

TEST REPORT No. 329215

Place and date of issue: Bellaria-Igea Marina - Italy, 18/11/2015

Customer: ASAWA INSULATION PRIVATE LIMITED - Plot No: 52 & 53, Arkose Industrial Estate,
Adhoshi Road Dekhu, Sajgaon, Tal - Khalapur, Khopoli, Maharashtra - 410203 - India

Date test requested: 08/07/2015

Order number and date: 67129, 08/07/2015

Date sample received: 03/08/2015

Test date: from 02/09/2015 to 13/11/2015

Purpose of test: water vapour transmission properties of thermal insulating products in accordance with standard UNI EN 12086:2013, with reference to UNI EN 13403:2004 standard

Place of test: Istituto Giordano S.p.A. - Blocco 1 - Via Rossini, 2 - 47814 Bellaria-Igea Marina (RN) - Italy

Sample origin: sampled and supplied by the Customer

Identification of sample received: 2015/1649

Sample name*

The test sample is called "SMART PIR PANELS".



(*) according to information supplied by the Customer

LAB N° 0021

Comp. AV
Revis. PR

This test report consists of 5 sheets and 1 annex.

Sheet
1 of 5

Description of sample*

The test sample consists of PIR (Poly-Isocyanurate) foam sheet boards, size 1200 mm × 1000 mm, with a nominal thickness of 20 mm, faced on both faces with aluminum foil (thickness of 80 µm).

Blowing agent: HCFC 141b.

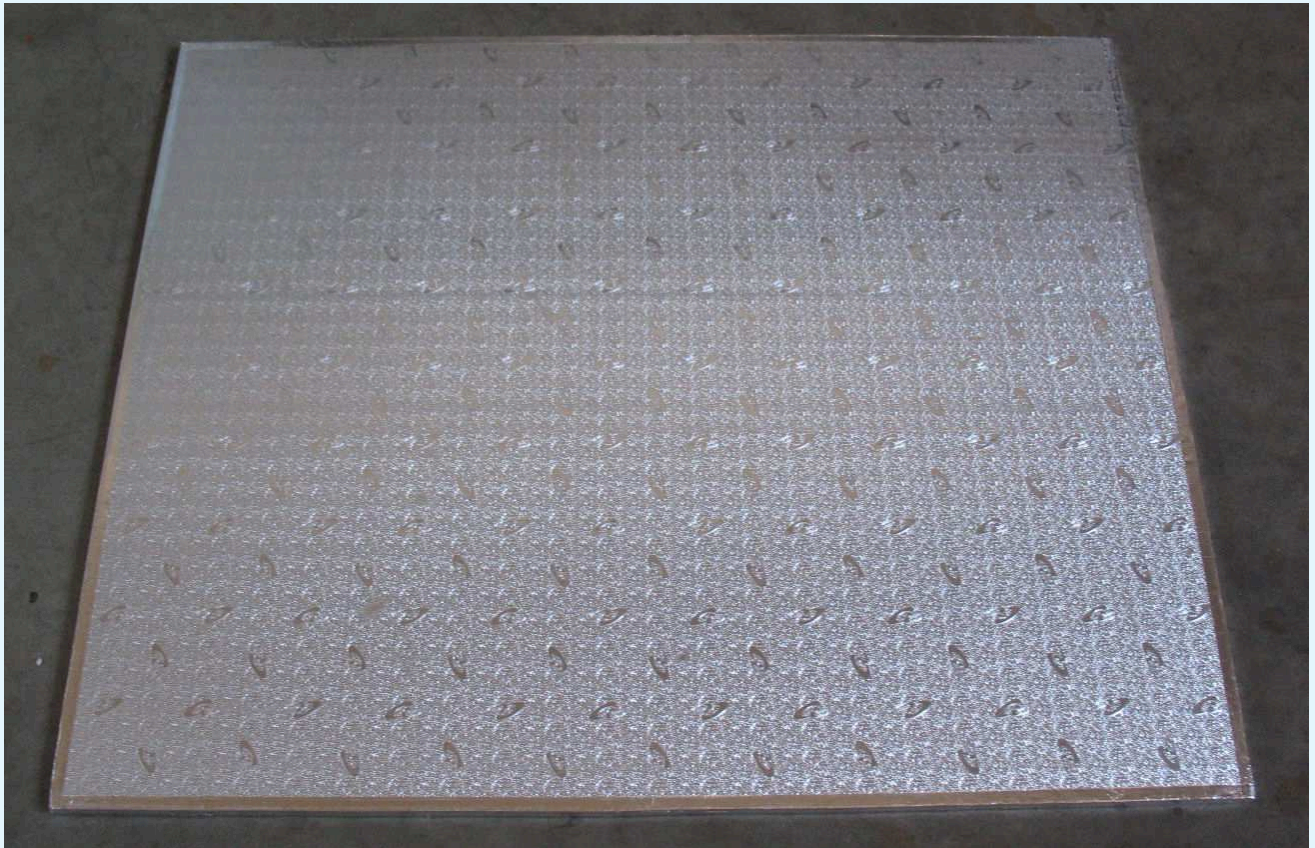


Photo of test sample

(*) according to information supplied by the Customer

Normative references

The test was carried out in accordance with the requirements of standard UNI EN 12086:2013 dated 18/04/2013 “Isolanti termici per edilizia. Determinazione delle proprietà di trasmissione del vapore acqueo” (*“Thermal insulating products for building applications. Determination of water vapour transmission properties”*) using detailed internal procedure PP001 in its current revision at testing date with reference to standard UNI EN 13403:2004 dated 01/03/2004 “Ventilazione degli edifici. Condotti non metallici. Rete delle condotte realizzata con condotti di materiale isolante” (*“Ventilation for buildings. Non-metallic ducts. Ductwork made from insulation ductboards”*).

Specimen description

No. 5 specimens (+ 2 dummies specimens) of diameter 200 mm consisting of only the aluminum foil have been made from the sample under examination by cutting.



Photo of the specimens

Specimen conditioning

The specimens were conditioned for 24 h at a temperature of 23 °C and 50 % of relative humidity.

Test methods

The specimens were fitted on the opening of the test cups containing desiccant salt in order to maintain a relative humidity inside the cups of 0 %.

Test conditions

Atmospheric pressure	1019 mbar	
Temperature	23 °C	
Set of conditions	A: 23 - 0/50	
Relative humidity and vapour pressure inside test cup	0 %	0 Pa
Relative humidity and vapour pressure in climatic chamber	50 %	1404 Pa

Specimens properties

Set of conditions:		Specimen				
		n. 1	n. 2	n. 3	n. 4	n. 5
A: 23 - 0/50						
Thickness	[mm]	0,08	0,08	0,08	0,08	0,08
Specimens area	[mm ²]	32070	32220	31750	31580	31550
Exposed area	[mm ²]	27760	27770	27690	27780	27740
Mass per unit area	[kg/m ²]	287	310	302	349	319

Test results

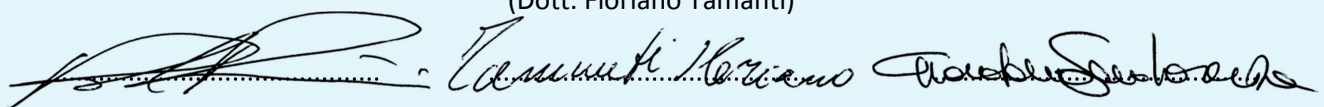
Set of conditions	Specimen [n.]	Water vapour transmission rate g [mg/(h · m ²)]	Permeance W [mg/(m ² · h · Pa)]	Resistance Z [m ² · h · Pa/mg]	Equivalent air layer thickness S_d [m]
A: 23 - 0/50	1	1,1	0,0008	1300	905
	2	25,3	0,0180	55	38,7
	3	47,5	0,0338	30	20,6
	4	≤ 1,0	≤ 0,0007	≥ 1430	≥ 1000
	5	≤ 1,0	≤ 0,0007	≥ 1430	≥ 1000

Set of conditions		A: 23 - 0/50
Mean value of water vapour transmission rate "g" and relative expanded uncertainty	[mg/(h · m ²)]	≤ 15
Mean value of permeance "W" and relative expanded uncertainty	[mg/(m ² · h · Pa)]	≤ 0,011
Mean value of resistance "Z" and relative expanded uncertainty	[m ² · h · Pa/mg]	≥ 850
Mean value of equivalent air layer thickness "S _d " and relative expanded uncertainty	[m]	≥ 590

Test Technician
(Dott. Ing. Paolo Ricci)

Head of Heat Transfer
Laboratory
(Dott. Floriano Tamanti)

Chief Executive Officer
(Dott. Arch. Sara Lorenza Giordano)





ANNEX "A"
TO TEST REPORT No. 329215

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Customer: ASAWA INSULATION PRIVATE LIMITED - Plot No: 52 & 53, Arkose Industrial Estate,
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Purpose: requirements on water vapour resistance of standard UNI EN 13403:2004

Since the mean value of water vapour resistance "Z" is not less than $140 \text{ m}^2 \cdot \text{h} \cdot \text{Pa}/\text{mg}$, the test sample fulfils the requirement of subclause 4.7.4 "Water vapour resistance" of standard UNI EN 13403:2004 dated 01/03/2004 "Ventilazione degli edifici. Condotti non metallici. Rete delle condotte realizzata con condotti di materiale isolante" ("*Ventilation for buildings. Non-metallic ducts. Ductwork made from insulation ductboards*").

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