

TEST REPORT No. 90-12-0152

JOB

No.: 90120066
Client: KdB ISOLATION
Parc d'activités du Val de Moine
3, avenue de l'Europe
F-49230 Saint-Germain-sur-Moine
France

OBJECT OF TESTING

Product: Underlay sheet Permovap®
Manufacturer: manufacturer is the client
Manufacturing plant: at the manufacturer's address
Standard of product: EN 13859-1: 2010 Flexible sheets for waterproofing. Definitions and characteristics of underlays. Part 1: Underlays for discontinuous roofing
EN 13859-2: 2010 Flexible sheets for waterproofing. Definitions and characteristics of underlays. Part 2: Underlays for walls

PRODUCT SAMPLE

Description of sample: five pieces of product, dimensions of 300 mm x 300 mm
Sampler: client
Place and date of delivery: Laboratory branch in Tatranská Štrba, on 29th March 2012
Designation of sample by lab.: 057/12

TESTS

Water vapour transmission properties

Test procedure: STN EN ISO 12572: 2003 Hygrothermal performance of building materials and products. Determination of water vapour transmission properties

Description of test specimens: 5 pcs. of circular test specimens - of diameter 90 mm

Test specimens prepared by: Milan Ševčík

Test conditions:

- test conditions C: (23 - 50 / 93)	
- exposed area of the test specimen A	0,005 m ²
- time interval between two weighings of the test specimens	6 h
- used saturated aqueous solution - KNO ₃	
- test temperature	23°C
- relative humidity in climatized chamber	50%
- relative humidity in test cup	94%
- water vapour pressure difference Δp_v	1235,44 Pa
- standard barometric pressure p_0	1013,25 hPa
- mean barometric pressure during test p	1003,10 hPa
- gas constant of water vapour R_v	462 Nm/(kg.K)
- test temperature T	296 K
- moisture conductivity of air δ_a	1,972.10 ⁻¹⁰ kg/(m.s.Pa)

Deviations from the standard: Modifications according to STN EN 13859-1, clause 5.2.5.2:

- test conditions C: (23 - 50 / 93)
- five test specimens were used
- thickness of test specimens wasn't measured. The values of thickness declared by the manufacturer (± 15 mm) were used to the calculation

Date of test: 2nd to 4th April 2012

Test personnel: Ing. František Halčín

Applied instrumentation:

ID	Name	Range	Unit	Division
M900011	Stopwatch	(0 - 1800)	s	0,1
M900018	Analytical balance	(0 - 303,00)	g	0,0001
M900044	Automatic recorder of temperature and humidity	((-25) - 45)	°C	0,1
		(15 - 95)	%	1,0
Z900001	Climatized chamber Vötsch			
Z900015	Aluminium cups with free test area of 0,005 m ²			
Z900023	Barometer			
Z900024	Exicator			

TEST RESULTS**Water vapour transmission properties**

Test specimen No.	Mean value of the test specimen thickness d (m)	Rate of mass change in one time interval (g)	Rate of mass change of the straight line graph Δm_{21} (kg/s)	Density of moisture flow rate g (kg/(m ² .s))	Moisture permeance W (kg/(m ² .s.Pa))	Moisture permeability δ (kg/m.s.Pa)	Moisture resistance faktor μ (-)	Water vapour diffusion-equivalent air layer thickness s_d (m)
1		0,2470	$1,1435 \cdot 10^{-8}$	$2,2870 \cdot 10^{-6}$	$2,0863 \cdot 10^{-9}$	$10,7960 \cdot 10^{-13}$	183	0,094
2		0,2222	$1,0289 \cdot 10^{-8}$	$2,0578 \cdot 10^{-6}$	$1,8536 \cdot 10^{-9}$	$9,6386 \cdot 10^{-13}$	205	0,106
3		0,2171	$1,0052 \cdot 10^{-8}$	$2,0104 \cdot 10^{-6}$	$1,8063 \cdot 10^{-9}$	$9,9796 \cdot 10^{-13}$	198	0,109
4		0,2181	$1,0098 \cdot 10^{-8}$	$2,0197 \cdot 10^{-6}$	$1,8155 \cdot 10^{-9}$	$9,3043 \cdot 10^{-13}$	212	0,109
5		0,2389	$1,1059 \cdot 10^{-8}$	$2,2118 \cdot 10^{-6}$	$2,0093 \cdot 10^{-9}$	$10,1970 \cdot 10^{-13}$	193	0,098
Average	0,015	0,2287	$1,0587 \cdot 10^{-8}$	$2,1173 \cdot 10^{-6}$	$1,9142 \cdot 10^{-9}$	$9,9832 \cdot 10^{-13}$	198	0,103
Meas. uncertainty		0,0156	$0,0720 \cdot 10^{-8}$	$0,1440 \cdot 10^{-6}$	$0,1517 \cdot 10^{-9}$	$0,6817 \cdot 10^{-13}$	13	0,008


Date of report:

5th April 2012

Prepared by:

Ing. František Halčín

Authorized by:


 Ing. Pavel Kazár
 Head of Laboratory Branch
**Notes:**

- Unless the Test Laboratory makes the sampling, data on the manufacturer, its manufacturing plant and about the sampling are presented according to information provided by the client.
- Testing was carried out according to the Operational Procedure No. PP-037 of the Test Laboratory in compliance with the listed test procedure.
- The given extended uncertainty U is based on the standard uncertainty multiplied by the coverage factor $k = 2$, that in case of the normal distribution provides the reliability in the order of 95%.
- Presented results are relevant to the product sample only.
- This report shall not be reproduced except in full without written approval of the Test Laboratory.

————— End of test report —————