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Test Report N° 1214029 - 1

Version: 01

**TESTS ON GLASSWOOL AIR CONDITIONNING DUCT
ACCORDING TO EN 13403
AIRTIGHTNESS AND RESISTANCE TO PRESSURE**

EQUIPMENT ID: URSA AIR Zero A2

MANUFACTURER: URSA IBERICA AISLANTES

REFERENCE DOCUMENT(S): EN 13403, EN 1507

TESTS MADE BY: Dominique PUGNET

DATE OF TESTS: July 2012

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Version	Date	Nature of change	Modified pages
00	24/07/2012	First edition	
01	27/10/2014	Update of airtightness class based on updated version of EN 1507 standard	5-11-12

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1. INTRODUCTION

The objective of the tests was to characterise a glasswool duct according to EN 13403 July 2003 "Ventilation for buildings – Non-metallic ducts – Ductwork made from insulation ductboards". Tests were:

- Resistance against pressure (§7.3 of EN 13403) ;
- Air leakage factor and airtightness class (§4.3 of EN 13403 with airtightness classes defined in §3.10 of EN 1507).

The reference of tested sample is **URSA AIR Zero A2**.



Figure 1: Tested product

Summary of the results is in part 2.

Detailed results of resistance against pressure tests are in 0.

Detailed results of air leakage factor and airtightness class tests are in APPENDIX 2 -.

2. SUMMARY OF THE RESULTS

RESISTANCE AGAINST PRESSURE TEST Pressure = 2000 Pa
URSA AIR Zero A2
The fixation staples did not move during the test. The adhesive tape did not move during the test. There is no evidence of damage, which would cause the sample to become unusable.

AIRTIGHTNESS TEST		
	Pressure	URSA AIR Zero A2
Leakage factor (l/s/m ²)	-611 Pa	0.025
Airtightness class		D
Leakage factor (l/s/m ²)	1013 Pa	0,036
Airtightness class		D

APPENDIX 1 - REFERENCES

EN 13403 (2003): Ventilation for buildings – Non-metallic ducts – Ductwork made from insulation ductboards

EN 1507 (July 2006): Ventilation for buildings – Sheet metal air ducts with rectangular section – Requirements for strength and leakage

RESISTANCE AGAINST PRESSURE TEST

The pressure test determines the fitness for purpose of the ductboard assembly.

A typical rectangular section ducts were constructed by the URSA IBERICA AISLANTES SA company and assembled with a peripheral joint. The used internal section is 300 mm × 300 mm.

A pressure tap is sealed on the test sample and connected to a manometer.

An air supply tape is sealed on the test sample to supply specified air pressure. The Figure 2 shows the sample in test.



Figure 2: View of the test facility

The manufacturer's rated pressure is 800 Pa.

This pressure is gradually reached in a time between 45 and 60 s, and is maintained during 1 min. It is then increased to 2000 Pa (2,5 times 800 Pa), and maintained during 1 h.

Detailed results

The fixation staples did not move during the test. The adhesive tape did not move during the test. There is no evidence of damage, which would cause the sample to become unusable.

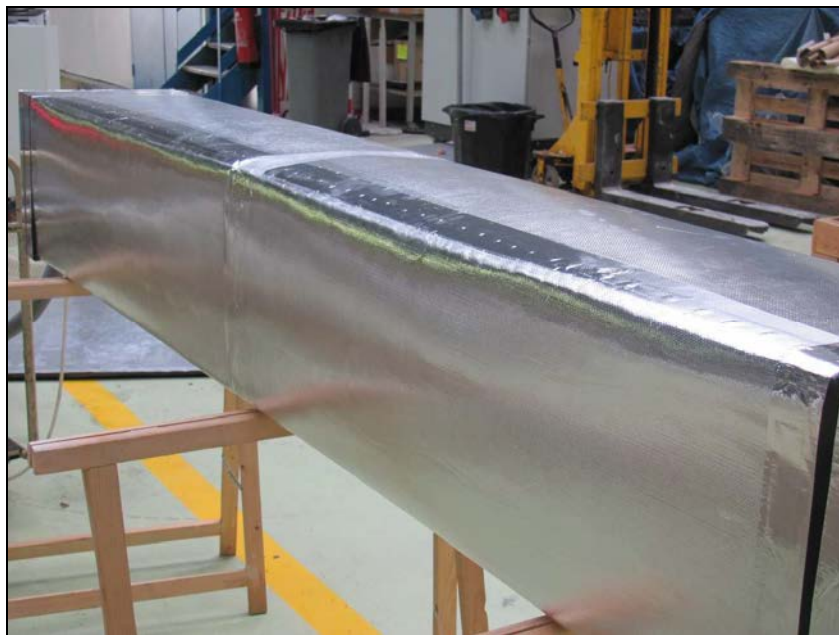


Figure 3 : View of the sample during the test (pressure = 2000 Pa)

APPENDIX 2 - AIRTIGHTNESS TEST

Test is made following EN 1507 standard.

The test sample built by URSA IBERICA AISLANTES consists of 7 modules of 1,17 m of length and section of 300 mm × 300 mm.

Ductwork surface area (A) = $8,20 \times 4 \times 0,3 = 9,84 \text{ m}^2$

Total joint length (L) = $6 \times 4 \times 0,3 + 8,20 = 15,40 \text{ m}$.

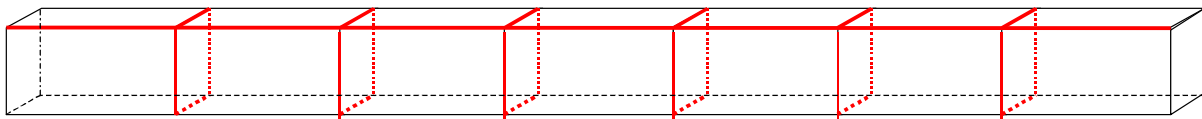


Figure 4: Diagram of the samples

CETIAT closed the ends of the sample with metal sheets.

The Table 1 shows the airtightness classification defined in the EN 1507 standard.

Air tightness class	Air leakage limit
	$\text{l.s}^{-1} \cdot \text{m}^{-2}$
A	$0,027 \cdot p_{\text{test}}^{0,65}$
B	$0,009 \cdot p_{\text{test}}^{0,65}$
C	$0,003 \cdot p_{\text{test}}^{0,65}$
D	$0,001 \cdot p_{\text{test}}^{0,65}$

Table 1 : Definition of the airtightness classes – EN 1507

The limit for the pressure tests is defined by the manufacturer, following the design operating pressure of the ducts.

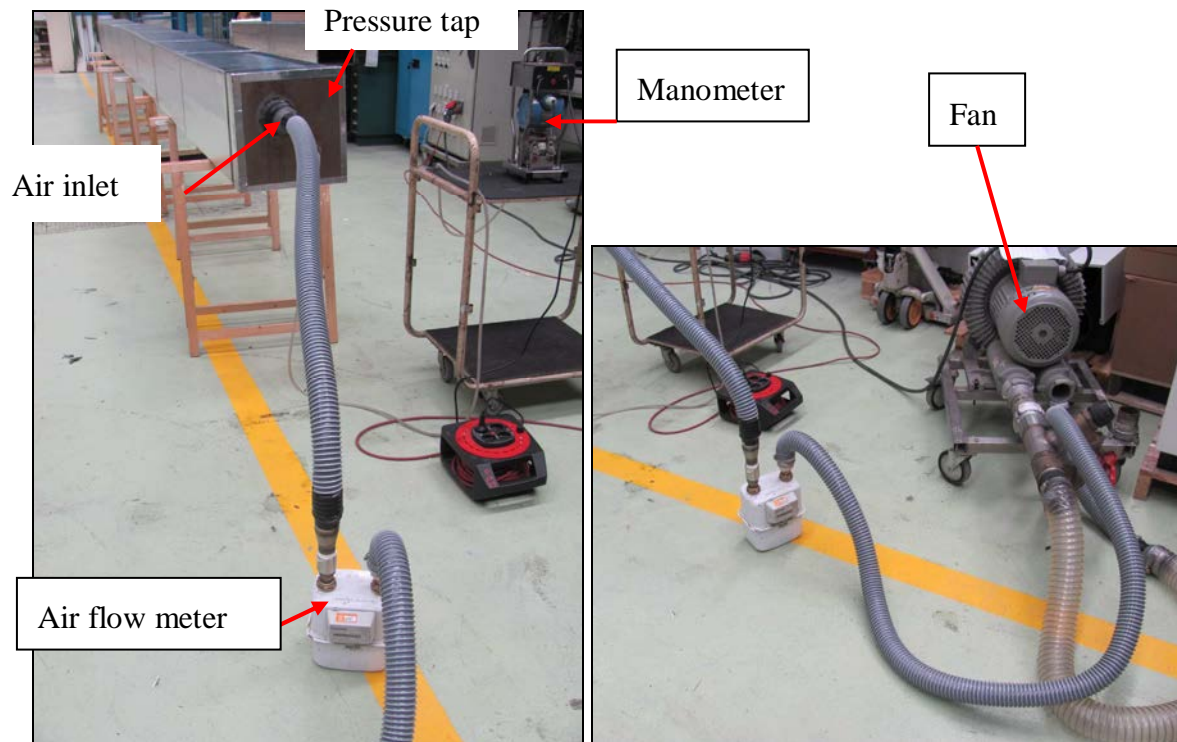


Figure 5 : View of the test facility – airtightness test

Detailed results

URSA IBERICA AISLANTES SA
Affaire n° 1214029
Date: July 2012
Product reference: URSA AIR Zero A2

Internal surface area 9.84 m²

NEGATIVE PRESSURE TEST

Pressure	Measured airflow rate	Air leakage rate
Pa	m3/h	l/s/m2
-65	0.16	0.005
-149	0.30	0.008
-253	0.45	0.013
-351	0.59	0.017
-443	0.70	0.020
-611	0.88	0.025

POSITIVE PRESSURE TEST

Pressure	Measured airflow rate	Air leakage rate
Pa	m3/h	l/s/m2
96	0.21	0.006
200	0.39	0.011
304	0.54	0.015
399	0.66	0.019
607	0.89	0.025
808	1.09	0.031
1013	1.28	0.036

	Air leakage rate (l/s/m ²)	Air leakage limit class D (l/s/m ²)	Class
-611 Pa	0.025	0.065	D
1013 Pa	0.036	0.090	D

The sample is in the class D within the limits of positive and negative test pressure as defined in table above.

Airtightness test - Negative pressure

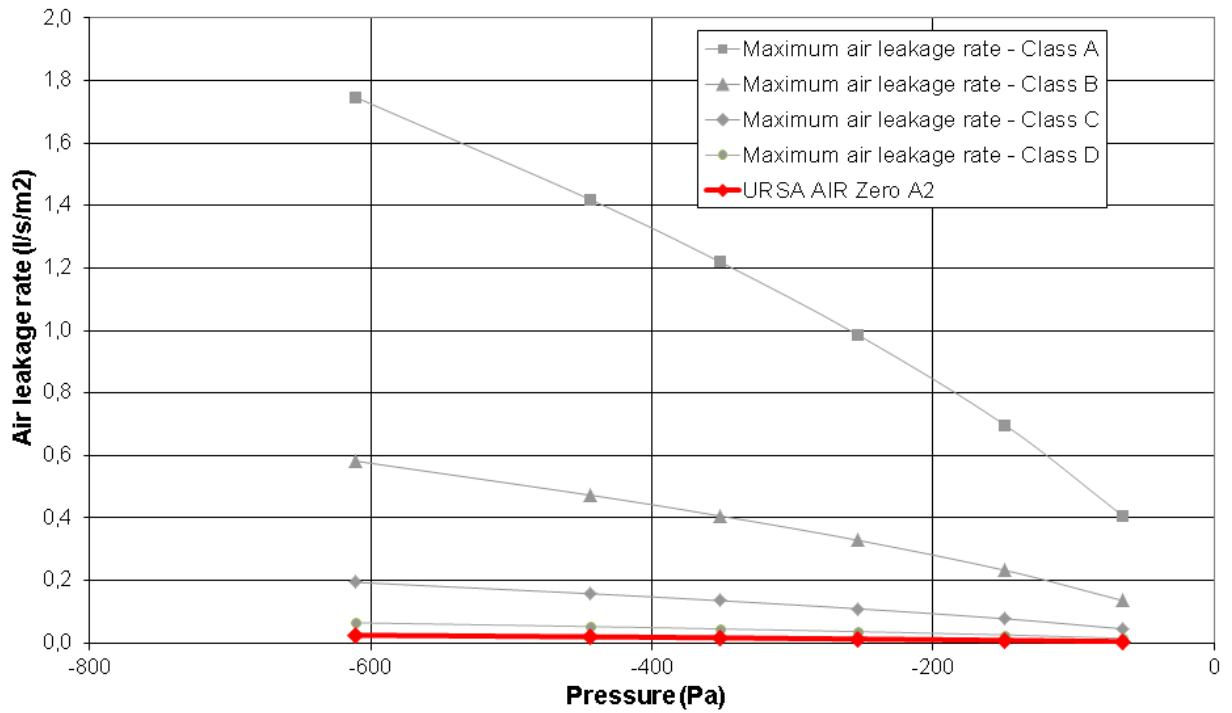


Figure 6 : Air leakage rate according to negative pressure

Airtightness test - Positive pressure

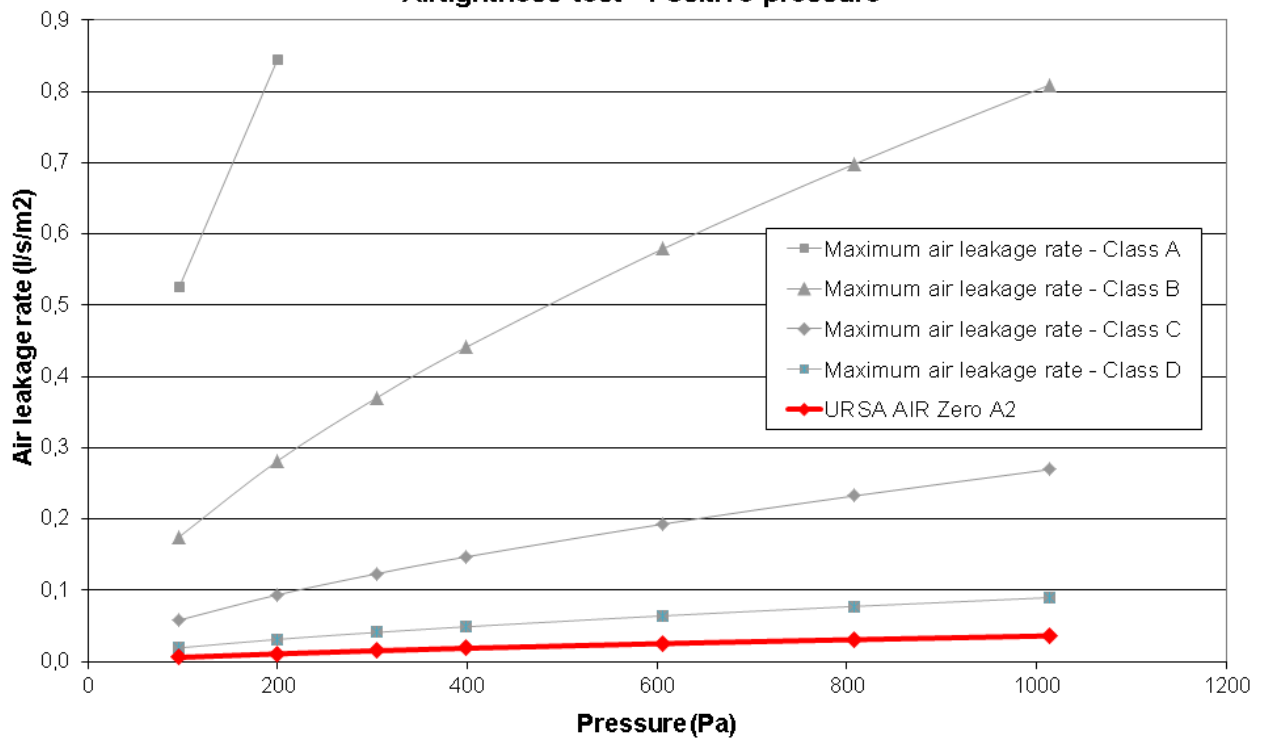


Figure 7 : Air leakage rate according to positive pressure

APPENDIX 3 - MEASUREMENT SENSORS

Main sensors

Pressure measurement: ROSEMOUNT sensor N° 5775 (0 – 2000 Pa). Calibration certificate P1100618C

Airflow measurement: GALLUS (volumetric counter) N° 10725 (0.04 – 6 m³/h). Calibration certificate G1112463F

Other sensors

Temperature measurement: sensor N° 13749. Calibration certificate T1145141E

Atmospheric pressure and dew point temperature measurement : sensor N°13320. Calibration certificates P1109604E (Pressure) and H1125430E (Humidity)