

## 0890 SERIES

### AcoustiVeil™ Dimout

#### Available Colours

White	0891	
Grey	0893	
Black	0894	

This series is composed of an eco-friendly material that unites form and function as a tightly woven, sound-absorbing, light blocking, near-blackout textile. Its woven flame-retardant polyester will enhance any interior. With a Noise Reduction Coefficient (NRC) of 0.575, the shade cloth appreciably filters noise and reduces sound reverberation. When sound is absorbed, echoes are reduced.



MechoShade ThermoVeil®, EuroVeil®, Equinox™ and EuroTwill™ shade cloths are offered with the broadest Limited Lifetime Warranty available; assuring the end-user a product that will provide many years of trouble-free performance.

#### Fabric Specifications

<b>Stock Widths</b>	86"
Openness Factor	0-1%
Composition	100% Polyester
Thickness	.021"
Weight	7.6 oz/sq yrd
Fire Rating	NFPA 701-2004
Cleaning Instructions	Contact Manufacturer
Spline	SnapLoc
Railroaded	Not Recommended
Batten or Seam	Not Recommended



**Fire Rated PVC-Free**

#### Bacterial Fungal Resistance (All):

ASTM G-22-76 (reapproved 1996) and ASTM G-21-96 Staphylococcus aureus - Zone of inhibition (mm) / Growth: 8/NGCA. Pseudomonas aeruginosa - ASTM G-22-80 Bacterial Growth: No Growth.

- If you require additional fabric send E-mail to: [samples@frasershading.com](mailto:samples@frasershading.com)
- Actual fabric colours may vary from pictures, Fabric stock levels may vary.
- Openness factors are approximate. Mockups recommended. Specification subject to change without notice.

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## AcoustiVeil™

### Measurement of the sound absorption in the reverberation room according to DIN EN ISO 354

Test report No. M52 830/2

Client:	MechoShade Systems, Inc
Consultant:	Dipl.-Ing. (FH) Andreas Niermann
Date of report:	18 <sup>th</sup> November 2004
Date of test:	03 <sup>rd</sup> November 2004
Number of pages:	In total 10 pages: 5 pages of text, 1 page Appendix A, 2 pages Appendix B, 1 page Appendix C, 1 page Appendix D

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## 1 Task

On behalf of MechoShade Systems Inc., the sound absorption of AcoustiVeil™, is to be measured in the reverberation room according to DIN EN ISO 354

## 2 Specimen and measuring conditions

On 15<sup>th</sup> October 2004, the specimen was delivered.

The set-up was installed by Müller-BBM.

The manufacturer gave the following indications on the fabric to be tested:

- Lengths of fabric to darken rooms
- Product of MechoShade Systems, Inc.
- AcoustiVeil™

The test set-up corresponds to the assembly type G-100 according to DIN EN ISO 354, and was assembled from 3 fabric lengths of the dimensions length x width = 3060 mm x 1200 mm. The fabrics were freely suspended and fixed to a metal beam, without folds or without being gathered or stretched. The clear distance from the wall was 100 mm. The set-up had no enclosing frame. The fabrics were fixed to the metal beam directly underneath the ceiling of the reverberation room, without any gap towards the ceiling. The space between the lower end of the fabrics and the floor was approx. 650...700 mm. According to the instructions of the client, the space between the fabrics lengths was adjusted to 400 mm, each. In terms of test surface, the surface of the 3 fabrics was counted with  $S = 3 \times 3000 \text{ mm} \times 1200 \text{ mm}$ , without the  $2 \times 400 \text{ mm}$  wide gaps.

## 3 Execution of measurements

The measurements were performed and evaluated according to DIN EN ISO 354 „Acoustics – Measurement of sound absorption in reverberation rooms“, German version December 2003.

The measurements were carried out on 3<sup>rd</sup> November 2004 in the reverberation room of the Müller-BBM company in Planegg. The reverberation room has a volume of approx.  $200 \text{ m}^3$  and a surface of approx.  $216 \text{ m}^2$ .

There are six omnidirectional microphones and two loudspeakers mounted fixedly in the reverberation room. In order to increase diffusivity, seven composite metal plates (1.2 m x 1.4 m) and six composite bent metal plates (1.2 m x 1.2 m) are suspended irregularly.

In all tests, pink noise was used as a test signal.

The climatic conditions during the measurements are shown in the test certificate, Appendix A of the present test report. The varying dissipation during propagation in air was taken into account according to ISO 9613-1: 1993(E) "Acoustics - Attenuation of sound during propagation outdoors" - Part 1: Calculation of the absorption of sound by the atmosphere".

The measuring equipment listed in Appendix C was used for the measurements.

Table 1 in Appendix D, page 1 shows the reverberation times measured in the reverberation room with and without specimen.

#### 4 Measuring results

The measurement results listed in the following tables are shown in the test certificate in Appendix A.

In addition to the sound absorption indices  $\alpha_S$  in the respective third octave bands, the practical sound absorption indices  $\alpha_p$  calculated from these values are indicated in octave bands. Based on the practical sound absorption indices  $\alpha_p$  from 250 Hz to 4000 Hz, the weighted sound absorption index  $\alpha_w$  is determined as a one-number-value. Both the practical and the weighted sound absorption index were calculated according to DIN EN ISO 11654 "Sound absorbers for use in buildings – Rating of sound absorption", German version July 1997.

**Table 1.** Measurement results of the practical sound absorption index  $\alpha_p$  calculated according to DIN EN ISO 11654

Octave centre frequency f / Hz	125	250	500	1000	2000	4000	Appendix A, page
AcoustiVeil™ 100 mm gap 400 mm open spaces	0.00	0.10	0.60	0.85	0.75	0.75	1

## 5 Remarks

The present report may only be copied, disclosed or published as a whole including all appendices. The publication of extracts requires the prior written consent of Müller-BBM.



Dipl.-Ing. (FH) Andreas Niermann

MÜLLER-BBM

Akkreditiertes Prüflaboratorium  
nach ISO/IEC 17025



DAP-PL-2465.10

# Sound absorption coefficient ISO 354

## Measurement of sound absorption in a reverberation room

assembly type G100 acc. to DIN EN ISO 354  
 test construction made of 3 curtains, each L x W = 3060 mm x 1200 mm  
 freely suspended, not folded, gathered or stretched  
 clear distance to the wall 100 mm  
 construction without enclosing frame  
 fixed directly underneath the ceiling of the reverberation room, to a metal beam  
 without any gap towards the ceiling  
 clear distance to the floor appr. 650...700 mm  
 spaces between the fabrics length each 400 mm

test surface S = 3 x 3000 mm x 1200 mm (without 400 mm spaces)

Room: Hallraum E  
 Volume: 199.60 m<sup>3</sup>  
 Size: 10.80 m<sup>2</sup>  
 Date of test: 2005-04-11

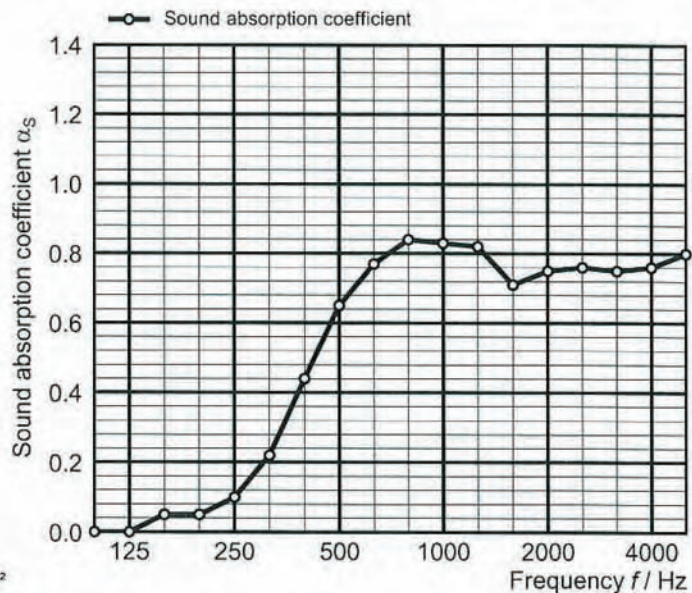
	Θ [°C]	r. h. [%]	B [kPa]
with specimen	19.6	51	95.6
without specimen	19.6	51	95.6

Accredited testing laboratory  
 according to ISO/IEC 17025



2465.10

Frequency [Hz]	$\alpha_s$ 1/3 octave	$\alpha_p$ oktave
100	0.00	
125	0.00	0.00
160	0.05	
200	0.05	
250	0.10	0.10
315	0.22	
400	0.44	
500	0.65	0.60
630	0.77	
800	0.84	
1000	0.83	0.85
1250	0.82	
1600	0.71	
2000	0.75	0.75
2500	0.76	
3150	0.75	
4000	0.76	0.75
5000	0.80	



◦ Equivalent sound absorption area less than 1.0 m<sup>2</sup>

$\alpha_s$  Sound absorption coefficient according to ISO 354

$\alpha_p$  Practical sound absorption coefficient according to ISO 11654

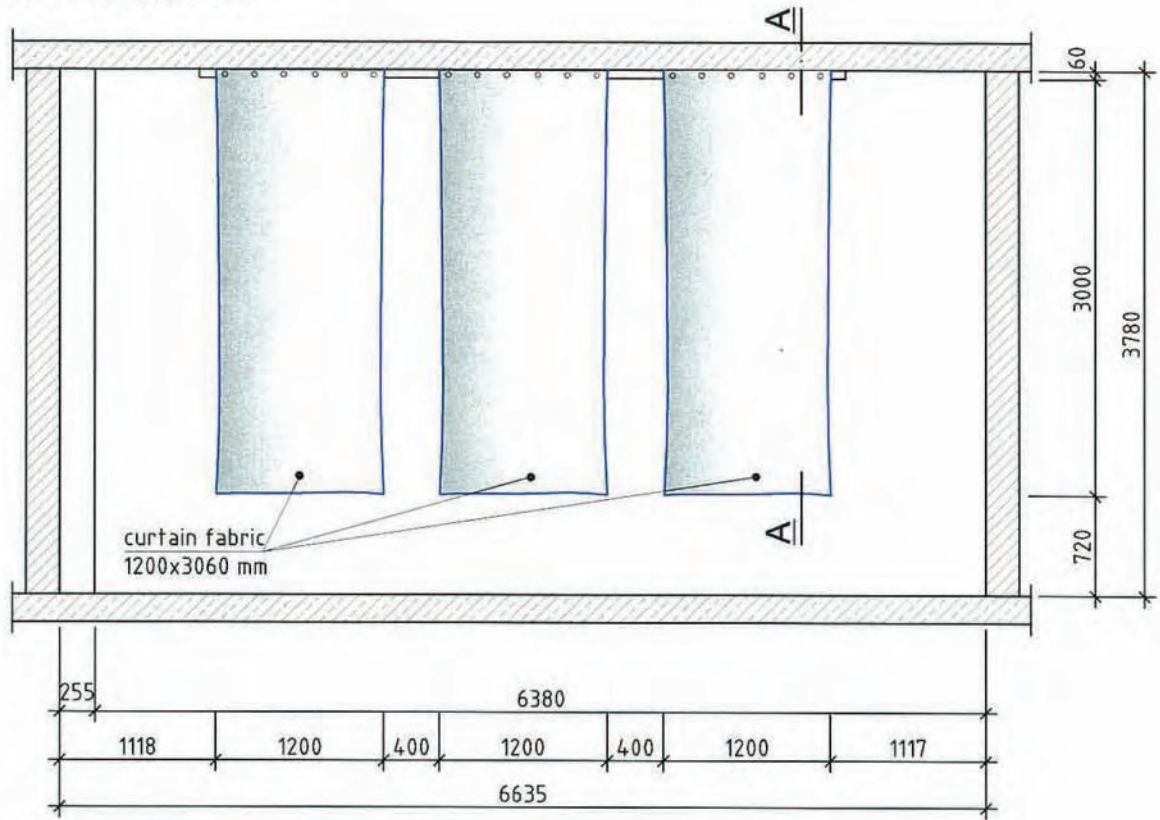
Rating according to ISO 11654:

**Weighted sound absorption coefficient  $\alpha_w = 0.40$  (MH)**

Sound absorption class: D

Test construction in the reverberation room

frontview scale 1:50



section A - A scale 1:5

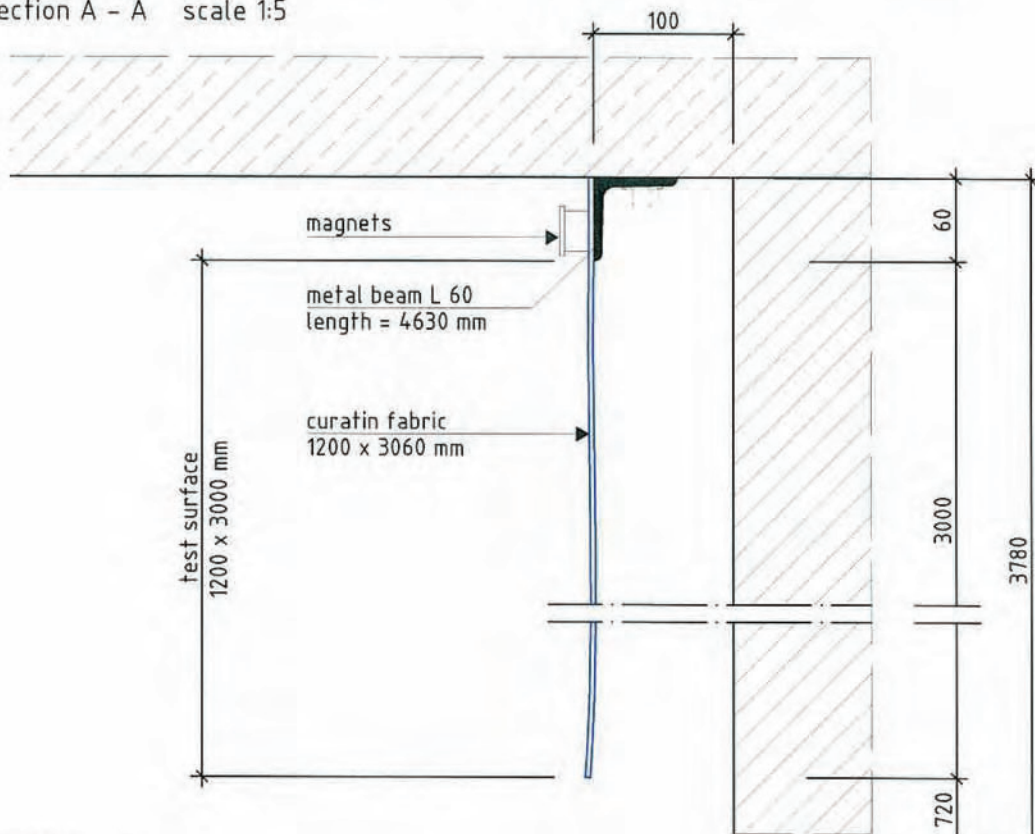






Figure 1.

Test set-up in the reverberation room  
3 fabrics of length x width = 3000 mm x 1200 mm  
100 mm distance from the wall  
400 mm gaps

**Measuring equipment**

Device	Manufacturer	Type	Serial-No.
Building acoustic measuring system	Norsonic	121	26342
Amplifier	Norsonic	235	14582
Reverberation loudspeaker (2 x reverberation room)	Allsound LT	--	--
Dynamic microphone (6 x reverberation room )	Sennheiser	MD21N	102805
Aspiration psychrometer	Wilh. Lambrecht KG	761	450157
Measurement and evaluation software	Müller-BBM	Bau 4	Version 1.4

**Table 1.** Meanvalues of the reverberation time without specimen  $T_1$  and with specimen  $T_2$ 

Frequency f / Hz	Meanvalues of the reverberation time	
	without specimen $T_1$ / s	with specimen $T_2$ / s
100	6,15	6,12
125	5,91	5,88
160	6,20	5,65
200	7,41	6,56
250	8,58	6,69
315	8,13	5,08
400	7,21	3,51
500	6,47	2,68
630	5,91	2,34
800	5,52	2,15
1000	5,62	2,19
1250	5,80	2,23
1600	5,39	2,36
2000	4,96	2,22
2500	4,42	2,07
3150	3,56	1,87
4000	2,87	1,65
5000	2,29	1,42