Blowerproof variable moisture control (Vapour Control Layer, VCL)

Table 1 (*taken from BBA certificate 17/5410 page 4 section 7*)

The water vapour resistance of the product varies with the relative humidity conditions across it. The water vapour diffusion equivalent air layer thicknesses (Sd) of the cured, unaged product at various relative humidity conditions are given in Table 1

Water vapour diffusion equivalent air layer thickness for different relative humidity conditions [1] Sd (m) [2]

Relative humidity difference (%)	Sd (m)[2]
0/50 (±3)	21.7
39/69 (±3)	14.1
66/97 (±3)	0.8

[1] Tests carried out at a temperature of (23 ± 2) °C.

[2] Result adjusted for a membrane thickness of 0.4 mm.

Definitions:

VCL – A Vapour Control Layer is defined as a material that substantially reduces the water vapour transfer through a building element into which it is incorporated a common example would be a polythene sheet. Vapour control layers are commonly specified on the warm side of the insulation to reduce the possible risk of interstitial condensation within the construction element. A VCL maybe a barrier or have variable diffusion as is the case with Blowerproof.

Sd value - This is a useful measure of breathability as it measures a materials resistance to the transmission of water vapour through it. This can only be quoted for a particular thickness of material and is measured in metres. The Sd value refers to the resistance shown by the equivalent thickness of air, so the lower the number the better the breathability. The diffusion equivalent air layer thickness specifies how thick a layer of air with the same diffusion resistance would have to be.

Under normal room humidity levels (40-70%), the water vapour resistance of a variable VCL such as Blowerproof will not only block moisture transmission during the winter months, but also enables drying out of unwanted humidity during the summer months.

In general, the higher the Sd-value, the higher the moisture resistance during winter conditions, but conversely, the lower the drying out potential during summer weather.

High levels of vapour tightness also reduce the capacity of a membrane to allow moisture trapped within the construction to dry out easily.

Many roof and wall assemblies are only durable if they can dry-out to the interior side as well. In many cases moisture damage can be attributed to the fact that a vapour barrier is practically impermeable in both directions, i.e. it does not permit any drying out.

Polyethylene membranes are typically offered with Sd-values ranging from >20m up to 100- 150m. Due to their high vapour resistance, they can quickly become a moisture trap, as drying out of the construction toward the room side is rarely possible.

VCLs with a variable Sd-value offer excellent protection against condensation risk and potential damage due to the adaptation of their water vapour resistance by means of humidity concentration.

During the winter the Sd-value of the membrane increases as the relative humidity within the building interior increases, thus reducing moisture transfer towards the insulation when vapour control is needed most. The

Sd-value decreases as the relative humidity drops during the summer months, allowing the construction to dry out towards the interior. The broader the Sd-value range of a variable VCL, the higher the humidity protection.

The lower Sd-value represents the drying out potential of a variable VCL during summer months the upper Sd-value represents the water vapour transmission during winter months, the higher the value the less moisture will penetrate from the room side towards the insulation. Blowerproof technology with a lower Sd-value of 0.8m and an upper Sd-value of 21.7m provides outstanding humidity protection compared to other VCLs, and helps to accelerate the drying out process of wet construction materials.

NOTE

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