Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with SFS-EN ISO 354-1985 and SFS-EN ISO 11654

Orderer: Esa Silfverhuth

Esa Silfverhuth

Specimen:	Manufacturer:		
	Product name:		
	Structure:	~ 5 mm	spray coating (nameless)
		20 mm	mineral wool
			concrete
	Total thickness:	~ 25 mm	

Measurement date: Dec. 12, 2005

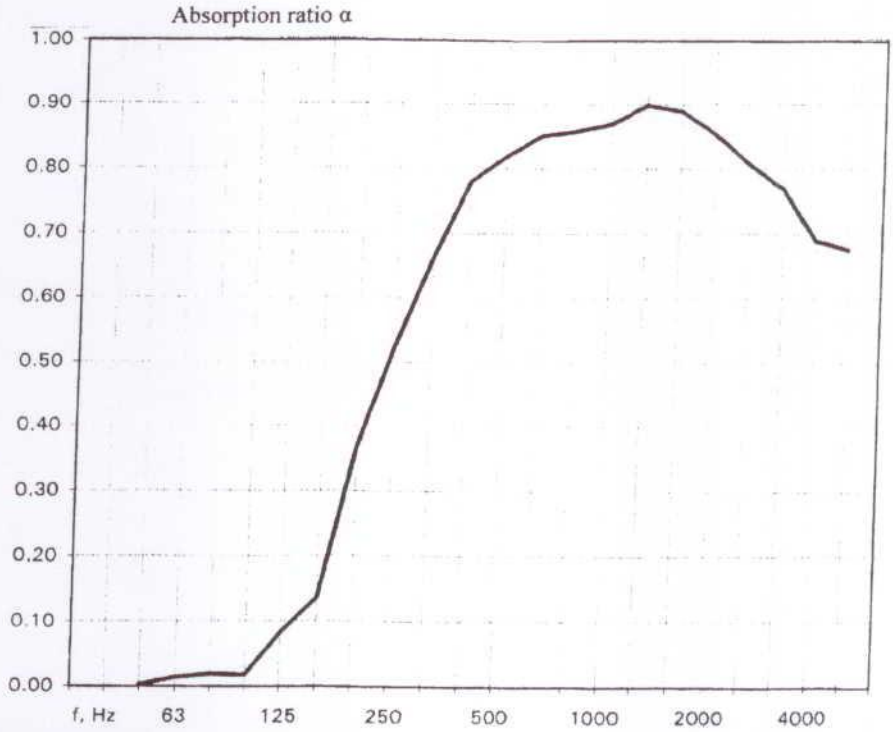
Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

Specimen: Area: 11.52 m^2
3600 x 2400 mm (panels, 4 pcs 1800 x 1200 mm)
Panel plates directly against the concrete floor, sides blank.

Conditions: Temperature: 16 °C
Air humidity: 50 %

Measuring results: The absorption class is B in accordance with standard EN ISO 11654.
In accordance with standard EN ISO 11654, weighted absorption ratio α_w = 0.8 ()

f Hz	α_s
50	**0.00**
63	**0.01**
80	**0.02**
100	**0.02**
125	**0.08**
160	**0.14**
200	**0.37**
250	**0.53**
315	**0.66**
400	**0.78**
500	**0.82**
630	**0.85**
800	**0.86**
1000	**0.87**
1250	**0.90**
1600	**0.89**
2000	**0.85**
2500	**0.81**
3150	**0.77**
4000	**0.69**
5000	**0.68**



Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with SFS-EN ISO 354-1985 and SFS-EN ISO 11654

Orderer: Esa Silfverhuth

Esa Silfverhuth

Specimen:	Manufacturer:		
	Product name:		
	Structure:	~ 5 mm	spray coating D41
		20 mm	mineral wool
			concrete
	Total thickness:	~ 25 mm	

Measurement date: Dec. 12, 2005

Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

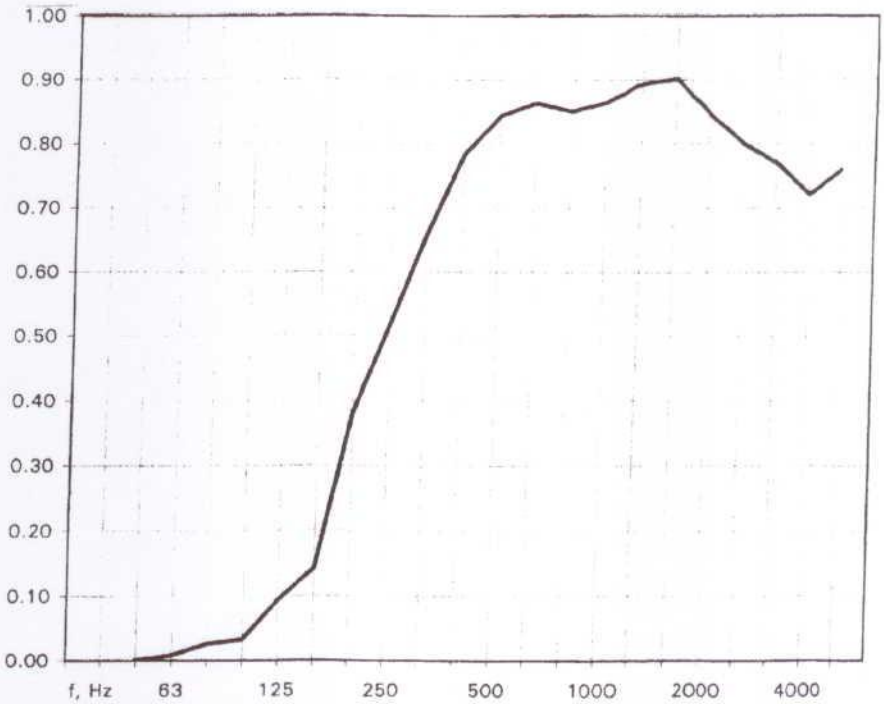
Specimen: Area: 11.52 m^2
3600 x 2600 mm (panels, 3 pcs 2600 x 1200 mm)
Panel plates directly against the concrete floor, sides blank.

Conditions: Temperature: 16 °C
Air humidity: 50 %

Measuring results: The absorption class is B in accordance with standard EN ISO 11654.
In accordance with standard EN ISO 11654, weighted absorption ratio α_w = 0.8 ()

f Hz	α_s
50	**0.00**
63	**0.01**
80	**0.03**
100	**0.03**
125	**0.09**
160	**0.14**
200	**0.38**
250	**0.52**
315	**0.66**
400	**0.78**
500	**0.84**
630	**0.86**
800	**0.85**
1000	**0.86**
1250	**0.89**
1600	**0.90**
2000	**0.85**
2500	**0.80**
3150	**0.77**
4000	**0.72**
5000	**0.76**

Absorption ratio α



Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with SFS-EN ISO 354-1985 and SFS-EN ISO 11654

Orderer: Esa Silfverhuth

Esa Silfverhuth

Specimen:	Manufacturer:		
	Product name:		
	Structure:	~ 5 mm	spray coating D42
		20 mm	mineral wool
			concrete
	Total thickness:	~ 25 mm	

Measurement date: Dec. 12, 2005

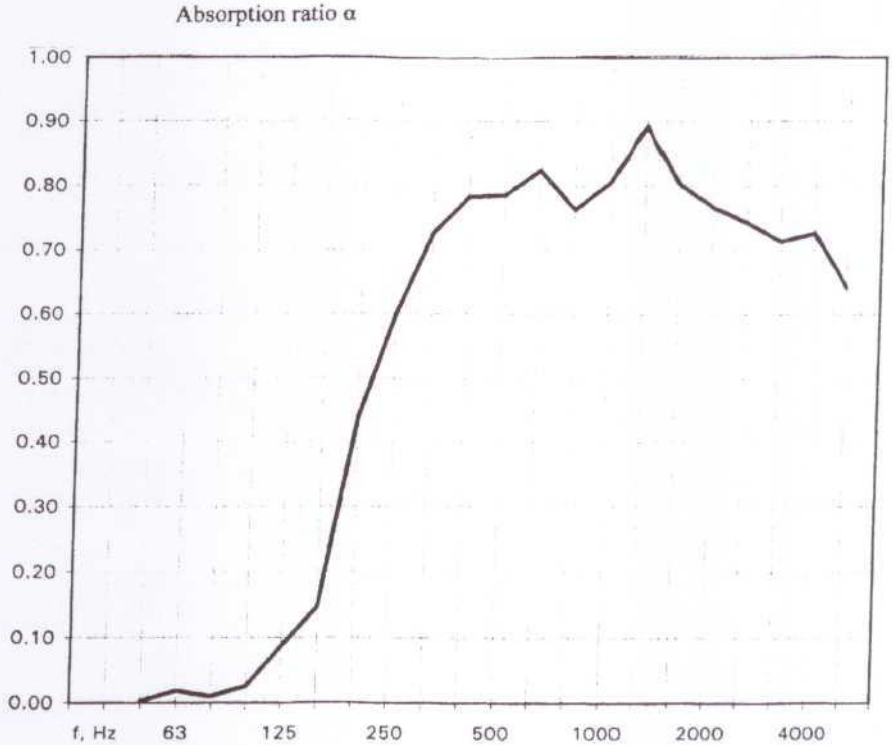
Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

Specimen: Area: 11.52 m^2
3600 x 2400 mm (panels, 3 pcs 2400 x 1200 mm)
Panel plates directly against the concrete floor, sides blank.

Conditions: Temperature: 16 °C
Air humidity: 50 %

Measuring results: The absorption class is B in accordance with standard EN ISO 11654.
In accordance with standard EN ISO 11654, weighted absorption ratio α_w = 0.81 ()

f Hz	α_s
50	**0.00**
63	**0.02**
80	**0.01**
100	**0.03**
125	**0.09**
160	**0.15**
200	**0.44**
250	**0.60**
315	**0.73**
400	**0.78**
500	**0.79**
630	**0.82**
800	**0.76**
1000	**0.81**
1250	**0.89**
1600	**0.80**
2000	**0.77**
2500	**0.74**
3150	**0.71**
4000	**0.73**
5000	**0.64**



Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with SFS-EN ISO 354-1985 and SFS-EN ISO 11654

Orderer: Esa Silfverhuth

Esa Silfverhuth

Specimen: Manufacturer:		
Product name:		
Structure:	~ 5 mm	spray coating (nameless)
	20 mm	mineral wool
	200 mm	studding with boards + air gap
		concrete
Total thickness:	~ 25 mm	

Measurement date: Dec. 12, 2005

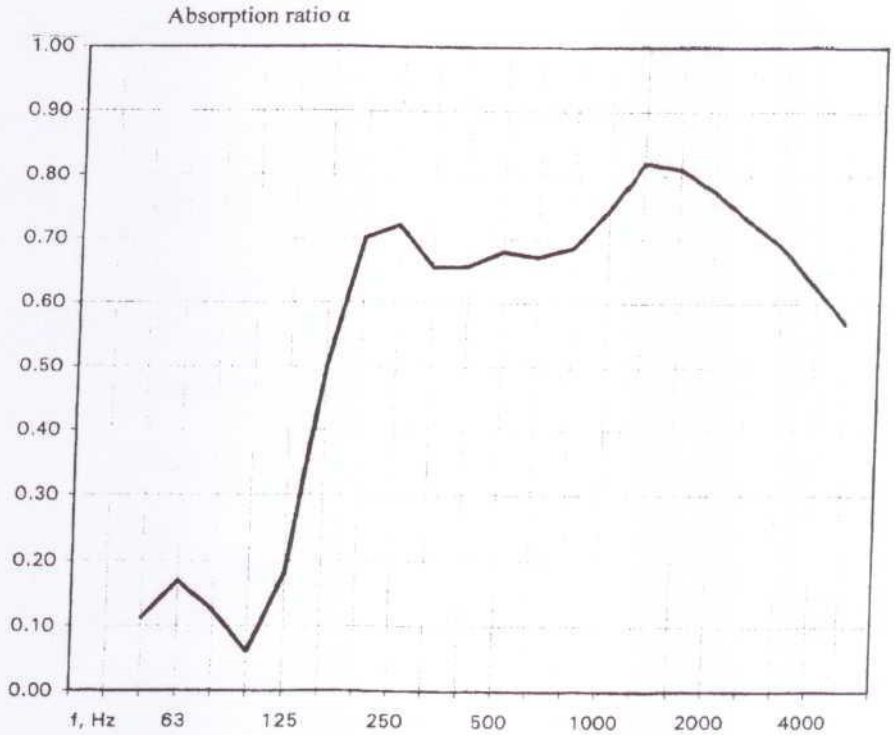
Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

Specimen: Area: 8.64 m^2
3600 x 2400 mm (panels, 3 pcs 2400 x 1200 mm)
Panel plates mounted on a studding to place them 200 mm off the floor, sides of the measured structure covered with a gypsum plate.

Conditions: Temperature: 16 °C
Air humidity: 50 %

Measuring results: The absorption class is C in accordance with standard EN ISO 11654.
In accordance with standard EN ISO 11654, weighted absorption ratio α_w = 0.75 ()

f Hz	α_s
50	**0.11**
63	**0.17**
80	**0.12**
100	**0.06**
125	**0.18**
160	**0.50**
200	**0.70**
250	**0.72**
315	**0.66**
400	**0.66**
500	**0.68**
630	**0.67**
800	**0.69**
1000	**0.75**
1250	**0.82**
1600	**0.81**
2000	**0.77**
2500	**0.73**
3150	**0.69**
4000	**0.63**
5000	**0.57**



Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with SFS-EN ISO 354-1985 and SFS-EN ISO 11654

Orderer: Esa Silfverhuth

Esa Silfverhuth

Specimen:	Manufacturer:		
	Product name:		
	Structure:	~ 5 mm	spray coating D41
		20 mm	mineral wool
		200 mm	studding with boards + air gap
			concrete
	Total thickness:	~ 25 mm	

Measurement date: Dec. 12, 2005

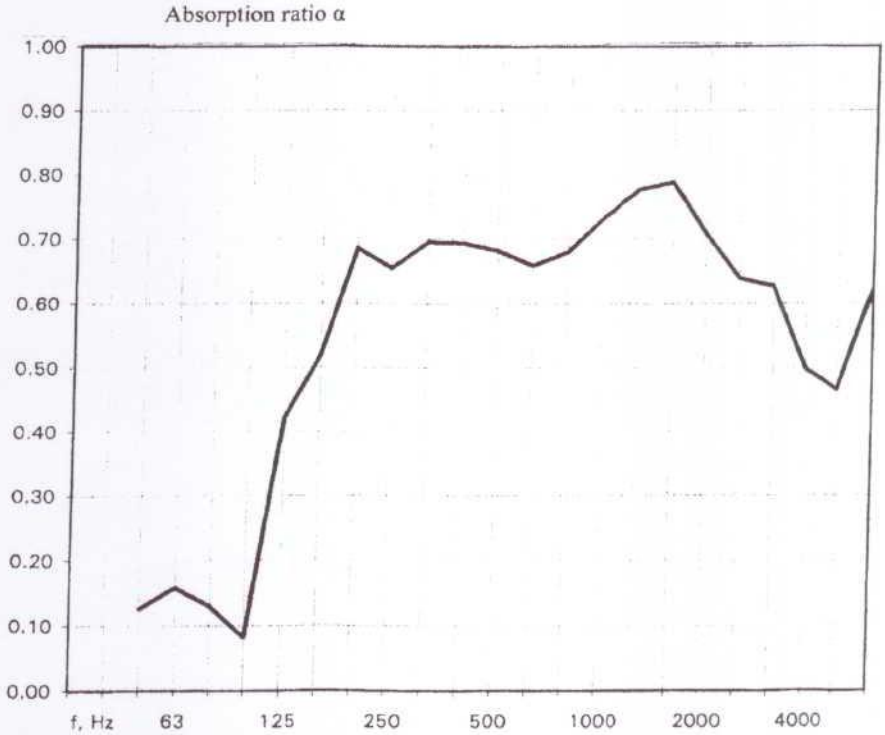
Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

Specimen: Area: 8.64 m^2
3600 x 2400 mm (panels, 3 pcs 2400 x 1200 mm)
Panel plates mounted on a studding to place them 200 mm off the floor, sides of the measured structure covered with a gypsum plate.

Conditions: Temperature: 16 °C
Air humidity: 50 %

Measuring results: The absorption class is C in accordance with standard EN ISO 11654.
In accordance with standard EN ISO 11654, weighted absorption ratio α_w = 0.73 ()

f Hz	α_s
50	**0.13**
63	**0.16**
80	**0.13**
100	**0.08**
125	**0.42**
160	**0.52**
200	**0.69**
250	**0.65**
315	**0.69**
400	**0.69**
500	**0.68**
630	**0.66**
800	**0.68**
1000	**0.73**
1250	**0.78**
1600	**0.79**
2000	**0.71**
2500	**0.64**
3150	**0.63**
4000	**0.50**
5000	**0.47**



Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with SFS-EN ISO 354-1985 and SFS-EN ISO 11654

Orderer: Esa Silfverhuth

Esa Silfverhuth

Specimen:	Manufacturer:		
	Product name:		
	Structure:	~ 5 mm	spray coating D42
		20 mm	mineral wool
		200 mm	studding with boards + air gap
			concrete
	Total thickness:	~ 25 mm	

Measurement date: Dec. 12, 2005

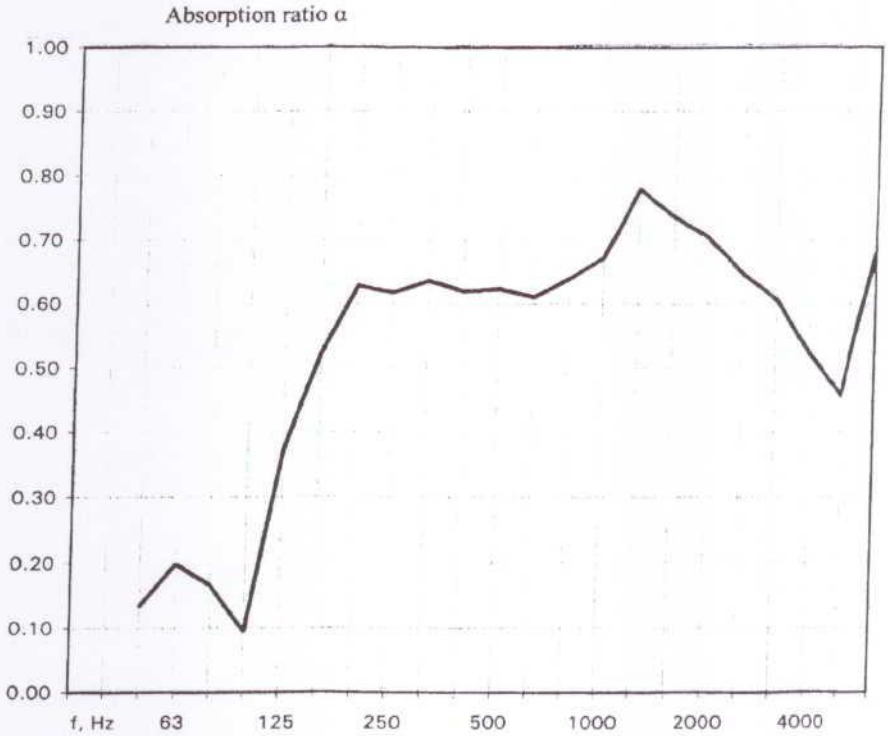
Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

Specimen: Area: 8.64 m^2
3600 x 2400 mm (panels, 3 pcs 2400 x 1200 mm)
Panel plates mounted on a studding to place them 200 mm off the floor, sides of the measured structure covered with a gypsum plate.

Conditions: Temperature: 16 °C
Air humidity: 50 %

Measuring results: The absorption class is C in accordance with standard EN ISO 11654.
In accordance with standard EN ISO 11654, weighted absorption ratio α_w = 0.69 ()

f Hz	α_s
50	**0.14**
63	**0.20**
80	**0.17**
100	**0.10**
125	**0.37**
160	**0.52**
200	**0.63**
250	**0.62**
315	**0.64**
400	**0.62**
500	**0.62**
630	**0.61**
800	**0.64**
1000	**0.67**
1250	**0.78**
1600	**0.74**
2000	**0.70**
2500	**0.65**
3150	**0.61**
4000	**0.52**
5000	**0.46**



Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with SFS-EN ISO 354-2003 and SFS-EN ISO 11654: 1997

Orderer: AcousticOne Oy
P.O.BOX 56, FI-00421 Helsinki
Esa Silfverhuth

Sample:	Manufacturer:	AcousticOne Oy	
	Product name:	**AcousticOne**	
	Structure:	~ 12 mm	spray coating a 13 mm gypsum plate (as a spraying background, no acoustic effect) concrete 3 pcs 1200 x 2600 mm panels mounted to form a uniform field sides of the panel field open
	Total thickness:	~ 12 mm	

Measurement date: Oct. 6, 2006

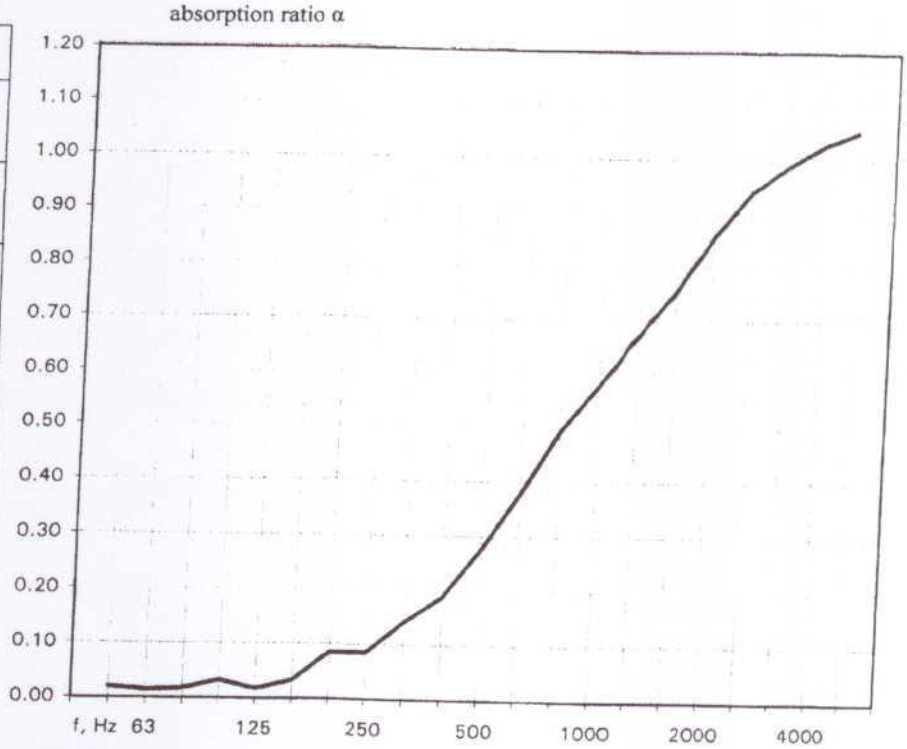
Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

Specimen: Area: 9.36 m²

		reference / specimen
Conditions:	Temperature:	19 / 19 °C
	Air humidity:	64 / 65 %

Measuring results: The absorption class is D in accordance with standard EN ISO 11654.
In accordance with standard EN ISO 11654, weighted absorption ratio α_w = **0.35 (MH)**

f Hz	α_s 1/3 oct.	α_s octaves
50	0.02	
63	0.01	**0.02**
80	0.02	
100	0.03	
125	0.02	**0.03**
160	0.03	
200	0.08	
250	0.09	**0.10**
315	0.14	
400	0.19	
500	0.28	**0.28**
630	0.38	
800	0.49	
1000	0.58	**0.58**
1250	0.67	
1600	0.75	
2000	0.86	**0.85**
2500	0.94	
3150	0.99	
4000	1.03	**1.02**
5000	1.05	



Measurement of sound absorption in a reverberation room
in accordance with ISO 354-1985

March 3, 2004

Test facility: Yleisradio
Test equipment: IRMA

Test specimen: **Decocoat panels delivered on March 3, 2004**
20 mm (mineral wool) + 6 mm (shred) + 6.5 mm (surface)
"6 mm shred, a 6.5 nozzle, 2000/1 kg"

Room dimensions:

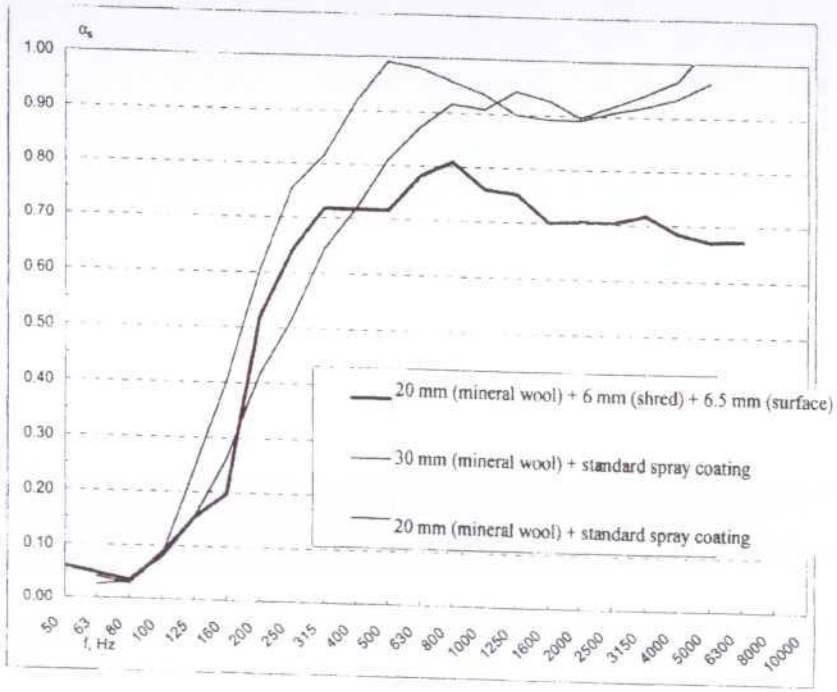
l	6.00	m
w	6.60	m
h	5.20	m
V	205.92	m^3
S_t	210.24	m^2

Test specimen dimensions:

$l_{specimen}$	3.6	m
$W_{specimen}$	2.4	m
S	8.64	m^2
dim.ratio	0.666667	(0.7<x<1)

Ambient temperature t 16 °C
Sound velocity c 340.6 m/s

f Hz	T_1 s	T_2 s	A_1 m^2	A_2 m^2	A m^2	α_s
50	14.75	12.02	2.2669	2.7816	0.5147	0.06
63	12.57	10.87	2.6599	3.0750	0.4151	0.05
80	10.82	9.83	3.0913	3.4004	0.3091	0.04
100	12.00	9.61	2.7862	3.4780	0.6918	0.08
125	10.50	7.41	3.1830	4.5094	1.3263	0.15
160	10.67	6.90	3.1331	4.8483	1.7151	0.20
200	8.88	4.05	3.7655	8.2516	4.4860	0.52
250	9.40	3.68	3.5562	9.0839	5.5277	0.64
315	9.07	3.38	3.6857	9.8896	6.2038	0.72
400	10.87	3.61	3.0748	9.2729	6.1980	0.72
500	10.68	3.58	3.1306	9.3287	6.1981	0.72
630	9.22	3.22	3.6255	10.8380	6.7575	0.78
800	8.63	3.08	3.8746	10.8626	6.9880	0.81
1000	7.99	3.11	4.1869	10.7482	6.5613	0.76
1250	7.00	2.97	4.7728	11.2700	6.4971	0.75
1600	5.48	2.75	6.1020	12.1671	6.0652	0.70
2000	4.38	2.44	7.6358	13.7289	6.0931	0.71
2500	3.50	2.14	9.5640	15.6456	6.0816	0.70
3150	2.68	1.79	12.4612	18.6665	6.2054	0.72
4000	1.99	1.47	16.8175	22.7399	5.9223	0.69
5000	1.48	1.18	226168	28.4156	5.7988	0.67
6300	1.06	0.89	31.6328	37.4498	5.8169	0.67
8000						
10000						



Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with ISO354-1985

Orderer: Decocoat Ky
P.O.Box 716, FI-00101 Helsinki
Esa Silfverhuth

Specimen:	Manufacturer:	Decocoat Ky	
	Product name:	**Decocoat**	
	Structure:	~ 5 mm	sprayed surface
		~ 10 mm	multicolored spray coating
		20 mm	hard mineral wool
			concrete
	Total thickness:	~ 35 mm	

Measurement date: March 3, 2004

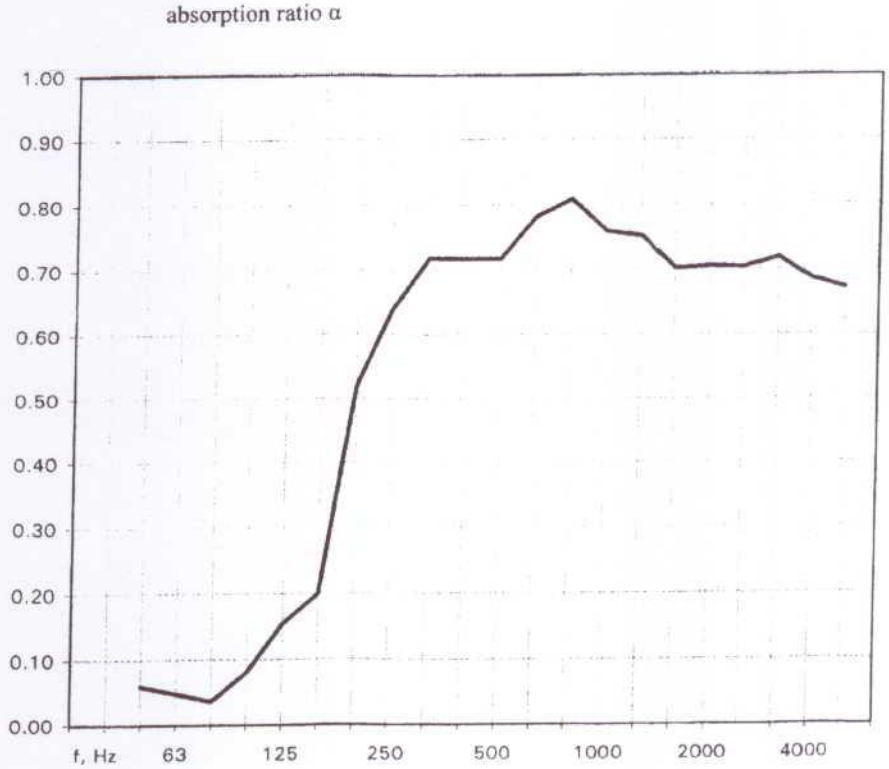
Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

Specimen: Area: 8.64 m^2
3600 x 2400 mm (panels, 3 pcs 2400 x 1200 mm)
Panel plates directly against the concrete floor, sides open.

Conditions: Temperature: 16 °C
Air humidity: 53 %

Measuring results:

f Hz	α_s
50	**0.06**
63	**0.05**
80	**0.04**
100	**0.08**
125	**0.15**
160	**0.20**
200	**0.52**
250	**0.64**
315	**0.72**
400	**0.72**
500	**0.72**
630	**0.78**
800	**0.81**
1000	**0.76**
1250	**0.75**
1600	**0.70**
2000	**0.71**
2500	**0.70**
3150	**0.72**
4000	**0.69**
5000	**0.67**



Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with ISO354-1985

Orderer: Decocoat Ky
P.O.Box 716, 00101 Helsinki
Esa Silfverhuth

Sample:	Manufacturer:	Decocoat Ky	
	Product name:	**Decocoat**	
	Structure:	~ 5 mm	sprayed surface
		~ 10 mm	multicolored spray coating
		20 mm	hard mineral wool
		200 mm	air gap + studding
			concrete
	Total thickness:	235 mm	

Measurement date: March 3, 2004

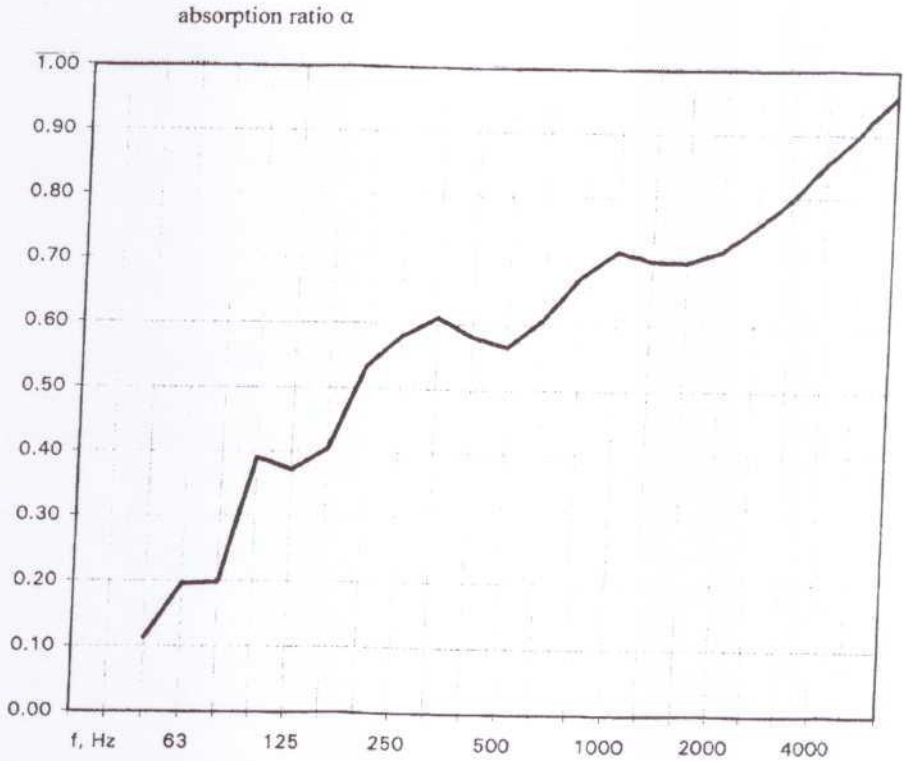
Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

Specimen: Area: 8.64 m^2
3600 x 2400 mm (panels, 3 pcs 2400 x 1200 mm)
Panel plates mounted on a studding to place them for a distance of 200 mm from the floor, sides covered with a 13 mm gypsum plate.

Conditions: Temperature: 16 °C
Air humidity: 60 %

Measuring results:

f Hz	α_s
50	**0.11**
63	**0.20**
80	**0.20**
100	**0.39**
125	**0.37**
160	**0.40**
200	**0.53**
250	**0.58**
315	**0.61**
400	**0.58**
500	**0.57**
630	**0.61**
800	**0.68**
1000	**0.71**
1250	**0.70**
1600	**0.70**
2000	**0.72**
2500	**0.75**
3150	**0.80**
4000	**0.85**
5000	**0.90**



Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with ISO354-1985

Orderer: Decocoat Ky
P.O.Box 716, FI-00101 Helsinki
Esa Silfverhuth

Specimen:	Manufacturer:	Decocoat Ky	
	Product name:	**Decocoat**	
	Structure:	~ 5 mm	multicolored spray coating
		12 mm	gypsum plate (no acoustic significance)
			concrete
	Total thickness:	~ 5 mm	

Measurement date: March 11, 2004

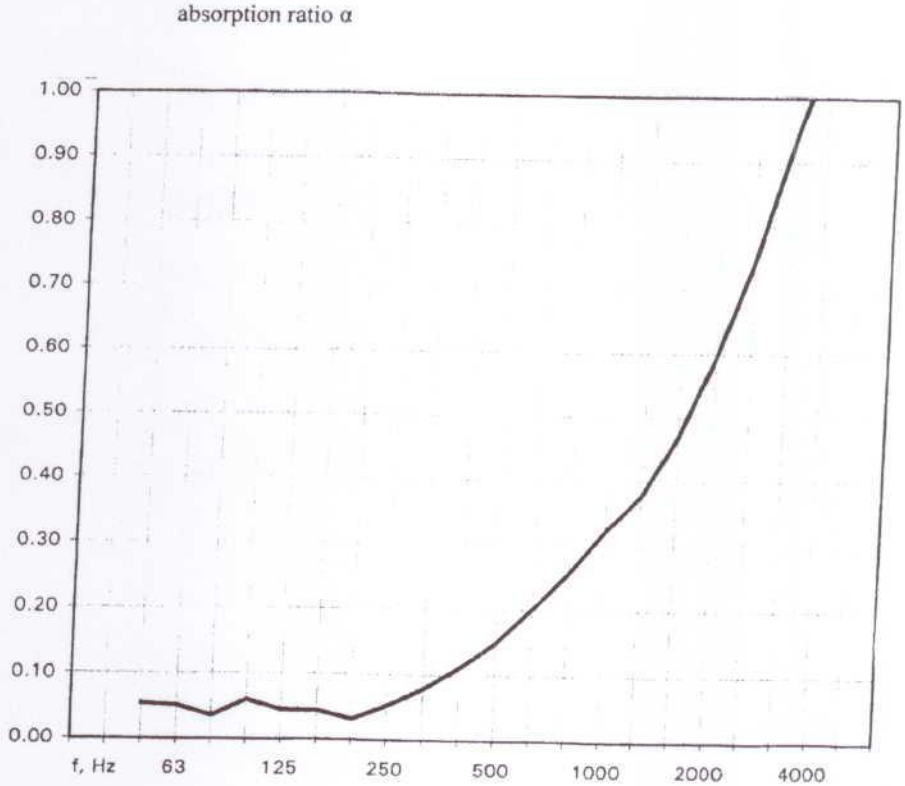
Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

Specimene: Area: 9.36 m^2
3600 x 2600 mm (panels, 3 pcs 2600 x 1200 mm)

Conditions: Temperature: 16 °C
Air humidity: 47 %

Measuring results:

f Hz	α_s
50	**0.05**
63	**0.05**
80	**0.03**
100	**0.06**
125	**0.04**
160	**0.04**
200	**0.03**
250	**0.05**
315	**0.08**
400	**0.11**
500	**0.15**
630	**0.20**
800	**0.26**
1000	**0.32**
1250	**0.38**
1600	**0.47**
2000	**0.59**
2500	**0.74**
3150	**0.92**
4000	**1.00**
5000	**1.00**



Measurement of Absorption Ratio with a Reverberation Room Method

in accordance with ISO354-1985

Orderer: Decocoat Ky
P.O.Box 716, FI-00101 Helsinki
Esa Silfverhuth

Specimen:	Manufacturer:	Decocoat Ky	
	Product name:	**Decocoat**	
	Structure:	~ 10 mm	multicolored spray coating
		12 mm	gypsum plate (no acoustic significance)
			concrete
	Total thickness:	~ 10 mm	

Measurement date: March 11, 2004

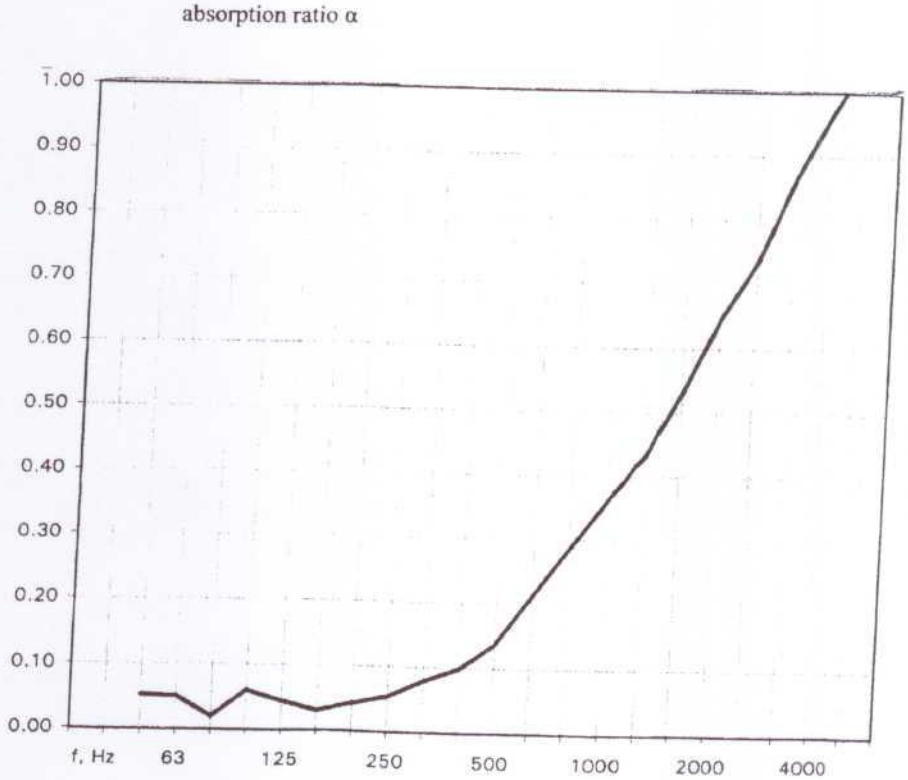
Measurement location: Acoustics lab of Yleisradio Oy, reverberation room 5

Specimen: Area: 9.36 m²
3600 x 2600 mm (panels, 3 pcs 2600 x 1200 mm)

Conditions: Temperature: 16 °C
Air humidity: 47 %

Measuring results:

f Hz	α_s
50	**0.05**
63	**0.05**
80	**0.02**
100	**0.06**
125	**0.04**
160	**0.03**
200	**0.04**
250	**0.05**
315	**0.08**
400	**0.10**
500	**0.14**
630	**0.21**
800	**0.29**
1000	**0.36**
1250	**0.43**
1600	**0.53**
2000	**0.65**
2500	**0.74**
3150	**0.86**
4000	**0.97**
5000	**1.00**



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Kornetintie 4 A, FI-00380 HELSINKI fax+358 (0)9-5617 1711 firstname.lastname@akukon.fi