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## TEST REPORT No. 305672

**Place and date of issue:** Bellaria-Igea Marina - Italy, 17/05/2013

**Customer:** SEALED AIR S.r.l. - Via Trento, 7 - 20017 PASSIRANA DI RHO (MI) - Italy

**Date test requested:** 10/04/2013

**Order number and date:** 59614, 08/05/2013

**Date sample received:** 19/04/2013

**Date test effected:** 10/05/2013

**Purpose of test:** determination of airflow resistance in accordance with standard UNI EN 29053:1994

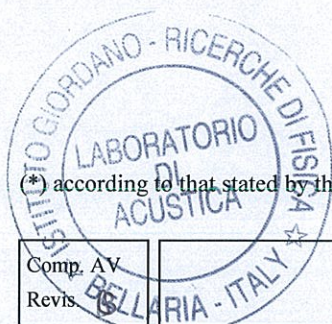
**Test site:** Istituto Giordano S.p.A. - Via Erbosa, 78 - 47043 Gatteo (FC) - Italy

**Sample origin:** sampled and supplied by the Customer

**Identification of specimen received:** No. 2013/0947

### Sample name\*

The test samples are called "Stratocell Whisper FR 25 mm" and "Stratocell Whisper FR 50 mm".



(\* according to that stated by the Customer.

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This test report consists of 6 sheets.

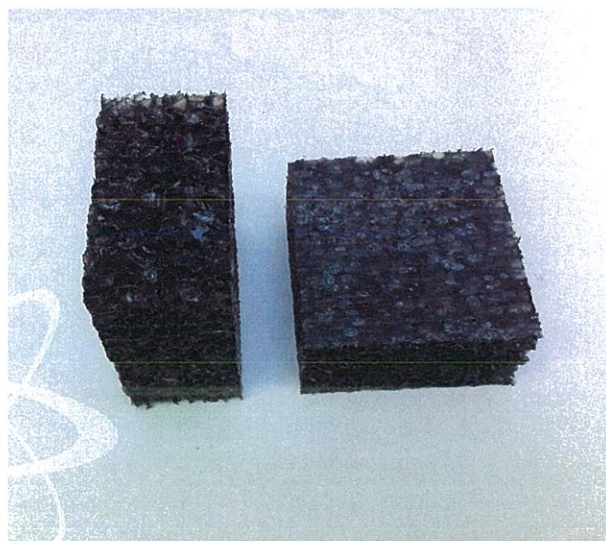
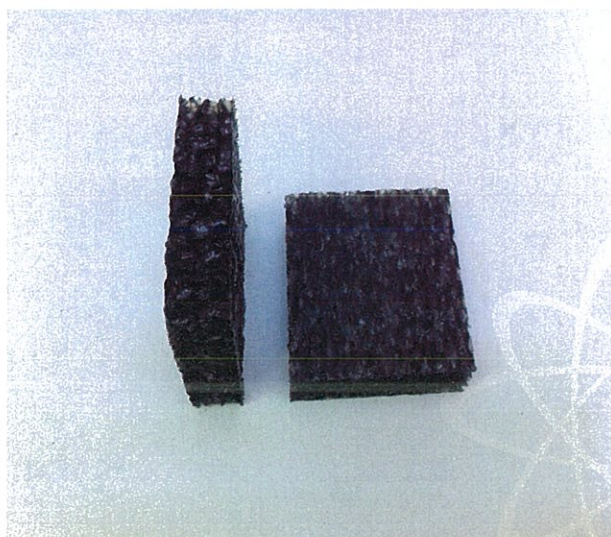
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**Description of sample\***

The test samples are two and comprise:

- No. 5 specimens, nominal size  $100 \times 100$  mm and nominal thickness 25 mm each, composed of low density polyethylene foam, nominal density  $25 \text{ kg/m}^3$ ;
- No. 5 specimens, nominal size  $100 \times 100$  mm and nominal thickness 50 mm each, composed of low density polyethylene foam, nominal density  $25 \text{ kg/m}^3$ .



**Photos of some test specimens of two samples**



(\*) according to that stated by the Customer.

### **Normative references**

The test was carried out in accordance with the requirements of standard UNI EN 29053:1994 dated 28/02/1994 “Acustica. Materiali per applicazioni acustiche. Determinazione della resistenza al flusso d’aria” (*“Acoustics. Materials for acoustical applications. Determination of airflow resistance”*).

### **Test apparatus**

The following equipment was used to carry out the test:

- continuous airflow piston generator;
- MKS Instruments “698A” differential pressure transducer, sensitivity 0,1 Pa;
- MKS Instruments “270B” signal conditioner;
- Pico “ADC-16” data logger;
- Toshiba “Tosvert VF-nC1” inverter;
- Kern “572-49” electronic balance;
- gauge with 10  $\mu$  resolution;
- complementary accessories.



### Test method

Each test specimen was placed in a sample holder made of plexiglas, cross-section  $100 \times 100$  mm, by sealing the edges with vaseline.

The airflow resistance “R” of each specimen was calculated using the following equation:

$$R = \frac{\Delta p}{A \cdot u}$$

where: R = airflow resistance, in Pa·s/m<sup>3</sup> (Rayls/m<sup>2</sup>);

$\Delta p$  = pressure difference at the ends of the specimen, in Pa;

A = cross sectional area of the air flow of the specimen, in m<sup>2</sup>;

u = velocity of the air flow through the specimen, in m/s.

From the airflow resistance “R” it is possible to determine the specific airflow resistance “R<sub>s</sub>” and the airflow resistivity “r” respectively using the following equations:

$$R_s = R \cdot A \qquad r = \frac{R \cdot A}{d}$$

where: R<sub>s</sub> = specific airflow resistance, in Pa·s/m (Rayls);

r = airflow resistivity, in Pa·s/m<sup>2</sup> (Rayls/m);

A = cross sectional area of the air flow of the specimen, in m<sup>2</sup>;

d = thickness of the specimen in the direction of airflow, in m.

For all measured variables were determined average values and standard deviations.

### Environmental conditions during test

Average ambient temperature	20 °C
Relative humidity	50 %
Atmospheric pressure	1000 mbar





**Test results**

<b>Generation of the air flow</b>	Method A: continuous unidirectional
<b>Airflow velocity</b>	0,0005 m/s
<b>Cross sectional area of the air flow of the specimens</b>	0,01 m <sup>2</sup>

<b>Stratocell Whisper FR 25 mm</b>					
<b>Specimen</b>	<b>Weight</b>	<b>Thickness of the specimen "d"</b>	<b>Airflow resistance "R"</b>	<b>Specific airflow resistance "R<sub>s</sub>"</b>	<b>Airflow resistivity "r"</b>
[n.]	[g]	[mm]	[Pa·s/m <sup>3</sup> ] = [Rayls/m <sup>2</sup> ]	[Pa·s/m] = [Rayls]	[Pa·s/m <sup>2</sup> ] = [Rayls/m]
1	7	25	506000	5060	202400
2	7	25	500000	5000	200000
3	7	25	538000	5380	215200
4	7	25	508000	5080	203200
5	7	25	500000	5000	200000
<b>Average values*</b>			<b>510000</b>	<b>5100</b>	<b>204000</b>
<b>Standard deviations*</b>			16000	160	6000

(\*) approximate values to 10<sup>1</sup>, 10<sup>2</sup> or 10<sup>3</sup>.



Stratocell Whisper FR 50 mm					
Specimen	Weight	Thickness of the specimen "d"	Airflow resistance "R"	Specific airflow resistance "R <sub>s</sub> "	Airflow resistivity "r"
[n.]	[g]	[mm]	[Pa·s/m <sup>3</sup> ] = [Rayls/m <sup>2</sup> ]	[Pa·s/m] = [Rayls]	[Pa·s/m <sup>2</sup> ] = [Rayls/m]
1	14	50	Not measurable	Not measurable	Not measurable
2	14	50	2466000	24660	493200
3	14	50	2850000	28500	570000
4	14	50	3040000	30400	608000
5	14	50	Not measurable	Not measurable	Not measurable
<b>Average values*</b>			<b>2785000</b>	<b>27900</b>	<b>557000</b>
<b>Standard deviations*</b>			292400	2920	58500

(\*) approximate values to 10<sup>1</sup>, 10<sup>2</sup> or 10<sup>3</sup>.

**Notes:**

The sample "Stratocell Whisper FR 50 mm" is formed by joining of two layers of 25 mm thick, probably this coupling creates a very high resistance to the air flow. This justifies the high values of the specimens, and for two of them the inability to evaluate the too high pressure drop.

Test Technician  
(Dott. Andrea Bruschi)

*Andrea Bruschi*

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Laboratory  
(Dott. Ing. Roberto Baruffa)

*Roberto Baruffa*

Managing Director

L'AMMINISTRATORE DELEGATO  
Dott. Ing. Vincenzo Iommi

*Vincenzo Iommi*

