



**Thermal Building Concepts**  
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**DATE:** July 2, 2009

**SUBJECT:** ASTM 1363-05 Thermal 3Ht Performance Testing – Thermal 3Ht

**Description**

Thermal 3Ht is a high-performance superior closed cell Type 1 Expanded Polystyrene (EPS) rigid insulation with factory laminated metallic-reflective facers, white facers or a combination of the two. Thermal 3Ht offers a long-term stable R-value, is an Energy Star qualified insulation and qualifies for LEED points.

**Testing**

Architectural Testing Inc., an accredited independent testing laboratory, has performed the ASTM 1363-05 Wall Assembly R-Value test on a series of concrete wall assemblies. Assemblies contain different thicknesses of Thermal 3Ht which were installed in a variety of locations through the wall assemblies.

Temperature Range: 70 °F / 21 C inside and 0 °F / -18 C outside.  
 Attached to the R-19 fiberglass insulation was a paper laminated vapor retarder.

Note\* When installed in conventional wall assemblies, R-19 fiberglass insulation’s in-service R-value is significantly lower than its stated of labeled R-value. For additional information:  
[www.ornl.gov/roofs+walls/wholewall/wallsys.html](http://www.ornl.gov/roofs+walls/wholewall/wallsys.html)

**TEST RESULTS**

Wall Construction Details	In-Service R-Value
4" concrete wall with ½" Thermal 3Ht adhered to the outside (cold side) of wall	<b>3.8</b>
4" concrete wall with 1" Thermal 3Ht adhered to the outside (cold side) of wall	<b>5.9</b>
½" sheetrock, <b>empty</b> 6" steel stud cavity, 1" Thermal 3Ht, 4" concrete wall	<b>10.0</b>
½" sheetrock, 6" steel stud cavity with R-19 fiberglass, 4" concrete wall	<b>11.6</b>
½" sheetrock, 6" steel stud cavity with R-19 fiberglass, 1" Thermal 3Ht, 4" concrete wall	<b>21.6</b>

**Additional Information & Observations:**

- The ASTM 1363-05 is a wall assembly R-value test (heat transfer via conduction). The test is conducted in total darkness; consequently, this testing method does not fully utilize the effectiveness of Thermal 3Ht’s metallic-reflective facers.
- When installed in a conventional concrete 6" steel stud framed wall, the in-service R-Value of R-19, 6" fiberglass insulation diminishes by approximately 40%. Conversely, when the components of a concrete steel stud framed wall assembly with R-19

fiberglass insulation are combined with 1" Thermal 3Ht the in-service R-Value of the wall assembly is improved from R-11.6 to R-21.6.

- The R-value for 1" Thermal 3Ht is approximately R-4.
- 1" of Thermal 3Ht adhered to a concrete wall between an empty 2 X 6 steel stud cavity and ½" sheetrock has an in-service R-value of R-10.
- Thermal 3Ht is a highly effect interior insulated vapor barrier.
- Additional LEED points may be achieved by utilizing Thermal 3Ht.