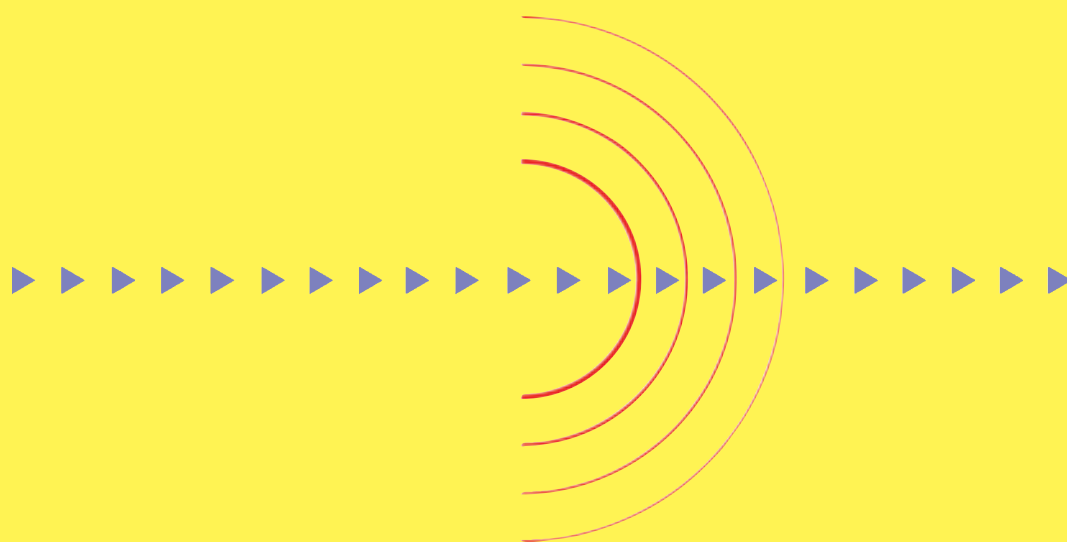


SAATIFIL ACOUSTEX™

PRECISION FABRICS
FOR ACOUSTICAL APPLICATIONS



Saatifil Acoustex™

Saatifil Hyphobe Acoustex™

Saatifil MET Acoustex™

ACOUSTICALLY TRANSPARENT SCREENS

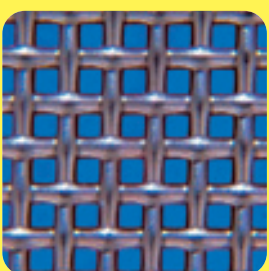
SCREENS FOR ACOUSTICAL DAMPING

MOISTURE AND DUST BARRIER SCREENS

CONDUCTIVE SCREENS - EMI/RFI SHIELDING



- Predictable sound transmission and damping
- Regular mesh construction
- High mechanical strength and workability
- Available with Hyphobe™ water repellent treatment
- Available with special Metalester™ metallic coating
- Available as slit ribbon or cut to any shape or size
- ISO 9001 certification



APPLICATIONS

MOBILE PHONES
PALM PCs
TWO-WAY RADIOS
HEADSETS

CAR/HOME HI-FI
HOME VIDEO
PROFESSIONAL MICROPHONES
PROFESSIONAL SPEAKERS

Typical range of products

Saatifil Acoustex™ Saatifil Hyphobe Acoustex™

Tab.1

	Specific Airflow Resistance		Pore Size [μm]	Thickness [μm]	Weight [g/m ²]	Tensile Strength warp/weft [N/5 cm]
	[MKS rayls] ⁽¹⁾	[CGS Acoustic Ohms ⁽²⁾ over 1 cm ²]				
Saatifil Acoustex 006	6	0.6	105	65	25	235
Saatifil Acoustex 010	10	1.0	120	105	50	500
Saatifil Acoustex 025	25	2.5	55	50	25	245
Saatifil Acoustex 045	45	4.5	50	110	70	655
Saatifil Acoustex 090	90	9.0	40	125	85	790
Saatifil Acoustex 145	145	14.5	25	70	55	475
Saatifil Acoustex 160	160	16.0	20	60	45	385
Saatifil Acoustex 260	260	26.0	20	60	50	300
NOTES (1) = [Pa s/m] (2) = [microbar s/cm ³]	PRODUCT CODE DESCRIPTION					
	Saatifil Acoustex B 010 <small>color code acoustic impedance in MKS Rayls</small>		Saatifil Hyphobe Acoustex B 010 <small>special water repellent treatment color code acoustic impedance in MKS Rayls</small>			
	COLOR CODES: W=White B=Black G=Grey S=Silver any color can be specially ordered					

INDICATIVE DATA ONLY

Saatifil MET Acoustex™

Tab. 2

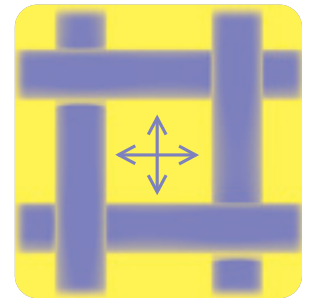
	Specific Airflow Resistance		Pore Size [μm]	Thickness [μm]	Weight [g/m ²]	Tensile Strength warp/weft [N/5 cm]
	[MKS rayls] ⁽¹⁾	[CGS Acoustic Ohms ⁽²⁾ over 1 cm ²]				
Saatifil MET Acoustex Ni 004	4	0.4	400	465	280	1550
Saatifil MET Acoustex Ni 005	5	0.5	220	230	125	550
Saatifil MET Acoustex Ni 010	10	1.0	130	120	100	450
Saatifil MET Acoustex Ni 030	30	3.0	45	60	55	220
Saatifil MET Acoustex Ni 050	50	5.0	55	90	85	340
Saatifil MET Acoustex Ni 085	85	8.5	30	65	110	380
Saatifil MET Acoustex Ni 140	140	14.0	25	70	85	310
NOTES (1) = [Pa s/m] (2) = [microbar s/cm ³]	PRODUCT CODE DESCRIPTION					
	Saatifil MET Acoustex Ni 010 <small>special metallic coating metal=nickel acoustic impedance in MKS Rayls</small>					

INDICATIVE DATA ONLY

Saatifil Acoustex™

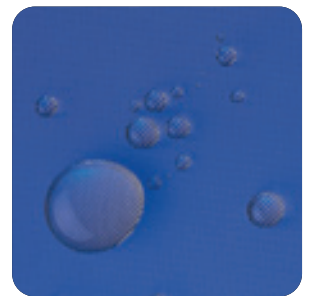
Introduction

Saatifil Acoustex™ fabrics are designed for acoustical applications requiring uniform performance. These fabrics are woven to close tolerances thereby creating consistent acoustical resistance*. Uniformity is maintained throughout the roll and from lot to lot. The Polyester Monofilament Fiber used to produce the Saatifil Acoustex fabrics is stable in humid conditions.



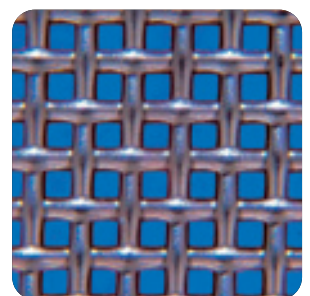
The Water Repellent Treatment

Saatifil Acoustex fabrics are available with Hyphobe™ special finishing which enables the fabric to repel water. The effectiveness in repelling moisture is determined by measuring the contact angle of a drop of liquid on the fabric's surface. (See Tab. 4-5)
The contact angle of Hyphobe™ treated fabrics was compared to standard fabrics. The increase in contact angle demonstrates the ability to repel water. (See Tab. 3)



The Metal Coating

Another interesting option is the exclusive metal-coated polyester fabric. Main features of this high-tech product are:
High electrical conductivity (Typical surface resistivity ~ 0,1 Ohms/□)
Good electromagnetic shielding (E-field shielding at 1 GHz >60 dB)

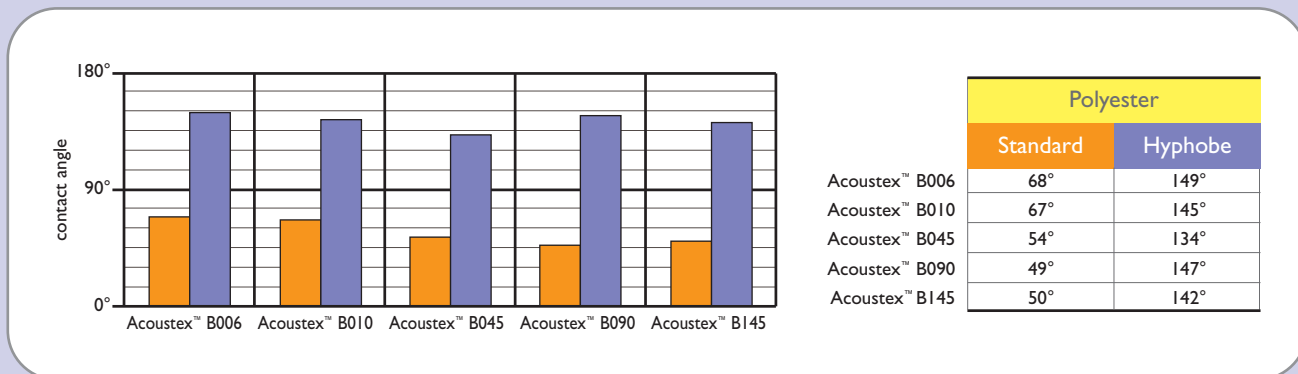


Airflow Resistance - Testing Conditions

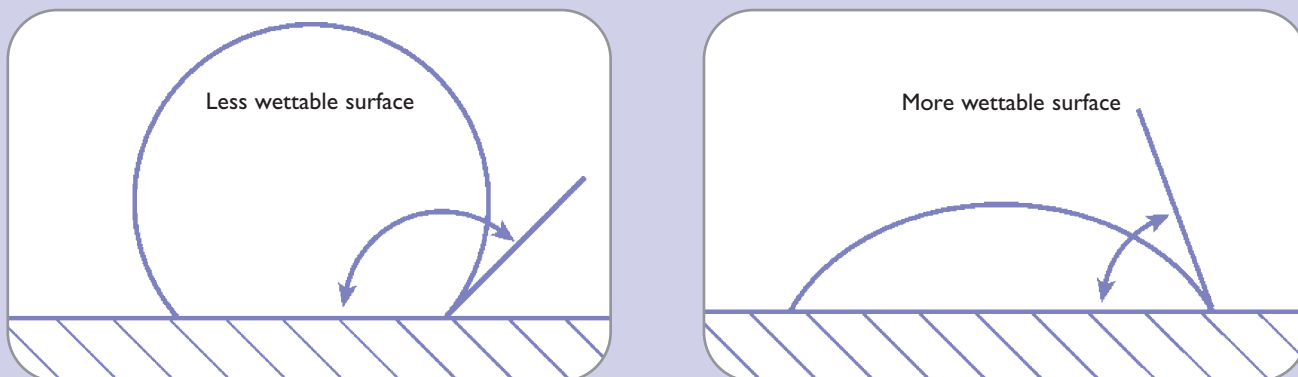
To accurately determine specific airflow resistance, the test must be conducted using a laminar flow. The test measurements of the Saatifil Acoustex fabrics were conducted with flow rates below 0.3 m/s, with an accuracy of 0.1 Pa in pressure measurements. (See Tab. 6-7)

*Typical dispersion of woven Saatifil Acoustex screens < 6%
Typical dispersion of nonwoven materials 10-30%

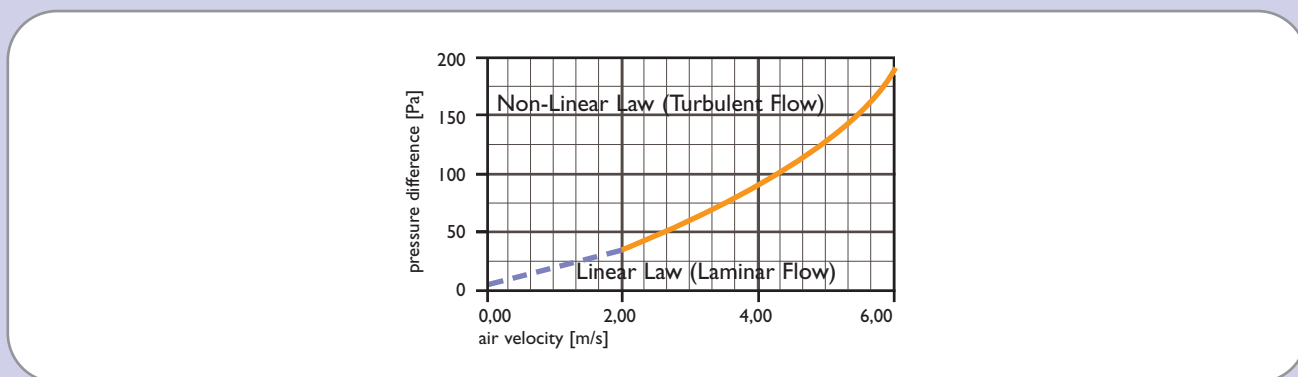
Tab.3 The Water Repellent Treatment



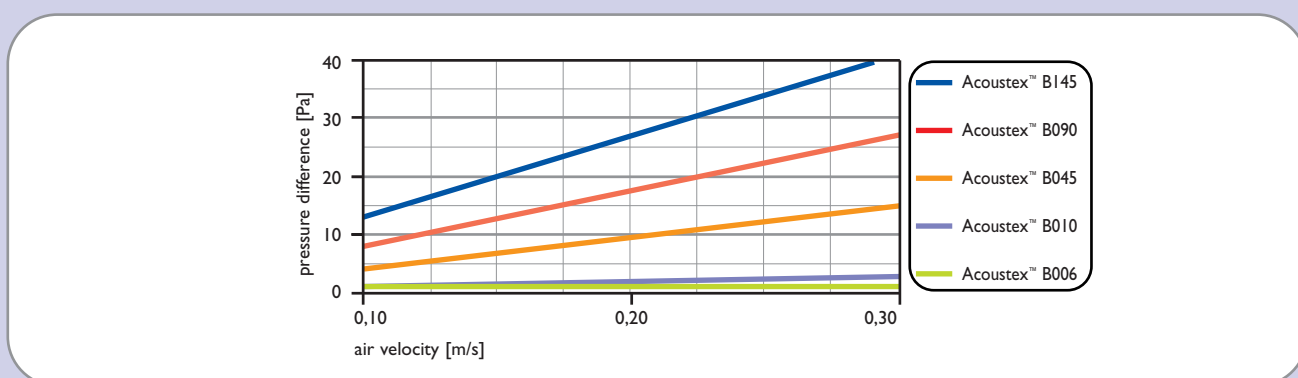
Tab.4-5 Contact Angle Measurements



Tab.6 Airflow Resistance-Testing Conditions / Linear vs Non-Linear Range



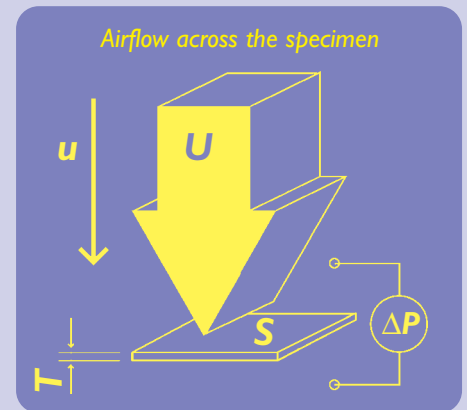
Tab.7 Airflow Resistance-Testing Conditions / Laminar Flow-selection from the Acoustex range



Definitions

The diagram shows airflow passing through a screen fabric. The symbols denote:

- S [m²]** **AREA**
The test area.
- T [m]** **THICKNESS**
The thickness of the fabric in meters.
- ΔP [Pa]** **PRESSURE DIFFERENCE**
The pressure difference across the fabric.
- U [m³/s]** **FLOW RATE OR VOLUME VELOCITY**
The rate at which a volume of air flows through the fabric in a specific unit of time.
- u [m/s]** **LINEAR VELOCITY OF THE AIRFLOW**
The flow rate or volume velocity divided by the test area.



pressure conversion factors:

$$1 \text{ bar} = 100000 \text{ Pa} \quad 1 \text{ cm WG} = 98,06 \text{ Pa}$$
$$1 \text{ psi} = 6894 \text{ Pa} \quad 1'' \text{ WG} = 249,1 \text{ Pa}$$

In order to describe the airflow properties of the material, the following parameters are defined:

R
[Pa s/m³] or
[MKS acoustic ohms]

AIRFLOW RESISTANCE

This is the result of the **pressure drop** across the specimen divided by the **flow rate**.

$$\mathbf{R} = \Delta\mathbf{P}/\mathbf{U}$$

The **Acoustic Ohm** unit can be defined as [Pa s/m³] in the **MKS standard** or as [microbar s/cm³ = (dyn/cm²) s/cm³] in the **CGS system**.

A factor in airflow resistance is the size of the surface area. An increase in surface area will have a corresponding increase in airflow and a decrease in airflow resistance. Airflow resistance is a useful measurement only when the size of the surface area is known and therefore not appropriate to compare materials.

r
[Pa s/m] or
[MKS rayls]

SPECIFIC AIRFLOW RESISTANCE ("ACOUSTIC IMPEDANCE")

This is the result of the **pressure difference** across the specimen divided by the linear velocity of the airflow.

$$\mathbf{r} = \Delta\mathbf{P}/\mathbf{u}$$

It also corresponds to the value of the above **airflow resistance** multiplied by the **area** of the specimen. In fact:

$$\mathbf{r} = \Delta\mathbf{P}/\mathbf{u} = \Delta\mathbf{P}/(\mathbf{U}/\mathbf{S}) = \Delta\mathbf{P}*\mathbf{S}/\mathbf{U} = \mathbf{R}*\mathbf{S}$$

The MKS unit [Pa s/m] is also called **MKS rayl**, while in the CGS system it corresponds to the **CGS Acoustic Ohms referred to 1 cm²**.

Specific airflow resistance is a useful measurement to compare materials as it is not dependant on the size of the surface area but is a measurement of the material itself. Variations in the thickness and pore size will vary the MKS rayl value. The consistency of the MKS rayl values of Saatifil Acoustex materials is a result of its precise pore size and the uniformity of the fiber.

r₀
[Pa s/m²] or
[MKS rayls/m]

AIRFLOW RESISTIVITY

This can be obtained from the **specific airflow resistance** divided by the **thickness** of the specimen.

$$\mathbf{r}_0 = \mathbf{r}/\mathbf{T}$$

The unit [Pa s/m²] corresponds to MKS rayl/m.

Materials such as foam are available in various thicknesses. Airflow resistivity is a useful measurement for choosing which thickness to use. Saatifil Acoustex products are each produced in specific thickness and this is not a useful measurement for this material.

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