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Test report

P 6995-4

Testing order: **Water vapour permeability of**
Selftene Base Biadesivo
according to EN 1931

Customer: **INDEX S.p.A.**
Via Rossini, 22
37060 Castel D'Azzano (Verona)
Italy

Persons in charge: **Dipl.-Ing. N. Machill**
C. Preller

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This test report comprises: **6 pages**
1 enclosure

The test results exclusively refer to the tested materials.
The publication in extracts of the test report and references to tests for advertising purposes require our written agreement in each individual

C O N T E N T S

1	SUBJECT.....	3
2	RECEIPT OF SAMPLES.....	3
3	PREPARATION OF TEST SPECIMEN.....	3
4	TESTING OF WATER-VAPOUR TRANSMISSION PROPERTIES	4
4.1	Procedure.....	4
4.2	Calculation.....	4
4.3	Results	5
5	SUMMARY	6

1 SUBJECT

Polymer Institut was charged by INDEX S.p.A., Castel D'Azzano/Italy, to carry out the water vapour permeability of the self-adhesive elastomeric polymer-bitumen membrane

Selftene Base Biadesivo

according to EN 1931 "Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of water vapour transmission properties".

2 RECEIPT OF SAMPLES

The following samples were delivered to the Polymer Institut on 2011-01-13.

Table 1: *Receipt of samples*

no.	material	description	dimensions [cm]
4	Selftene Base Biadesivo	self-adhesive elastoplastic polymer-bitumen membrane	100 x 95 x 0,2

3 PREPARATION OF TEST SPECIMEN

The test specimens were punched out in the required dimension of \varnothing 90 mm.

The layer thickness has been determined using a film thickness tester of the company Erichsen, Model 497. The results can be taken from table 2.

Three test specimens were arranged in steel cups containing water-free calcium chloride to produce a relative humidity of less than 1 % at 23 °C.

Another test specimen was sealed to an empty cup as reference.

The dishes were placed into a desiccator containing a sodium chloride solution to produce a relative humidity of 75 % at 23 °C.

The prepared test dishes were stored at these conditions for 90 days.

4 TESTING OF WATER-VAPOUR TRANSMISSION PROPERTIES

4.1 Procedure

The water vapour permeability was determined according to EN 1931.

test atmosphere: 23°C / 75 % r.h.

The test dishes were weighed to the nearest 0,1 mg once a week until the change of mass was linear to the time (stationary condition).

4.2 Calculation

From the mass increase at the stationary condition the water-vapour transmission rate g [$\text{g}/(\text{m}^2 \times \text{d})$], the water-vapour diffusion-equivalent air layer thickness s_d in [m] and the water-vapour resistance factor μ [-] were determined as follows.

Water-vapour transmission rate g

The *water-vapour transmission rate g* is characterised by the mass of water vapour in [g] that is transmitted over 24 h through 1 m^2 of test specimen area under specified conditions (temperature, humidity gradient). It is calculated by the following equation:

$$g = \frac{\Delta m}{A * t} \left[\frac{\text{g}}{\text{m}^2 * \text{d}} \right] \quad (\text{equation 1})$$

Where:

- Δm mass difference within the respective period of time [g]
 A area of the specimen [m^2]
 t period of time [d]

Diffusion-equivalent air layer thickness s_d

The *diffusion-equivalent air layer thickness s_d* in [m] indicates the thickness of a stationary air layer that possesses the same water-vapour resistance factor as the specimen. It is calculated by the following equation:

$$s_d = \frac{Z}{g} [m] \quad (\text{equation 2})$$

Where:

- Z factor that puts together several quantities (humidity difference, air pressure, temperature); for the present measuring conditions $Z = 35,7$ [$\text{g}/(\text{m} \times \text{d})$] applies.
 g water vapour transmission rate [$\text{g}/(\text{m}^2 \times \text{d})$]
 s_d diffusion-equivalent air layer thickness [m]

Water-vapour resistance factor μ

The *water-vapour resistance factor* μ [-] indicates how many times greater the diffusion resistance of a material is than that of a stationary air layer of the same thickness at the same temperature. The water-vapour resistance factor is calculated by the following equation:

$$\mu = \frac{s_d}{s} \quad [-] \quad (\text{equation 3})$$

Where:

- μ water-vapour resistance factor [-]
- s_d water-vapour diffusion-equivalent air layer thickness [m]
- s mean thickness of the specimen [m]

4.3 Results

The results of the measurements are summarised in the following table 2.

Table 2: *Characteristics of the water-vapour transmission of Selftene Base Biadesivo*

test specimen	$\frac{g}{m^2 \times d}$	$s_d (H_2O)^{2)}$ [m]	$\mu^{1)}$ []	layer thickness [mm]
1	0,16	228	90000	2,52
2	0,17	206	87000	2,38
3	0,18	200	79000	2,53
mean value	0,17	211	85000	2,48

¹⁾ rounded to 2 value-indicating digits

²⁾ rounded to 3 value-indicating digits

The graphical illustration of the change of mass as a function of the time period is to be taken from figure 1 of the enclosure.

5 SUMMARY

At Polymer Institut the water vapour permeability of

Selftene Base Biadesivo

according to EN 1931 "*Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of water vapour transmission properties*" was determined by order of INDEX S.p.A., Castel D'Azzano/Italy.

The results are to be taken from table 2.

Flörsheim-Wicker, 2011-08-31

The head of the testing laboratory


J. Magner



the persons in charge


Dipl.-Ing. N. Machill



C. Preller

ANLAGE
zum
Prüfbericht

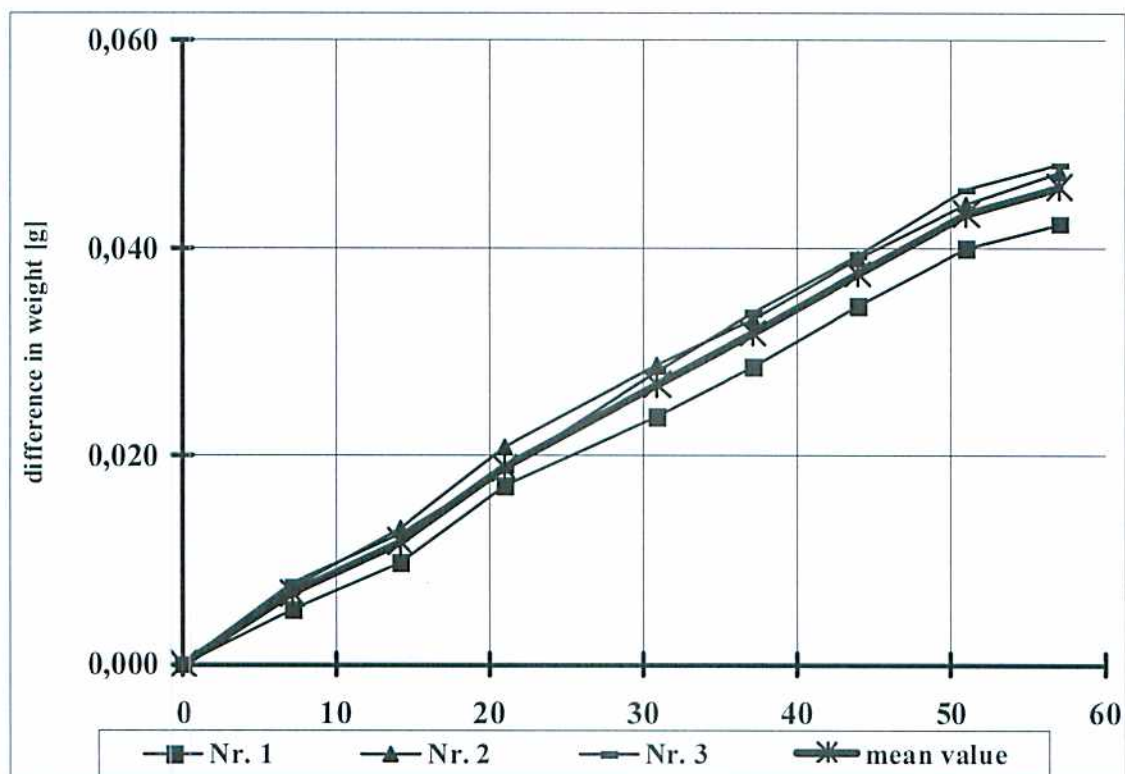


Figure 1: water vapour transmission rate of *Seltene Base Biadesivo*