WALLTITE ® v.5 Reference Guide
Long Term Thermal Resistance (LTTR) Values

The long term thermal resistance data presented in this table has been derived from testing conducted according to the requirements of standards,

CAN/ULC-S705.1-15 and CAN/ULC-S705.1-18, Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Material Specification **and**

CAN/ULC-S770-09, Standard Test Method for Determination of Long Term Thermal Resistance of Closed-Cell Thermal Insulating Foams.

Standard CAN/ULC-S770-09 is referenced in standard CAN/ULC-S705.1-15 and CAN/ULC-S770-15* in CAN/ULC-S705.1-18 under subsection 2.1.

Furthermore, CAN/ULC-S705.1-15 and CAN/ULC-S705.1-18 stipulates the following:
"The measured LTTR values shall be the design thermal resistance values."

Standards CAN/ULC-S705.1-15 and CAN/ULC-S705-18 are referenced respectively in the National Building Code of Canada (NBC-2015 and NBC-2020) under the following items:

Section 1.3 Referenced Documents and Organizations
Sentence 1.3.1.2.(1) Applicable Editions (see Table 1.3.1.2.)

Section 5.9 Standards
Sentence 5.9.1.1.(1) Compliance with Applicable Standards (see Table 5.9.1.1.)

Section 9.25 Heat Transfer, Air Leakage and Condensation Control
Subsection 9.25.2 Thermal Insulation
Article 9.25.2.2. Insulation Materials (CAN/ULC-705.1)

Standards CAN/ULC-S770-09 and CAN/ULC-S770-15 are respectively referenced in both the 2015 and 2020 National Building Code of Canada under explanatory note 6 of Table A- 9.36.2.4.(1)-D) requiring cellular plastic foam insulation manufactured to retain a blowing agent other than air to test for LTTR and that the LTTR is to be used for energy calculations.

LTTR measurements were conducted by Element Canada Inc. of Mississauga (ON), an independent laboratory.

*The calculation for LTTR in CAN/ULC-S770-15 is the same as in CAN/ULC-S770-09

Additional information on the aging process of foam thermal insulations and the design thermal resistance of polyurethane foams is found in Use of Field-Applied Polyurethane Foams in Buildings, Construction Technology Update No. 32, IRC-NRC, M.T. Bomberg, M.K. Kumaran (December 1999).

Thermal Resistance		Thickness	
R-Value ($ft^2 \cdot hr \cdot ^oF/Btu$)	RSI ($m^2 \cdot ^oC/W$)	(inches)	(mm)
12	2.11	2.1	54
13	2.29	2.3	58
14	2.47	2.5	62
15	2.68	2.6	66
16	2.82	2.8	71
17	2.99	2.9	75
18	3.17	3.1	79
19	3.35	3.3	83
20	3.52	3.4	87
21	3.70	3.6	91
22	3.87	3.8	95
23	4.05	3.9	100
24	4.23	4.1	104
25	4.40	4.3	108
26	4.58	4.4	113
27	4.76	4.6	117
28	4.93	4.8	121
29	5.11	4.9	126
30	5.28	5.1	130
31	5.46	5.3	134
32	5.64	5.5	139
33	5.81	5.6	143
34	5.99	5.8	147
35	6.16	6.0	151
36	6.34	6.1	156
37	6.52	6.3	160
38	6.69	6.5	164
39	6.87	6.7	169
40	7.04	6.8	173
41	7.22	7.0	177
42	7.40	7.2	182
43	7.57	7.3	186
44	7.75	7.5	190
45	7.93	7.7	195
46	8.10	7.8	199
47	8.28	8.0	203
48	8.45	8.2	208
49	8.63	8.4	212
50	8.81	8.5	216
51	8.98	8.7	220
52	9.16	8.9	225
53	9.33	9.0	229
54	9.51	9.2	234
55	9.69	9.4	238
56	9.86	9.5	242
57	10.04	9.7	247
58	10.21	9.9	251
59	10.39	10.0	255
60	10.75	10.2	260

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