



TESTS REPORT N° 1578721/1A

TESTS APPLICANT: **WINCO TECHNOLOGIE**
Z.I. des Châtelets
8, rue du Boisillon
22950 TREGUEUX

Date of tests request: April 2006-6th
Reference: Order n° 350

TESTS CARRIED OUT

On: Underlays for discontinuous roofing
Reference: **SKYTECH**

SAMPLES:

Received on: April 2006-10th
Registered under n°: LMC BR 06 34

NATURE OF TESTS:

- Determination of watertightness (§ 5.2.3 of EN 13859-1 Standard)
- Determination of water vapour transmission properties (§ 5.2.5.2 of EN 13859-1 Standard)

DATE OF TESTS:

From 18th to 21st April 2006

DS/MS

1. USED SAMPLES

Samples of underlays for discontinuous roofing referenced:

- SKYTECH

2. DETERMINATION DE L'ETANCHEITE A L'EAU

Reference of Standard: EN 13859-1, § 5.2.3: August 2005 and EN 1928 : 2001 – Method A.

Number and dimensions of specimens:

Three circular specimens of 200 mm diameter.

Tests Conditions:

Before testing the test specimens are stored at $(23 \pm 2)^\circ\text{C}$ et $(50 \pm 5)\%$ relative humidity.
Tests are carried out in the same environment.

Principle of test:

The specimen is subjected to a pressure of 20 cm colored water 20 cm during 2 hours.
A possible presence of water is detected across a glass after coloration of laboratory filter paper.

Results :

Specimen	Visual observation
1	No coloration of upper filter paper
2	No coloration of upper filter paper
3	No coloration of upper filter paper
Conclusion	The sheet is considered watertight and may be classified as class W1

Observation: The first sheet on roofing side being not watertight we can observe humidity between 1st and 2nd sheets constituting the underlay.

3. DETERMINATION OF WATER VAPOUR TRANSMISSION PROPERTIES

Reference of standard : EN 13859-1 § 5.2.5.2 : August 2005 and EN ISO 12572 : 2001

Principle :

The test specimen is sealed to the open side of a test cup containing an aqueous saturated solution.

The assembly is then placed in a temperature and humidity controlled test chamber.

Because of the different partial vapour pressure between the test cup and the chamber, a vapour flow occurs through permeable specimens.

Periodic weightings of the assembly are made to determine the rate of water vapour transmission in the steady state.

Tests conditions:

Environment C, with:

- Test chamber at $(23 \pm 1)^\circ\text{C}$ et $(50 \pm 2)\%$ relative humidity.
- Inside cup: saturated aqueous solution of $\text{NH}_4\text{H}_2\text{PO}_4$ (Ammonium dihydrogen phosphate) producing at 23°C a relative humidity of 93%.
- Number of specimen used: 5

Results:

Specimen N°	Density of water vapour flow rate g ($\text{kg}/\text{m}^2.\text{s}$)	Water vapour permeance W_c ($\text{kg}/\text{m}^2.\text{s}.\text{Pa}$)	Equivalent air layer thickness S_d (m)
1	$2,89.10^{-6}$	$2,85.10^{-9}$	$6,87.10^{-2}$
2	$4,48.10^{-6}$	$4,39.10^{-9}$	$4,46.10^{-2}$
3	$2,94.10^{-6}$	$2,86.10^{-9}$	$6,85.10^{-2}$
4	$3,65.10^{-6}$	$3,53.10^{-9}$	$5,54.10^{-2}$
5	$5,99.10^{-6}$	$6,00.10^{-9}$	$3,26.10^{-2}$
Mean	$3,99.10^{-6}$	$3,93.10^{-9}$	$5,40.10^{-2}$
Standard deviation	$1,29.10^{-6}$	$1,32.10^{-9}$	$1,56.10^{-2}$

NOTA :

For this test, δ_a (water vapour permeability of air) was taken equal at $1,96.10^{-10}$ $\text{kg}/\text{m}.\text{s}.\text{Pa}$.

The thickness of the air layer between underlay and saturated solution was taken in charge for correction of W_c and S_d values.

Saint Ouen l'Aumône on April 2006, 26th

Technician in charge of tests
Dalila SASSI

Tests Activity Responsible
Alain FERNANDEZ