



TEST CERTIFICATE

Certificate Number	0590	Certificate Date	13 / 01 / 2006
Client	EXALCO S.A. ALUMINIUM INDUSTRY 8th klm. NATIONAL ROAD LARISA-THESSALONIKI GR 411 10 LARISA GREECE		
Specimen description	Double Sash Aluminium Door Tilt & Turn System ALBIO 101 External dimensions 2200 x 1400 mm (code E01 1205 05)		
Delivery Date	09 / 12 / 2005		
Conducted Tests	Air permeability – Watertightness - Resistance to wind load		
Date of tests	13 / 12 / 2005		
Notes : <ul style="list-style-type: none"> ➤ Three (3) original pages in Greek with the constructional data of the specimen which has been tested are attached, as they were given by the client. No further verification of the above mentioned data has been conducted by E.K.AN.AL. ➤ The choice of the specimen has been made by the client. <p>❖ THE RESULTS CONCERN ONLY THE SPECIMEN TESTED.</p> <p>❖ THE PRESENT DOCUMENT DOES NOT CONSIST PRODUCT APPROVAL BY E.K.AN.AL.</p>			
SIGNATURE OF TECHNICAL MANAGER  SINOPI PAPAPOPOULOU Chemical Engineer		SIGNATURE OF GENERAL MANAGER  IOANNIS GKERTSOS Management Director	

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EXACT TRANSLATION FROM THE GREEK ORIGINAL

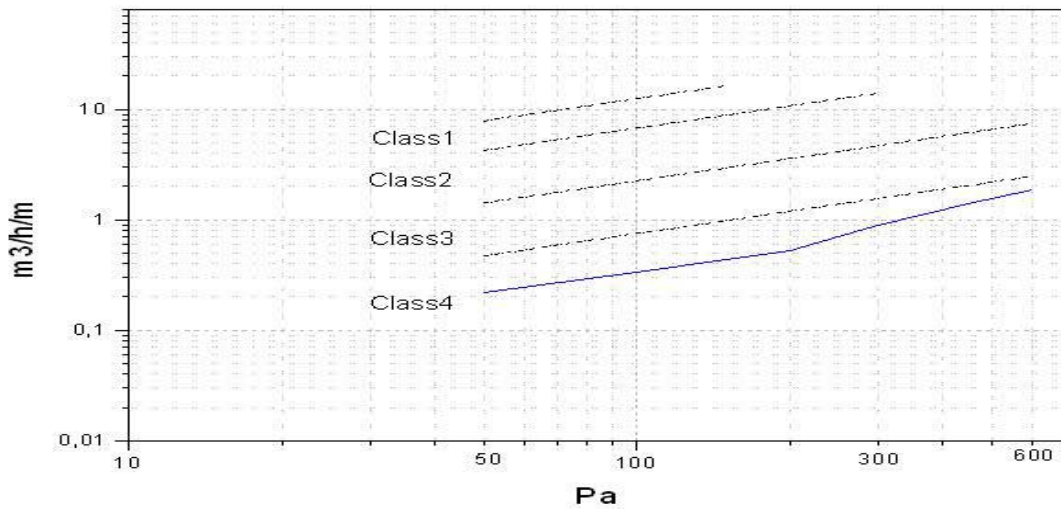
Certificate Number	0590 / 1	Certificate Date	13 / 01 / 2006
Conducted Tests & Technical Standards AIR PERMEABILITY (ELOT EN 1026 / 2000 & ELOT EN 12207 / 2000)		Testing Date 13 / 12 / 2005	
Laboratory Equipment			
<ul style="list-style-type: none"> • Door and window Test Rig K. SCHULTEN GmbH & Co KG (EK 01) • Temperature – moisture recorder CLIM (EK 03) • Barometer EVEREST (EK 04) • Measure tape FACOM (EK 05) 			
RESULT REPORT			
<p><i>The air permeability test, aiming at determining the quantity of the air which escapes from the specimen, is conducted in accordance with the procedure described in ΛΔ1001 of E.K.AN.AL.</i></p> <ul style="list-style-type: none"> • Specimen condition before the test : The door had a metal frame perimetricaly for mounting and fixing in the test chamber. It did not appear to have any external damage or functional defect which could affect the test. • Specimen preparation : After the specimen had been cleaned and dried, it was left in the allowed ambient conditions for at least 4 hours before the test. After the chamber had been built to fit to the specimen dimensions, the specimen was mounted and fixed on it by perimetrical placing of hand clamps. • Testing laboratory conditions : T : 20⁰ C, RH : 52 %, P : 101.8kPa 			
RESULTS			
<p>The tested door is classified in the 4th Air Permeability Class.</p> <p>The specimen is classified in the 4th class related to the overall surface (m³ / h / m²), and the joining length of its parts (m³ / h / m).</p> <p>The relative air loss graphs related to the overall surface and the joining length of the parts of the specimen follow.</p>			
<u>Specimen Dimensions</u>			
External : 2200 x 1400 mm Internal (sash) : 2144 x 674 mm			
Notes			

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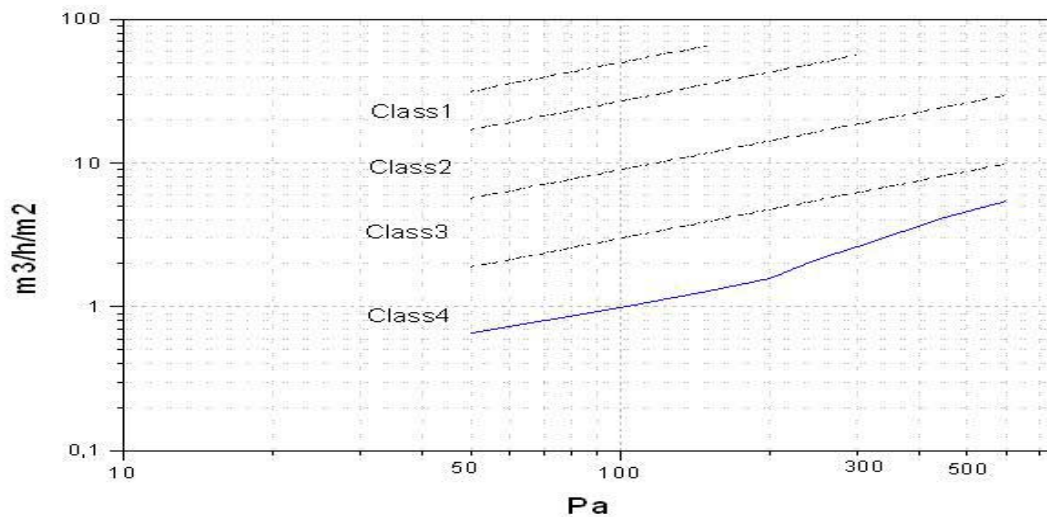
Conducted Tests & Technical Standards AIR PERMEABILITY (ELOT EN 1026 / 2000 & ELOT EN 12207 / 2000)	Testing Date 13 / 12 / 2005
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RESULT REPORT

Air permeability related to the joining length of the parts of the specimen

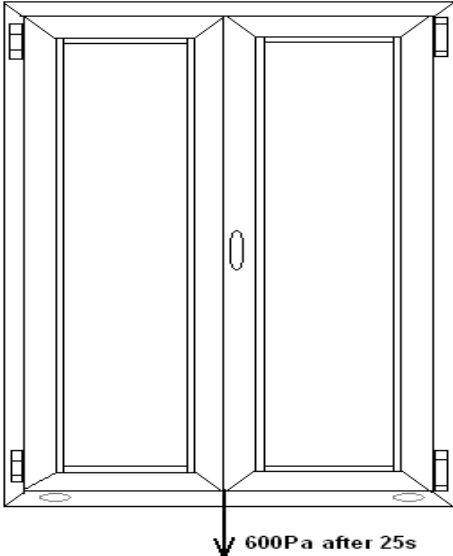


Air permeability related to the overall area of the specimen



Static Pressure (Pa)

<u>Airloss</u>	50	100	150	200	250	300	450	600
m³/h	2.02	3.03	3.94	4.84	6.52	8.05	12.79	16.98
m³/h·m	0.22	0.33	0.43	0.53	0.71	0.88	1.40	1.86
m³/h·m²	0.66	0.98	1.28	1.57	2.12	2.61	4.15	5.51

Certificate Number	0590 / 2	Certificate Date	13 / 01 / 2006
Conducted Tests & Technical Standards WATERTIGHTNESS (ELOT EN 1027 / 2000 & ELOT EN 12208 /2000)		Testing date 13 / 12 / 2005	
Laboratory Equipment			
<ul style="list-style-type: none"> • Door and window Test Rig • Temperature – moisture recorder • Barometer 		K. SCHULTEN GmbH & Co. KG (EK 01) CLIM (EK 03) EVEREST (EK 04)	
RESULT REPORT			
<p><i>The water tightness test, aiming at determining the water leak points of the specimen under specific static pressure, is conducted in accordance with the procedure described in ΛΔ 1002 of E.K.AN.AL.</i></p> <ul style="list-style-type: none"> • Specimen condition before the test : The door had a metal frame perimetricaly for mounting and fixing in the test chamber. It did not appear to have any external damage or functional defect which could affect the test. • Specimen preparation : After the specimen had been cleaned and dried, it was left in the allowed ambient conditions for at least 4 hours before the test. After the chamber had been built to fit to the specimen dimensions, the specimen was mounted and fixed on it by perimetrical placing of hand clamps. • Testing laboratory conditions : T : 20⁰ C, RH : 52 %, P : 101.8kPa <p>The door spraying was conducted according to method A and with a spraying rate of ~2.6 l/min·m². The door spraying, after the first fifteen minutes at zero pressure, continued for five minutes at each pressure step. The exerted pressures were the following: 50, 100, 150, 200, 250, 300, 450 and 600Pa.</p>			
RESULTS			
<u>The specimen is classified in 8A Watertightness Class.</u>			
			
Notes:			

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Conducted Tests & Technical Standards RESISTANCE TO WIND LOAD (ELOT EN 12211 / 2000 & ELOT EN 12210 / 2000)	Testing date 13 / 12 / 2005
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Laboratory Equipment	
• Door and window Test Rig	K. SCHULTEN GmbH & Co. KG (EK 01)
• Temperature – moisture recorder	CLIM (EK 03)
• Barometer	EVEREST (EK 04)

RESULT REPORT

The resistance to wind load test, aiming at determining the distortions of the frame and the resilience of the specimen under high pressures, is conducted in accordance with the procedure described in $\Lambda\Delta 1003$ of E.K.A.N.A.L.

- **Specimen condition before the test :**

The door had a metal frame perimetrically for mounting and fixing in the test chamber. It did not appear to have any external damage or functional defect which could affect the test.

- **Specimen preparation :**

After the specimen had been cleaned and dried, it was left in the allowed ambient conditions for at least 4 hours before the test.

After the chamber had been built to fit to the specimen dimensions, the specimen was mounted and fixed on it by perimetrical placing of hand clamps.

- **Testing laboratory conditions :**

T : 20 °C, RH : 52 %, P : 101.8kPa

The specimen was tested for the wind loads of the 4th class, which are 1600Pa, 800Pa, 2400Pa, according to the total air escape it shows and, therefore, to the maximum pressure that can be exerted in order to receive measurements and results.

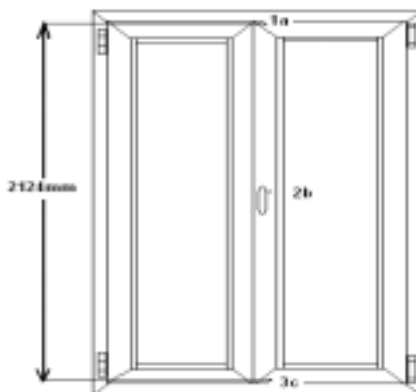
RESULTS

1.Frontal Displacement – Deflection (± 1600 Pa)

Pressure(Pa)	Sensor 1a	Sensor 2b	Sensor 3c	Frontal Deflection b-((a+c)/2)	Relative Frontal Deflection (abs)
1600	-3.1	-8.6	-2.9	-5.6	1 / 379
0*	0.0	0.0	0.0	0.0	0
-1600	3.8	9.3	3.8	5.5	1 / 386
0*	0.0	0.0	0.0	0.0	0

* (after 60s)

The specimen is classified in **class C** according to the relative frontal deflection.



Positions of waytransducers 1a,2b,3c.

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Laboratory Equipment			
<ul style="list-style-type: none"> • Door and window Test Rig • Temperature – moisture recorder • Barometer 		K. SCHULTEN GmbH & Co. KG (EK 01) CLIM (EK 03) EVEREST (EK 04)	
RESULT REPORT			
<ul style="list-style-type: none"> • Specimen condition before the test : The door had a metal frame perimetrically for mounting and fixing in the test chamber. It did not appear to have any external damage or functional defect which could affect the test. • Specimen preparation : After the specimen had been cleaned and dried, it was left in the allowed ambient conditions for at least 4 hours before the test. After the chamber had been built to fit to the specimen dimensions, the specimen was mounted and fixed on it by perimetrical placing of hand clamps. • Testing laboratory conditions : T : 20⁰ C, RH : 52 %, P : 101.8 kPa 			
RESULTS (continued)			
2a. 50 cycles of repeated pressure (± 800 Pa) No damage or change in the condition or the functional situation of the parts of the door has been observed.			
2b. Air permeability (follow up) Increase of the air permeability of the specimen was observed. That increase was not greater than 20% of the maximum permissible air permeability for the 4 th air permeability class in which the specimen has been previously classified.			
3. Safety Test (± 2400 Pa) No damage, separation or detachment of parts of the door was observed after the applied pressure of safety pulse.			
The tested door is classified in C4 class , for its overall resistance to wind load.			
Notes:			