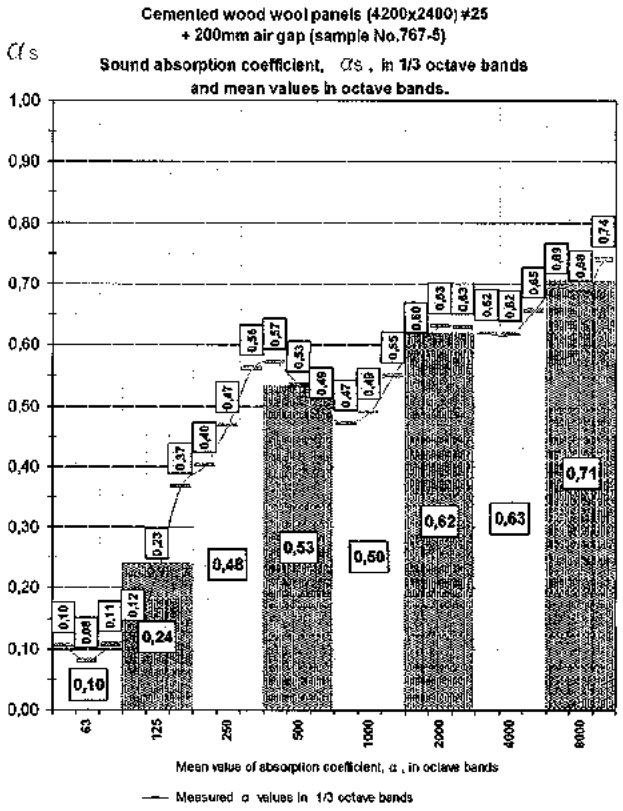


Fig. 21

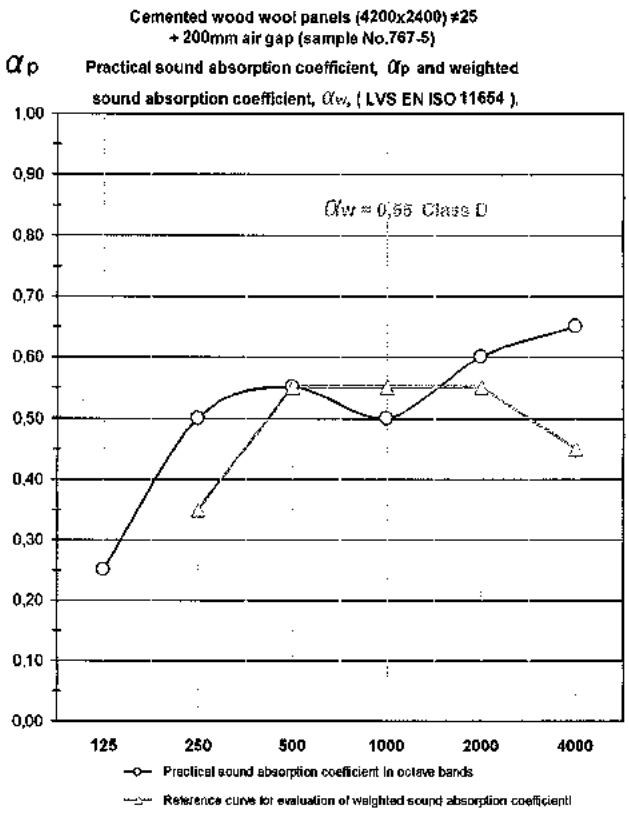


Fig. 22

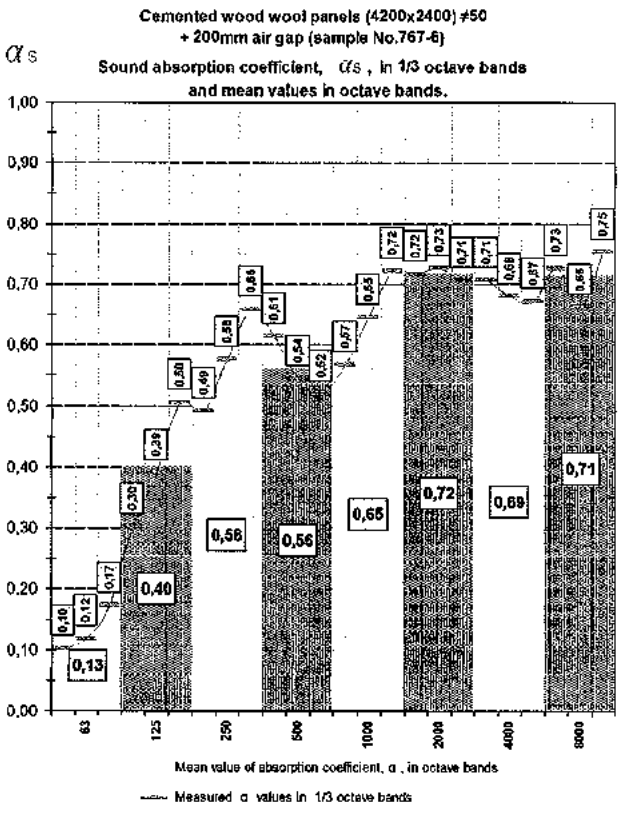


Fig. 23

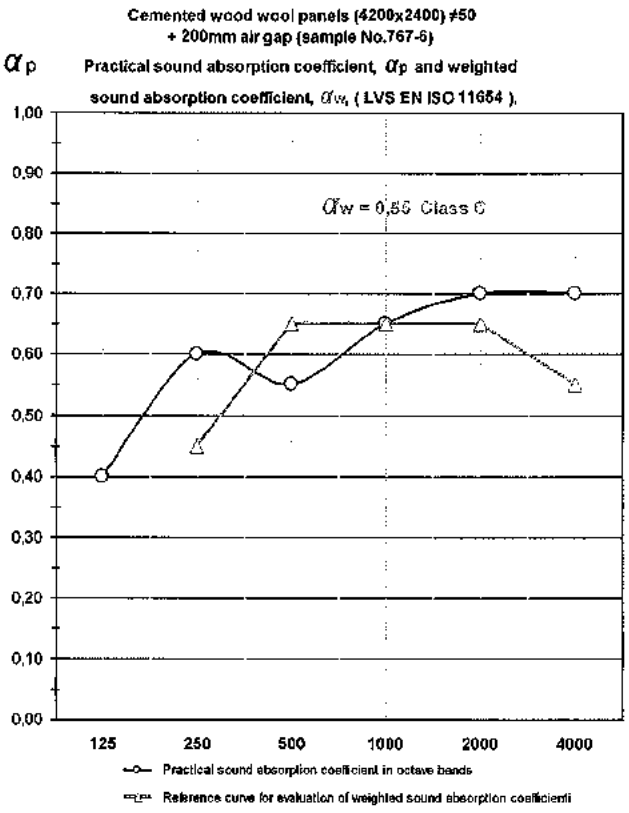


Fig. 24

Supplement 1

Sound absorbtion coefficient α_s LVS EN ISO 354:2003.

Acoustics - Sound absorption measurements in reverberation room.

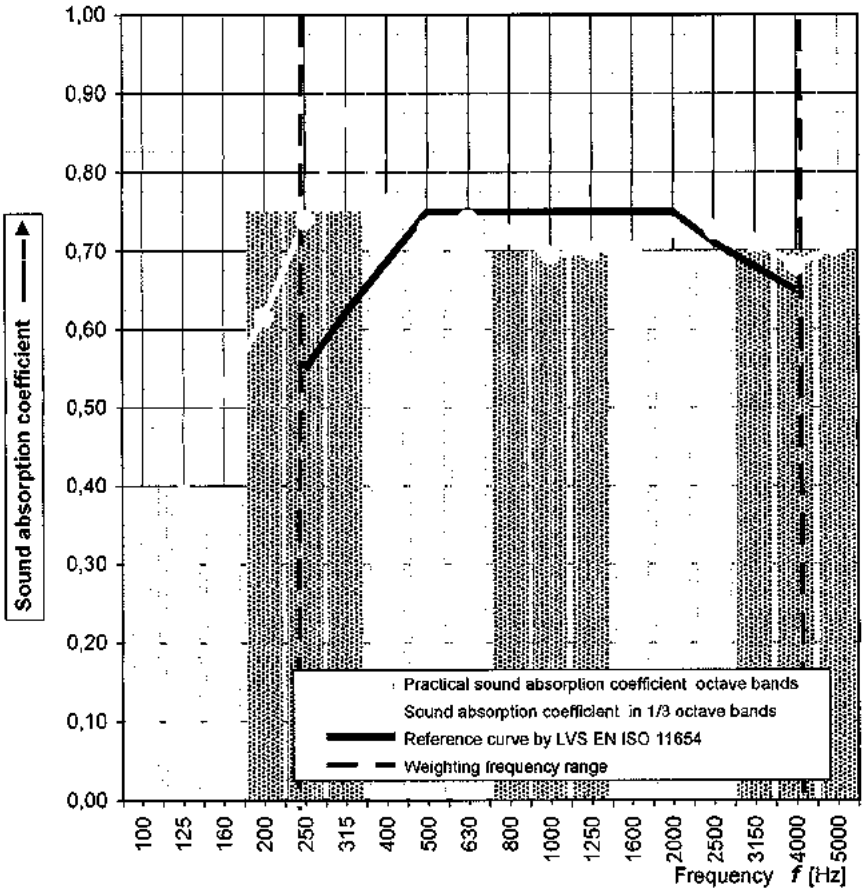
Practical α_p LVS EN ISO 11654. Acoustics - Sound absorbers in buildings - Rating of sound absorption.

Customer :	"CEWOOD" Ltd., "Gaidusalas-1", Jaunlaicene parish, Aluksne region, LV-4336	**Sample Nr.:**	**767-1**	**Measurement date:**	15.11.2016

Description of measured construction and assembly:	Cemented wood wool panels (4200x2400) ≠25 + 10mm air gap + + 50mm Stone wool Paroc UNS37 + CD profile 27x60 (3,3 m/m^2). Surface specific mass 14,8 kg/m^2. Total area 10,08 m^2

Average climatic conditions in reverberation chamber.			**Measurement conditions**	
Temperature :	17,0	T [C°]	Reverberation chamber volume m^3 :	203
Air pressure :	101,2	P [kPa]	Number of measurement points :	5
Speed of sound in the air :	341,6	c [m/s]	Dodecahedron sound source positions :	1
Relative air humidity :	59%	h [%]	Used type of signal :	MLS signal

Frequency *f*	α_s 1/3 oct	α_p 1 oct
[Hz]	[dB]	[dB]
50	-	-
63	-	-
80	-	-
100	0,21	
125	0,39	**0,40**
160	0,53	
200	0,62	
250	0,74	**0,75**
315	0,87	
400	0,76	
500	0,73	**0,75**
630	0,74	
800	0,72	
1000	0,69	**0,70**
1250	0,70	
1600	0,70	
2000	0,73	**0,70**
2500	0,73	
3150	0,71	
4000	0,68	**0,70**
5000	0,71	
6300	-	-
8000	-	-
10000	-	-



Practical sound absorption coefficient according to	**LVS EN ISO 11654,**	α_w :	**0,75**
Sound absorption class according to	**LVS EN ISO 11654**	:	**C**

Measurements done by: "R&D Akustika" Ltd. Acoustics laboratory T-282

By validity level 90% the measurement error is <5%

Latvian National Accreditation Bureau (LATAK)

Operators signature :_____/ G.Kozlovskis/

Annex of Testing report Nr. 806/2016–AL8.4

Supplement 2

Sound absorbtion coefficient α_s LVS EN ISO 354:2003.

Acoustics - Sound absorption measurements in reverberation room.

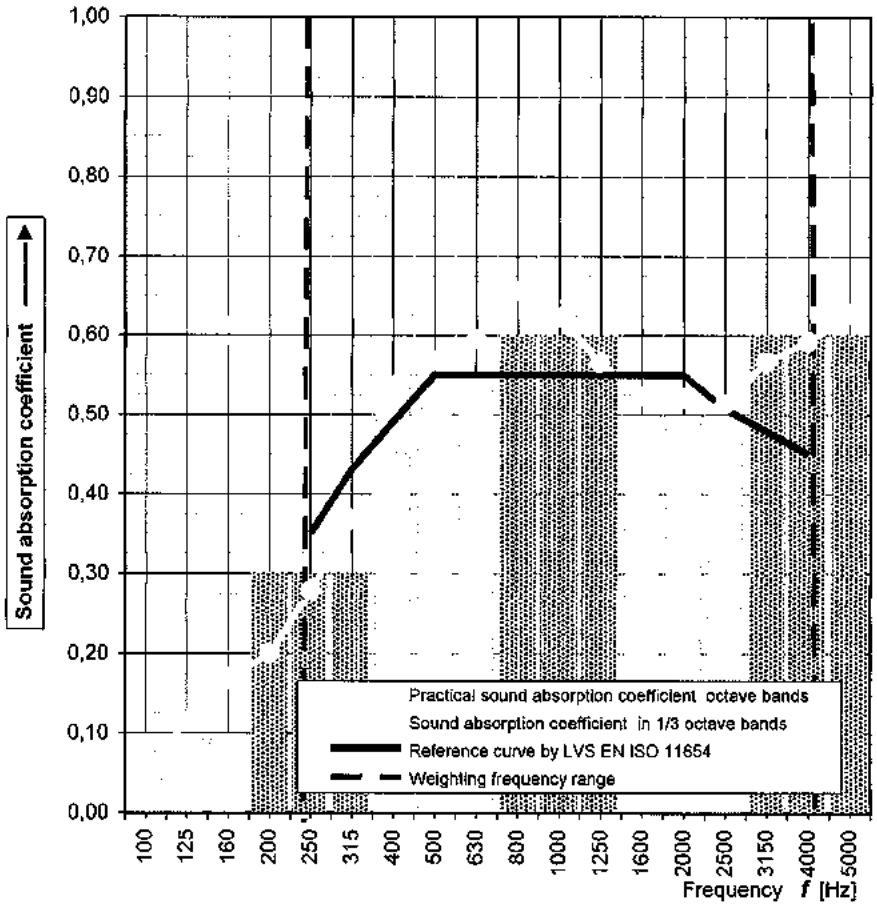
Practical α_p LVS EN ISO 11654. Acoustics - Sound absorbers in buildings - Rating of sound absorption.

Customer :	"CEWOOD" Ltd., "Galdusalas-1", Jaunlaicene parish, Aluksne region, LV-4336	**Sample Nr.:**	**767-2**	**Measurement date:**	15.11.2016

Description of measured construction and assembly:	Cemented wood wool panels (4200x2400) ≠25 + 60mm air gap + + CD profile 27x60 (3,3 m/m^2). Surface specific mass 13,2 kg/m^2. Total area 10,08 m^2

Average climatic conditions in reverberation chamber.			**Measurement conditions**	
Temperature :	17,0	T [C°]	Reverberation chamber volume m^3 :	203
Air pressure :	101,1	P [kPa]	Number of measurement points :	5
Speed of sound in the air :	341,6	c [m/s]	Dodecahedron sound source positions :	1
Relative air humidity :	56%	h [%]	Used type of signal :	MLS signal

Frequency *f* [Hz]	α_s ⅓ oct [dB]	α_p 1 oct [dB]
50	-	-
63	-	-
80	-	-
100	0,05	
125	0,11	**0,10**
160	0,17	
200	0,20	
250	0,28	**0,30**
315	0,37	
400	0,42	
500	0,57	**0,55**
630	0,59	
800	0,66	
1000	0,62	**0,60**
1250	0,57	
1600	0,52	
2000	0,52	**0,50**
2500	0,51	
3150	0,57	
4000	0,59	**0,60**
5000	0,63	
6300	-	-
8000	-	-
10000	-	-



Practical sound absorption coefficient according to	**LVS EN ISO 11654,**	α_w :	**0,55**
Sound absorption class according to	**LVS EN ISO 11654**	:	**D**

Measurements done by: "R&D Akustika" Ltd. Acoustics laboratory T-282

By validity level 90% the measurement error is <5%

Latvian National Accreditation Bureau (LATAK)

Operators signature :_____/ G.Kozlovskis/

Annex of Testing report Nr. 806/2016–AL8.4

Supplement 3

Sound absorbtion coefficient αs LVS EN ISO 354:2003.

Acoustics - Sound absorption measurements in reverberation room.

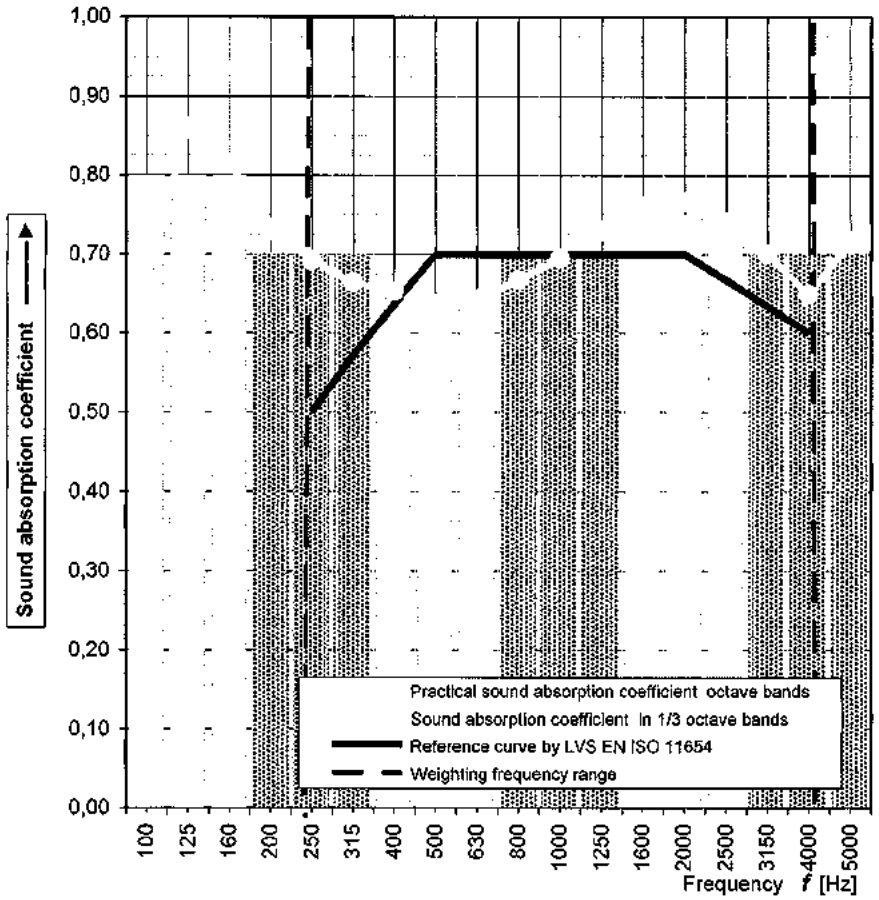
Practical αp LVS EN ISO 11654. Acoustics - Sound absorbers in buildings - Rating of sound absorption.

Customer :	"CEWOOD" SIA , "Galdusalas-1", Jaunlaicenes pagasts, Alūksnes novads, LV-4336, Latvia	Sample Nr.:	767-3	Measurement date:	16.11.2016

Description of measured construction and assembly:	Cemented wood wool panels (4200x2400) ≠25 + 100mm air gap + + 100mm Stone wool PAROC Extra + CD profile 27x60 (3,3 m/m^2). Surface specific mass 16,4 kg/m^2. Total area 10,08 m^2

Average climatic conditions in reverberation chamber.			Measurement conditions	
Temperature :	17,0	T [C°]	Reverberation chamber volume m^3 :	203
Air pressure :	101,2	P [kPa]	Number of measurement points :	5
Speed of sound in the air :	341,6	c [m/s]	Dodecahedron sound source positions :	1
Relative air humidity :	64%	h [%]	Used type of signal :	MLS signal

Frequency f	α_s ⅓ oct	α_p 1 oct
[Hz]	[dB]	[dB]
50	-	-
63	-	-
80	-	-
100	0,67	
125	0,86	**0,80**
160	0,81	
200	0,73	
250	0,69	**0,70**
315	0,66	
400	0,65	
500	0,63	**0,65**
630	0,64	
800	0,67	
1000	0,69	**0,70**
1250	0,73	
1600	0,76	
2000	0,77	**0,75**
2500	0,74	
3150	0,70	
4000	0,65	**0,70**
5000	0,71	
6300	-	-
8000	-	-
10000	-	-



Practical sound absorption coefficient according to	LVS EN ISO 11654,	α_w :	0,70
Sound absorption class according to	LVS EN ISO 11654	:	C

Measurements done by: "R&D Akustika" Ltd. Acoustics laboratory T-282

By validity level 90% the measurement error is <5%

Latvian National Accreditation Bureau (LATAK)

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Supplement 4

Sound absorbtion coefficient αs LVS EN ISO 354:2003.

Acoustics - Sound absorption measurements in reverberation room.

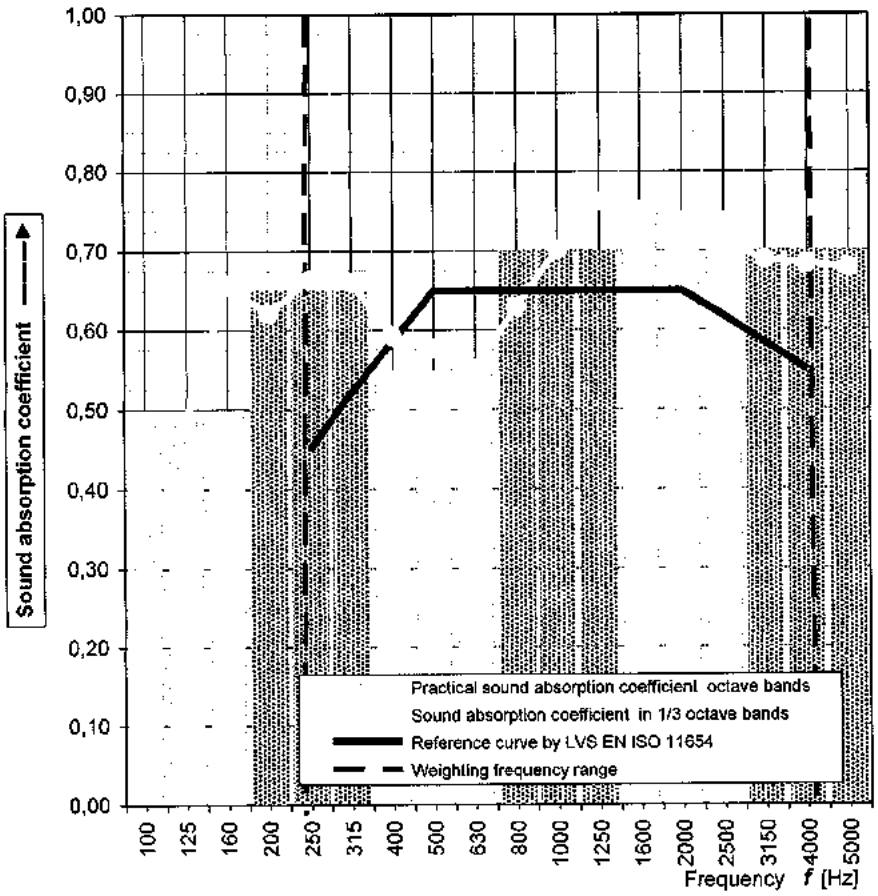
Practical αp LVS EN ISO 11654. Acoustics - Sound absorbers in buildings - Rating of sound absorption.

Customer :	"CEWOOD" SIA , "Galdusalas-1", Jaunlaicenes pagasts, Alūksnes novads, LV-4336, Latvia	**Sample Nr.:**	**767-4**	**Measurement date:**	16.11.2016

Description of measured construction and assembly:	Cemented wood wool panels (4200x2400) ≠25 + 150mm air gap + + 50mm Stone wool PAROC Extra + CD profile 27x60 (3,3 m/m^2). Surface specific mass 14,8 kg/m^2. Total area 10,08 m^2

Average climatic conditions in reverberation chamber.			**Measurement conditions**	
Temperature :	17,0	T [C°]	Reverberation chamber volume m^3 :	203
Air pressure :	101,2	P [kPa]	Number of measurement points :	5
Speed of sound in the air :	341,6	c [m/s]	Dodecahedron sound source positions :	1
Relative air humidity :	64%	h [%]	Used type of signal :	MLS signal

Frequency *f*	α_s ⅓ oct	α_p 1 oct
[Hz]	[dB]	[dB]
50	-	-
63	-	-
80	-	-
100	0,30	
125	0,49	0,50
160	0,66	
200	0,62	
250	0,66	0,65
315	0,66	
400	0,59	
500	0,58	0,55
630	0,55	
800	0,63	
1000	0,70	0,70
1250	0,76	
1600	0,75	
2000	0,72	0,75
2500	0,71	
3150	0,69	
4000	0,68	0,70
5000	0,68	
6300	-	-
8000	-	-
10000	-	-



Practical sound absorption coefficient according to	**LVS EN ISO 11654,**	α_w :	**0,65**
Sound absorption class according to	**LVS EN ISO 11654**	:	**C**

Measurements done by: "R&D Akustika" Ltd. Acoustics laboratory T-282

Latvian National Accreditation Bureau (LATAK)

By validity level 90% the measurement error is <5%

Operators signature :_____/ G.Kozlovskis/

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Supplement 5

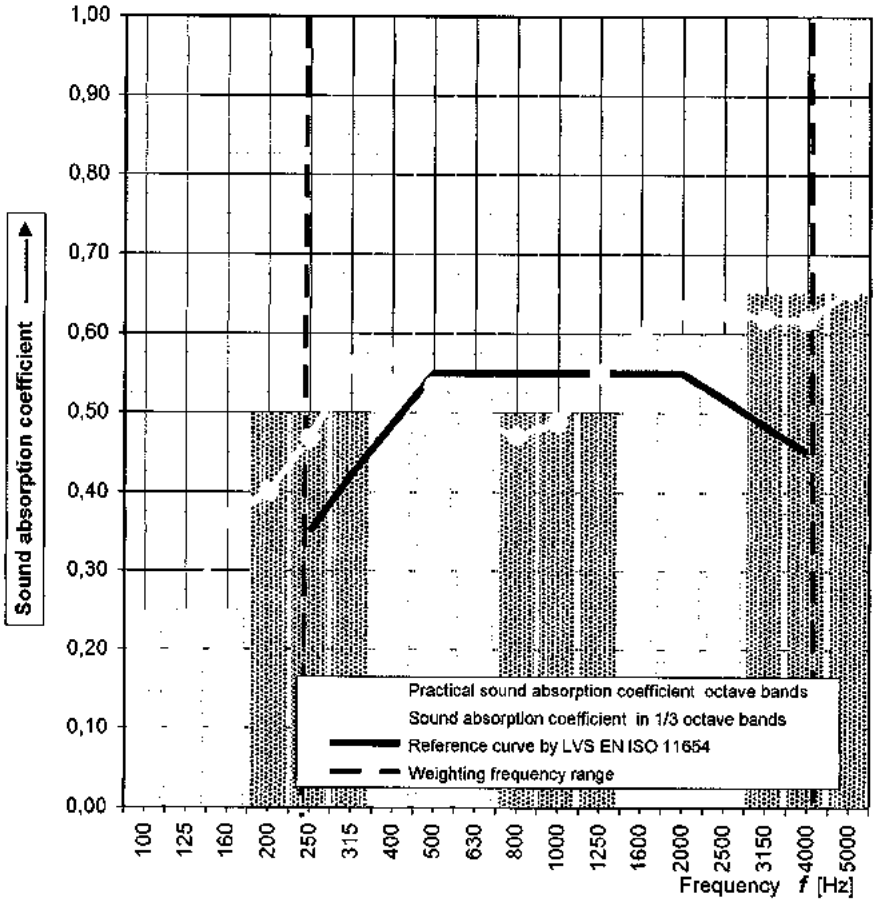
Sound absorbtion coefficient αs LVS EN ISO 354:2003.
Acoustics - Sound absorption measurements in reverberation room.
Practical αp LVS EN ISO 11654. Acoustics - Sound absorbers in buildings - Rating of sound absorption.

Customer :	"CEWOOD" SIA , "Galdusalas-1", Jaunlaicenes pagasts, Alūksnes novads, LV-4336, Latvia	Sample Nr.:	767-5	Measurement date:	16.11.2016

Description of measured construction and assembly:	Cemented wood wool panels (4200x2400) ≠25 + 200mm air gap + + CD profile 27x60 (3,3 m/m^2). Surface specific mass 13,2 kg/m^2. Total area 10,08 m^2

Average climatic conditions in reverberation chamber.			Measurement conditions	
Temperature :	17,0	T [C°]	Reverberation chamber volume m^3 :	203
Air pressure :	101,1	P [kPa]	Number of measurement points :	5
Speed of sound in the air :	341,6	c [m/s]	Dodecahedron sound source positions :	1
Relative air humidity :	64%	h [%]	Used type of signal :	MLS signal

Frequency f	α_s ⅓ oct	α_p 1 oct
[Hz]	[dB]	[dB]
50	-	-
63	-	-
80	-	-
100	0,12	
125	0,23	**0,25**
160	0,37	
200	0,40	
250	0,47	**0,50**
315	0,56	
400	0,57	
500	0,53	**0,55**
630	0,49	
800	0,47	
1000	0,49	**0,50**
1250	0,55	
1600	0,60	
2000	0,63	**0,60**
2500	0,63	
3150	0,62	
4000	0,62	**0,65**
5000	0,65	
6300	-	-
8000	-	-
10000	-	-



Practical sound absorption coefficient according to	**LVS EN ISO 11654,**	**α_w :**	**0,55**
Sound absorption class according to	**LVS EN ISO 11654**	**:**	**D**

Measurements done by: "R&D Akustika" Ltd. Acoustics laboratory T-282

By validity level 90% the measurement error is <5%

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Supplement 6

Sound absorbtion coefficient αs LVS EN ISO 354:2003.

Acoustics - Sound absorption measurements in reverberation room.

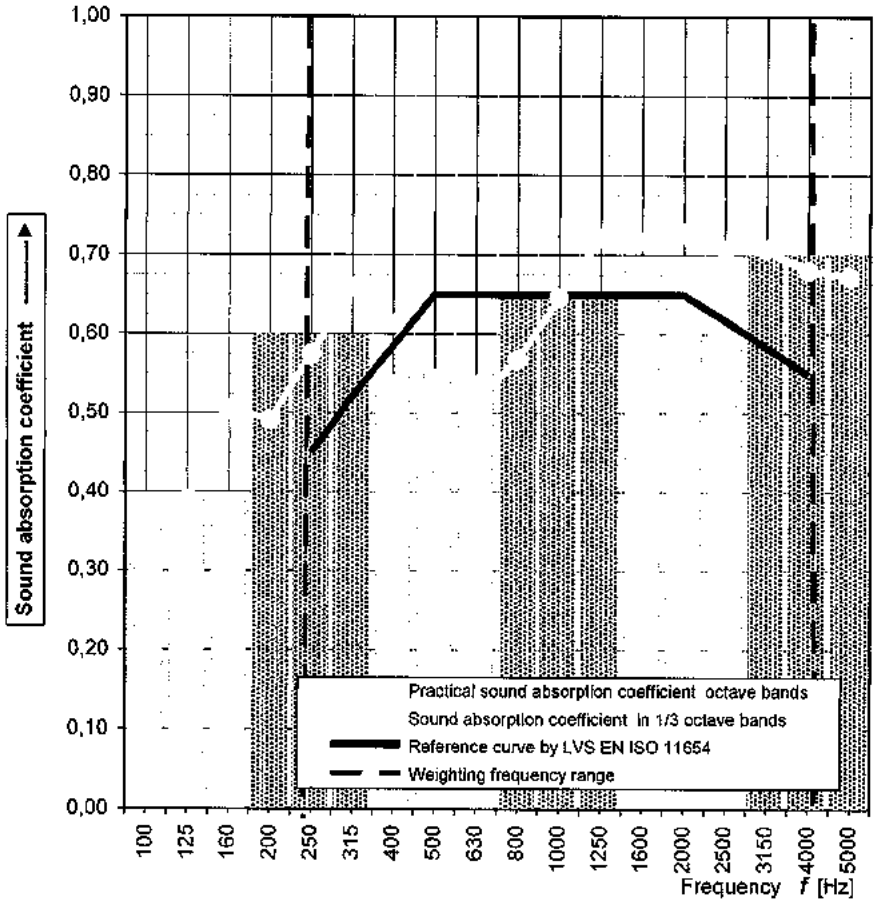
Practical αp LVS EN ISO 11654. Acoustics - Sound absorbers in buildings - Rating of sound absorption.

Customer :	"CEWOOD" SIA , "Galdusalas-1", Jaunlaicenes pagasts, Alūksnes novads, LV-4336, Latvia	Sample Nr.:	767-6	Measurement date:	16.11.2016

Description of measured construction and assembly:	Cemented wood wool panels (4200x2400) ≠50 + 200mm air gap + + CD profile 27x60 (3,3 m/m^2). Surface specific mass 21,7 kg/m^2. Total area 10,08 m^2

Average climatic conditions in reverberation chamber.			Measurement conditions	
Temperature :	17,0	T [C°]	Reverberation chamber volume m^3 :	203
Air pressure :	101,1	P [kPa]	Number of measurement points :	5
Speed of sound in the air :	341,6	c [m/s]	Dodecahedron sound source positions :	1
Relative air humidity :	64%	h [%]	Used type of signal :	MLS signal

Frequency f [Hz]	α_s ⅓ oct [dB]	α_p 1 oct [dB]
50	-	-
63	-	-
80	-	-
100	0,30	
125	0,39	**0,40**
160	0,50	
200	0,49	
250	0,58	**0,60**
315	0,66	
400	0,61	
500	0,54	**0,55**
630	0,52	
800	0,57	
1000	0,65	**0,65**
1250	0,72	
1600	0,72	
2000	0,73	**0,70**
2500	0,71	
3150	0,71	
4000	0,68	**0,70**
5000	0,67	
6300	-	-
8000	-	-
10000	-	-



Practical sound absorption coefficient according to	**LVS EN ISO 11654,**	α_w :	**0,65**
Sound absorption class according to	**LVS EN ISO 11654**	:	**C**

Measurements done by: "R&D Akustika" Ltd. Acoustics laboratory T-282

By validity level 90% the measurement error is <5%

Latvian National Accreditation Bureau (LATAK)

Operators signature :_____/ G.Kozlovskis/

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