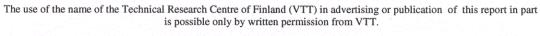
## VTT BUILDING TECHNOLOGY

TEST REPORT NO. RTE1610/00

# Determination of water vapour transmission properties of plastic films and laminates

Tupler Oy





Requested by

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Order

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Task

Determination of water vapour transmission properties of plastic films and laminates

**Samples** 

Plastic films (3 products) and laminates (2 products) were delivered to VTT by the customer. The laminates were prepared of two plastic films with small pellets of polystyrene between them.

#### Performance of the task

The water vapour transmission rates were determined according to standards prEN ISO 12572 Building materials – Determination of water vapour transmission properties and SS 02 15 82 Byggmaterial – Provning – Vattenånggenomgångsmotstånd. The test was carried out in conditions, where the relativ humidity of air on one side of the sample was RH 50% and on the other side RH 92,5%. The test was performed at a temperature of 23 °C.

#### Research results

The water vapour transmission properties for the plastic films are given in table 1 and for the laminates in table 2.

Table 1. Water vapour permeance W and resistance Z according to prEN ISO 12572 and water vapour resistance Z according to SS 02 15 18 for plastic films.

Sample	Water vapour permeance (prEN ISO 12572) W	Water vapour resistance (prEN ISO 12572) Z	Water vapour resistance (SS 02 15 18 ) Z
	[kg/(m <sup>2</sup> sPa)]	[Gm <sup>2</sup> sPa/kg]	[s/m]
0,06 dense	$2,7 \cdot 10^{-12}$	370	$2750 \cdot 10^3$
0,05 dense	$3,6 \cdot 10^{-12}$	278	$2040 \cdot 10^3$
0,04 normal	$17,5 \cdot 10^{-12}$	57	$418\cdot 10^3$



Table 2. Water vapour permeance W and resistance Z according to prEN ISO 12572 and water vapour resistance Z according to SS 02 15 18 for laminates.

Sample	Water vapour permeance (prEN ISO 12572)	Water vapour resistance (prEN ISO 12572) Z	Water vapour resistance (SS 02 15 18 ) Z
	[kg/(m <sup>2</sup> sPa)]	[Gm <sup>2</sup> sPa/kg]	[s/m]
Tuplex 0,04 + 0,04 normal	14,0 · 10 <sup>-12</sup>	71	$517 \cdot 10^3$
Tuplex 0,04 normal + 0,06 dense	2,5 · 10 <sup>-12</sup>	400	$2920 \cdot 10^3$

### Conclusions

According to the results of the individual plastic films and laminates consisting of two plastic films, there can be seen a certain correlation of water vapour resistance. The water vapour resistance of a laminate is as good or even better as the resistance of the densest individual film.

An estimation of water vapour tarnsmission properties for a laminate consisting of 0,04 normal film and 0,05 dense film is therefore:

 $W \le 2.7 \cdot 10^{-12}$  kg/(m<sup>2</sup>sPa)

 $Z \ge 370$  Gm<sup>2</sup>sPa/kg

 $Z \ge 2750 \cdot 10^3$ 

s/m

Espoo 15.5.2000

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Distribution

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