Thermal Performance Testing

Morrison Hershfield

"Quik-Therm Insulation Solutions Inc. has undertaken a program of full scale thermal performance testing(1) to ASTM C1363-05 Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus. Testing was performed by Architectural Testing Inc. This testing included direct comparison of assemblies with Solar-Dry and a Quik-Therm Connect product that is similar but without the "flutes". The tests confirmed that the introduction of the 3/16" flutes and 2"x3/4" wood furring had no appreciable effect on the thermal performance of the wall assembly, provided that the flutes are sealed at the top of each wall panel to eliminate any convection air current." *Quik-Therm Solar Dry Systems. Mark Lawton P.Eng.*

(1) as per National Building 2015 / 9.36.2.2.(4)(b)

Built Environments Inc.

"Computational methods utilized in this analysis have been benchmarked against independent hot box studies performed in accordance with ASTM C 1363. Methods employed in this analysis achieve thresholds that are generally less than ±2.5% of tested transmittance values, which are well below the ±8% threshold criterion." *Thermal Performance Report. Report No. 012019-1.*

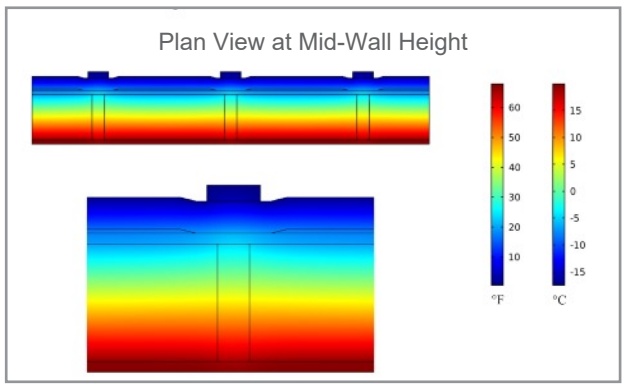
Thermal Performance Results

1.5" Solar Dry Insulation and R-20 Batt

Thermal Transmittance, U-factor	0.038 Btu/h·ft²·F
Overall Thermal Resistance (Air-to-Air)	26.0 (h·ft²·F)/Btu

4" Solar Dry Insulation and R-20 Batt

Thermal Transmittance, U-factor	0.028 Btu/h·ft²·F
Overall Thermal Resistance (Air-to-Air)	36.1 (h·ft²·F)/Btu



ASTM C1363 Test Results

Description of Test Samples Starting from Exterior	Overall Thermal Resistance (hr·ft²·F/Btu), R-value (R_u)
1" Quik-Therm, 7/16" OSB, 2x4 wood studs, empty cavity, ½" drywall	8.29
1" Quik-Therm, 7/16" OSB, 2x4 wood studs, R-11 fiberglass batts, ½" drywall	18.03
2" Quik-Therm (with flutes), 7/16" OSB, 2x4 wood studs, empty cavity, ½" drywall	13.2
Cement board siding, 2" Quik-Therm, 7/16" OSB, 2x4 wood studs, R-13 fiberglass batts, 6 mil. Poly vapour barrier, 3/8" drywall	23.1
2" Quik-Therm, 7/16" OSB, 2x6 wood studs, R-20 fiberglass batts, ½" drywall	28.3
5/8" OSB (in lieu of cladding), 3/8" rain screen, 3" Quik-Therm, 2x4 wood studs, R-12 fiberglass batts, ½" drywall	27.96

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"The use of effective R-values when evaluating the thermal resistance of an assembly is preferable to using the nominal R-value of the insulation alone. The benefits of this approach have been demonstrated in results obtained through laboratory tests such as ASTM C1363 and by data published in ASHRAE 90.1." *Use of Effective R-values for Evaluation of Insulated Assemblies. Mark Lawton P.Eng.*

Quik-Therm Effective Thermal Resistance

SDI Thickness	2x4 Wood Frame with R-12 Batt	2x6 Wood Frame with R-20 Batt	Wood Frame Empty Cavity	2x6 Steel Frame with R-20 Batt
1"	18	23	8	NA
1.5"	21	26	11	17
2"	23	28	13	19
3"	28	32	17	23
4"	32	36	21	27
5"	36	40	25	31
6"	40	44	29	35

Nominal R-Value Testing ASTM C-518 = R-4.2 | Steel Framing ASHRAE Table A3.13