Kingspan TEK™

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Subject: Tyvek Reflex (Foil Faced Breather Membrane)

What is a Breather Membrane?

BS 5250 (Code of practice for control of condensation in buildings) describes a breather membrane as a "*vapour permeable membrane with a vapour resistance less than 0.6MNs/g".* A breather membrane must effectively offer resistance to the passage of external moisture and wind driven rain due to inclement weather, while giving little resistance to the passage of internal vapour. Products classed as breather membranes in the context of BS 5250 are mainly used in vertical applications and can not normally be used in a roofing application unless they have a vapour resistance of no more than 0.25 MNs/g.

●Permeable membranes for pitched roofing applications such as **Nilvent** are classed as *vapour permeable underlays* and should have a vapour resistance of not more than 0.25 MNs/g.

Tyvek Reflex – Advantages

Tyvek Reflex is BBA certified (No. 90/2548) as a breather membrane for walls. When tested to BS 7374: 1990 (Method of test for water vapour transmission) achieves a water vapour resistance of 0.6MNs/g and therefore complies as a breather membrane as described in BS 5250.

The advantage of Reflex over ordinary breather membranes is that it is foil reflective, giving a low emissivity resistance value of 0.54m²K/W (membrane and air space) to the adjacent air cavity. This, when accounted for in a U-value calculation, will lower the U-value of any TEK wall in which it is used. Non-foil faced breather membranes will only offer a high emissivity resistance value of 0.18m²K/W.

E.g. (TEK 142 with facing brick)

Membrane	U-value
Nilvent	0.19 W/m²K
Reflex	0.18 W/m²K

In walls where a rainscreen cladding, timber boarding, render or any other ventilated system is used, the value of the adjacent cavity and subsequent layers external to the membrane, have a resistance of 0m²K/W. However, in accordance with BS EN ISO 6946 (Building components and building elements – Thermal resistance and thermal transmittance – Calculation method) and BR 443 (conventions for U-values), the external surface resistance

can be taken as 0.29m²K/W for low emissivity faced materials directly against the vented cavity. This is a significant improvement over the 0.13m²K/W used for high emissivity surfaces. This again will reduce the U-value of a TEK wall panel.

E.g. (TEK 142 with timber boarding on battens)

Membrane	U-value
Nilvent	0.20 W/m²K
Reflex	0.19 W/m²K

Conclusion

Tyvek Reflex is the preferred foil faced breather membrane by Kingspan for use in wall applications for the TEK building system. At present no other suitable foil faced breather membrane is known to us.

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