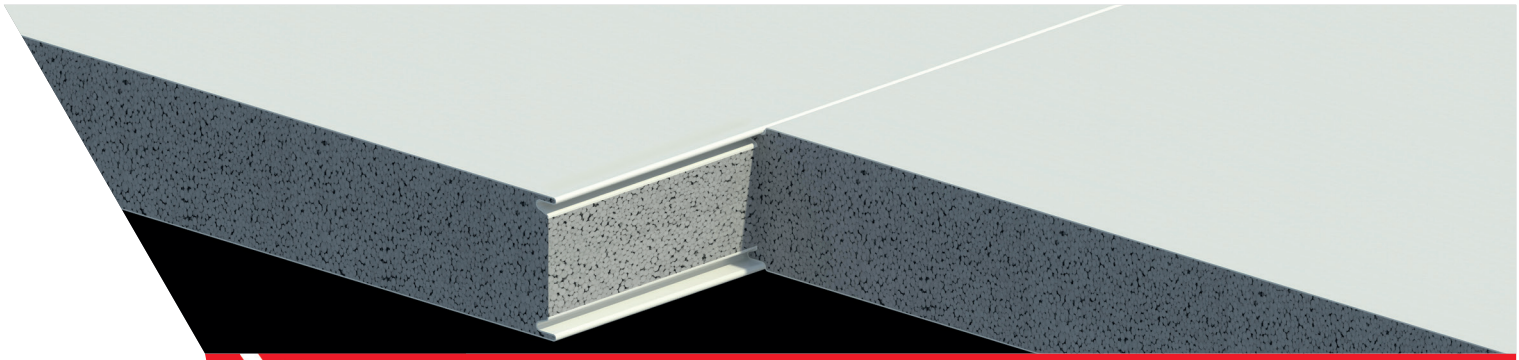


TECHNICAL BULLETIN NO. 14

PRODUCT: XFLAM® INSULATION **JUNE 2014**

SITUATION: HYGIENE FACILITY MAINTENANCE

APPLICATION: CLEAN ROOMS AND FOOD PROCESSING FACILITIES

ISSUE: Ingress and entrapment of water into a structure from cleaning and sanitising of plant and equipment is undesirable unless the structure is designed for holding liquids.

BACKGROUND: Maintenance of hygiene in clean rooms and food processing facilities usually requires the use of wash downs where significant volumes of water, possibly in conjunction with detergents and mechanical cleaning. The most efficient construction material for these applications will be insulated panel with benefits of pre-finished Microban anti-bacterial paint surfaces, and absence of structural members contributing to ease of cleaning.

Insulated panel with a heritage founded from cold store construction will contain a foam plastic based core with some resistance to both water and water vapour. These cellular foam products are available in open (EPS, XFLAM) or closed (PU, PIR) cell forms, with closed cell foams being more resistant to liquid water. Water vapour is the issue of concern due to migration into the core being driven by water vapour pressure.

Standards for water vapour transmission are written into the cellular plastic Australian Standard AS1366:

Maximum water vapour transmission rate for PU = 1000µg/m².s

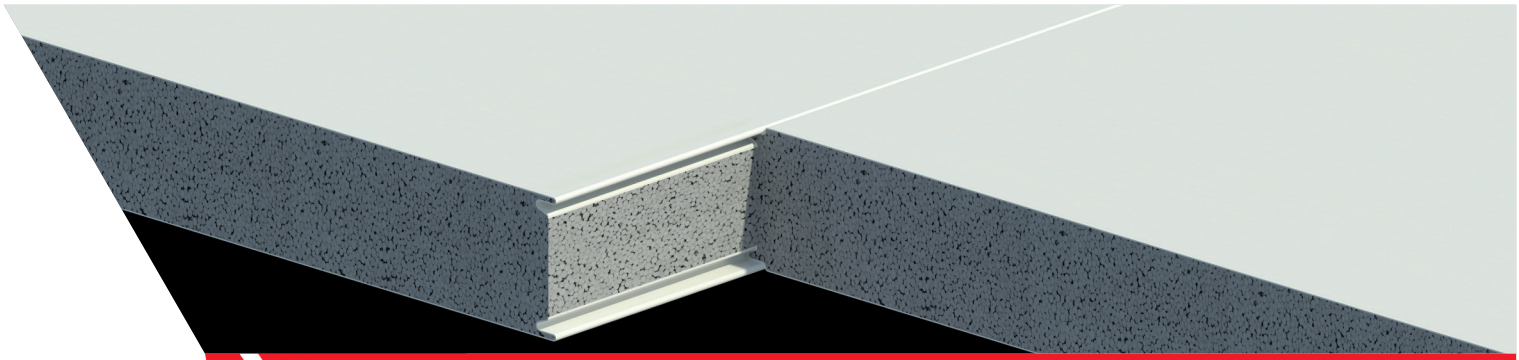
Maximum water vapour transmission rate for PIR= 2300µg/m².s

Maximum water vapour transmission rate for EPS-SL = 630µg/m².s

XFLAM water vapour transmission rate is comfortably below these standards at 180µg/m².s

However prolonged exposure to water or water vapour will lead to saturation of all cellular material dramatically increasing the weight of the wall and potentially risking progressive corrosion of the steel skins from the inside. Unfortunately if this occurs, removal of the water is very difficult, particularly if closed cell foams are involved.

Of particular note is that where there is potential for both sides to be a wash-down area it is necessary to seal both sides of a wall in a complete contrast to the cold store situation. The difficulty here is that once water or vapour gets into the panel, access routes out are not available through joints without sealing.



TECHNICAL BULLETIN NO. 14

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BACKGROUND CONTINUED:

Water that does enter needs a pathway downhill out of the wall. Core materials exhibit resistance to water and water vapour but need sound detailing to protect from vapour pressure build-up in the wall. The presence of water at the base of a wall trapped between covings on each side could potentially lead to water impregnation occurring, driven by temperature changes raising the vapour pressure during diurnal cycles or wash-down cycles.

Well designed, inter-locking and firm fitting slip joint systems require less sealant and are more reliable to maintain water and vapour barriers, protecting the panel core. These details provide the first and most critical layer of defence against ingress, Further to this correct design and construction details are also critical to relieve vapour pressure in insulated panel systems and consideration should be taken in design to provide a positive fall pathway to discharge moisture.

For specific project detailing information contact the team at ASKIN Performance Panels:

FREE CALL 13 000 ASKIN

Approval

Technical Manager
XFLAM Pty Ltd

References:
AS1366.1:1992 Rigid cellular plastics sheets for thermal insulation – Rigid cellular polyurethane
AS1366.2:1992 Rigid cellular plastics sheets for thermal insulation – Rigid cellular polyisocyanurate
AS1366.1:1992 Rigid cellular plastics sheets for thermal insulation – Rigid cellular polystyrene
CSIRO report no.6391.2
AS4674 – 2004 Design, construction and fit out of food premises
AS4709 – 2001 Guide to cleaning and sanitizing of plant and equipment in the food industry.