

## Building Envelope Functions and WALLTITE ECO®

### Spray Polyurethane Foam Insulation

In Canada, the national building code specifies requirements for vapour and air barrier material properties.

Specific requirements for vapour barrier materials are found in Sentence 9.25.4.2.(1) of the National Building Code of Canada (“NBCC”) and stated as: “Vapour barriers shall have a permeance not greater than 60 ng/(Pa·s·m<sup>2</sup>) measured in accordance with ASTM E96/E96M, ‘Water Vapour Transmission of Materials,’ using the desiccant method (dry cup).”

NBCC requirements for air barrier materials are stated in Clause 5.4.1.2.(1)(a) as “[...] materials intended to provide the principal resistance to air leakage shall have an air leakage characteristic not greater than 0.02 l/(s·m<sup>2</sup>) measured at an air pressure differential of 75 Pa.”

WALLTITE ECO spray polyurethane foam insulation complies with the requirements, as described below, of standard CAN/ULC-S705.1, *Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Material – Specification* (including amendments 1 and 2) (“CAN/ULC-S705.1”). Subsection 5.5.12 of CAN/ULC-S705.1 requires that the water vapour permeance of specimens be measured in accordance with the desiccant method of ASTM E96 and that a 50 mm thick specimen must have a water vapour permeance not more than 60 ng/(Pa·s·m<sup>2</sup>).

Subsection 5.5.1 and Table 1 of CAN/ULC-S705.1 specify the test method to measure material air permeance and set the maximum value at 0.02 l/(s·m<sup>2</sup>) at a 75 Pa pressure difference.

The properties of WALLTITE ECO spray polyurethane insulation are found in the table below.

	Air Barrier Material (L/(s·m <sup>2</sup> ) at 75 Pa pressure difference)			Vapour Barrier Material (ng/(Pa·s·m <sup>2</sup> ))		
	Requirement		Result (per CAN/ULC-S705.1)*	Requirement		Result (per CAN/ULC-S705.1)**
	NBCC (5.4.1.2.(1))	CAN/ULC-S705.1 (5.5.1 and Table 1)		NBCC (9.25.4.2.(1))	CAN/ULC-S705.1 (5.5.12 and Table 1)	
WALLTITE ECO v.2	≤ 0.02	≤ 0.02	≤ 0.02	≤ 60	≤ 60	42
WALLTITE ECO v.3	≤ 0.02	≤ 0.02	≤ 0.02	≤ 60	≤ 60	41

\* for 25.4 mm thickness

\*\* for 50 mm thickness

## BUILDING ENVELOPE FUNCTIONS AND WALLTITE ECO®

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Clause 5.5.12.1 of CAN/ULC-S705.1 provides background information concerning the water vapour permeance of spray polyurethane foam insulation:

“It was established that the surface skins created when SPF is applied to a rigid substrate have a substantial effect on water vapour transmission through the spray polyurethane foam. Furthermore, it was shown the same foam product exhibits different water vapour permeance when sprayed on different substrates.”

CAN/ULC-S705.1 requires that spray polyurethane foam must be installed in accordance with the requirements of standard CAN/ULC-S705.2, *Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Material – Application*.

Further to the information presented above, BASF believes that by virtue of WALLTITE ECO's air barrier and vapour barrier properties as ascertained pursuant to CAN/ULC-S.705.1, WALLTITE ECO thermal insulation complies with the water vapour and air barrier material requirements of the NBCC, as set forth above.

WALLTITE ECO v.2 and WALLTITE ECO v.3 are listed with the Canadian Construction Materials Centre as follows:

WALLTITE ECO v.2	CCMC # 13530-L	conformance to CAN/ULC-S705.1
	CCMC # 13467-R	air barrier system
WALLTITE ECO v.3	CCMC # 13588-L	conformance to CAN/ULC-S705.1

### **TECHNICAL ASSISTANCE**

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North Western Territories, Yukon, Nunavut

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Warning! These products can be used to prepare a variety of polyurethane products. Polyurethanes are organic materials and must be considered combustible.

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