



## Thermal Insulation, Polyurethane and Polyisocyanurate, Boards Faced [Annex]

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### Scope

These Evaluation Listings apply to closed-cell polyurethane and polyisocyanurate foam thermal insulation in the form of flat rigid boards covered on both sides with a facing material. The rigid boards are intended for use as thermal insulation in building construction. The continuous use temperature is within the range of  $-60^{\circ}\text{C}$  to  $+93^{\circ}\text{C}$ .

These rigid boards are not intended to be used as structural panels.

The standards referenced below provide a basis for evaluating products made with various facing materials, which has an impact on some physical characteristics. These standards cover only products in which the facing material has been bonded to the foam core in the original foam manufacturing process.

These standards do not apply to products made using fibreboard, perlite board, gypsum board, oriented strandboard (OSB), or any other rigid board, on one or both sides.

The proponent has demonstrated that the product meets the requirements of at least one of the following standards:

- CAN/ULC-S704-03, "Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced"
- CAN/ULC-S704-11, "Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced"

Products manufactured to these standards are classified as Type 1, 2 or 3 on the basis of their physical properties, and Class 1, 2 or 3 on the basis of water vapour permeability. Typically, Type 1 products are used in wall applications, whereas Type 2 and 3 products are used in roofing applications.

## Standard

**Table 1. Technical Requirements for Closed-cell Polyurethane and Polyisocyanurate Foam Thermal Insulation Tested to CAN/ULC-S704-03 and CAN/ULC-S704-11**

Property		Physical Property Requirements					
		Type 1		Type 2		Type 3	
Compressive strength, min., kPa		110		140		170	
Tensile strength, min., kPa, perpendicular to the plane of the facer		24		35		35	
Flexural strength, min., kPa		170		275		275	
Thermal resistance ( $m^2 \cdot ^\circ C/W$ )	after conditioning, min. for 25-mm-thick product	0.97					
	Long-term thermal resistance (LTTR), min. for 50-mm-thick product <sup>1</sup>	1.90 (CAN/ULC-S704-03)		1.80 (CAN/ULC-S704-11) <sup>2</sup>			
Water vapour permeance (ng/(Pa·s·m <sup>2</sup> ) for 25.4-mm-thick product)	Class 1	≤ 15					
	Class 2	≥ 15 to ≤ 60					
	Class 3	> 60					
Dimensional stability (max. % linear change)	at -29°C, ambient RH	Length	± 2.0	Width	± 2.0		
	at 80°C, ambient RH		± 2.0		± 2.0		
	at 70°C, 97% RH		± 2.0		± 2.0		
Water absorption (max. % by volume)		3.5					
Dimensional tolerances (mm)	width	+4, -2					
	length	+6, -4					
	thickness, ≤ 55 mm thick	+4, -1.5					
	thickness, ≥ 55 mm thick	+5, -2.5					
	flatness (mm/m)	< 4					
	squareness (mm/m), ≤ 1 200 mm in length	< 5					
	squareness (mm/m), ≥ 1 200 mm in length	< 9					

### Notes to Table 1:

- <sup>1</sup> The LTTR of the material must be reported for the purpose of energy calculations. The LTTR value must also be reported for the 25-mm- and 75-mm-thick products.
- <sup>2</sup> The design LTTR value for products made with gas impermeable facers must be calculated by averaging the conditioned thermal resistance value with the LTTR value.

## Labelling

The product must be marked with the following information:

As per CAN/ULC-S704-03:

- type and class;
- ULC standard number;
- manufacturer's name or trademark, address and telephone number;
- lot number;
- a brief generic description of the facing material used;
- the thermal resistance; and
- the warning: **“Caution: This product is combustible and shall only be used as specified by the local building code with respect to flame-spread classification and to the use of a suitable thermal barrier.”**

As per CAN/ULC-S704-11:

- product name;
- ULC standard number;
- type and class;
- manufacturer's name or trademark, address and telephone number;
- country of manufacture;
- lot number;
- a brief generic description of the facing material used;
- LTTR value;
- quantity in surface unit;
- nominal dimension of board; and
- the warning: **“Caution: This product is combustible and shall only be used as specified by the local building code with respect to flame-spread classification and to the use of a suitable thermal barrier when required.”**

## **National Building Code of Canada (NBC)**

### **NBC References**

CAN/ULC-S704-03 is not referenced in the NBC 2010.

CAN/ULC-S704-11 is referenced in Tables 5.10.1.1. and 9.23.17.2.A. and Sentence 9.25.2.2.(1) of Division B of the NBC 2010.