Kingspan TEK™

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Subject: Vapour Barrier Requirement

What Does a Vapour Barrier Do?

A vapour barrier or vapour control layer reduces the volume of gaseous vapour that passes from the interior of a building to the external due to the effects of vapour pressure. If the passage of vapour is reduced then the likelihood of condensation occurring in the structure (interstitial) is reduced or even eliminated as there is little or no vapour available to cool into condensate towards the colder side (exterior) of the structure. It is described in BS 5250 (Code of practice for control of condensation in buildings) as "*material of construction that substantially reduces the water vapour transfer through any building component in which it is incorporated".*

Vapour Barrier Requirement

The OSB/3 facings and closed cell structure of the urethane foam core of the TEK panel offers reasonable resistance to the passage of vapour through the structure. However, if consideration is to be given to omitting the vapour control layer it is recommend that an independently controlled ventilation and extraction system (such as MVHR or PIV) is installed within the entire TEK envelope as an alternative to the required minimum standard background ventilation required by building control used in all other circumstances. Cold bridges such as large timber members that extend beyond the face of the TEK panel or steel and concrete that break or penetrate the TEK panel, would also need to be reduced in the design. Additionally the cold bridge incurred at these junctures will need to be dealt with by additional insulation.

The omission of vapour control can only be considered for domestic situations and should be assessed in accordance with BS 5250 (Code of Practice for Control of Condensation in Buildings). Buildings of higher humidity and other non-domestic buildings should also be assessed in accordance with this standard and will almost certainly require a separate vapour control layer due to either higher volumes of vapour in the building or the use of short term heating cycles.

The full TEK envelope, TEK walls and roof, would need to be sealed correctly with expanding urethane foam or silicone sealant at all relevant junctions. All follow on trades such as plumbers, electricians and any other trades that may cause penetrations to the TEK envelope must seal around these penetrations to maintain the vapour resisting integrity of the system. The method of sealing will vary depending on the reason for the penetration. Details

can be found in the Kingspan TEK standard details, TRADA timber frame construction manual or the relevant building control documentation

The above explains some of the conditions required if consideration is to be given to omitting the vapour control layer for Local Authority Building Control Approval.

●*Warranty companies such as the NHBC and Zurich should also be consulted regarding the vapour control layer as they may have differing opinions on this matter for the issuing of a warranty despite evidence that a vapour control layer may not be required.*

Conclusion

Domestic buildings that have standard detailing for the TEK roof and wall system can forego the need for a vapour barrier if a mechanically assisted ventilation and extraction system is installed. Non-domestic buildings will almost certainly require a vapour barrier and should be assessed in accordance with BS 5250 depending on their use.

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