



TECHNICAL BULLETIN NO. 7

PRODUCT: XFLAM® INSULATION

MAY 2010

SITUATION: SUB-ZERO TEMPERATURES

APPLICATION: COLD STORAGE

ISSUE: Resistance of cold storage cladding materials to water uptake during service.

BACKGROUND: A refrigerated building will contain air with lower water saturation than exterior air due to a decrease of the water carrying capability with decreasing temperature. Reduction of the migration of external moisture into the building is important to prevent build-up of ice inside. Standard practice is therefore to detail an effective external vapour barrier using the external steel skin and various flexible sealants.

Typically cellular plastic materials are used as the core material for cold store insulated panel due to the low vapour transmission rate of these materials and the high resistance to absorption of water. Low water vapour transmission properties typically provide a backup in the event of a temporary failure of the vapour barrier. The insulation material of choice has been EPS and the minimum acceptable properties are shown in AS1366.3:-

GRADE	UNIT	SL	S	H
RATE OF WATER VAPOUR TRANSMISSION AT 23 °C	µg/m ² .s	630	580	460
DIMENSIONAL STABILITY	Percent	1	1	1

Dimensional stability is of particular importance to ensure the panel joints are not at risk of breaking the seals in service. The EPS industry has always used post manufacture drying of the core material prior to laminating into panel to ensure dimensional stability, a practice not so easily achieved with some other cellular plastics.

XFLAM® is manufactured in a block form and uses a post cure process to fully stabilise and remove all moisture and any volatiles prior to cutting into sheet and laminating. The comparable properties for XFLAM® are shown in the table below with the additional characteristic of low water absorption common to many cellular plastics.

GRADE	UNIT	XFLAM
RATE OF WATER VAPOUR TRANSMISSION AT 23 °C	µg/m ² .s	180
DIMENSIONAL STABILITY	Percent	<1

XFLAM® is therefore ideally suited for applications in cold storage with the additional benefits of fire resistance, low toxicity and insurance industry approval.

Approval

Technical Manager
XFLAM Pty Ltd

References:
CSIRO REPORT NO.5252
AS1366 .3 1992 RIGID CELLULAR PLASTIC SHEETS FOR INSULATION
IPENZ PRACTICE NOTE 15. COLDSTORE ENGINEERING IN NZ