

A CASE STUDY

The Making of a Dryer Wall

Your Solution for a Dryer Wall in Hot Humid Climates!

For decades Builders and Building Science Experts alike have debated the issue of Permeable (Vapor Open) vs Non Permeable (Vapor Closed) when it comes to the design of WRB (Weather Resistant Barriers) and Air Barrier systems. Over the years, the market consensus in residential construction moved to the position that a permeable WRB is the solution in all climate zones. Is this right? Does it work? Does this one size fits all climate zones approach really provide the best solution, hot or cold, dry or humid? A lot of questions.

In addition, for 10+ years now innovative builders in Austin Texas have been using PolyWall Building Solutions Aluma Flash Plus self adhering non permeable membrane as their above grade WRB with great success. How could this be? Are their walls failing? This is a hot/humid climate, how can this be working?

From these field results in Austin Poly Wall Building Solutions knew it worked great! To be able to demonstrate that fact PolyWall commissioned the nationally recognized, third party engineering company: Positive Energy Corp. to conduct a WUFI (Heat & Moisture Transfer) analysis to simulate wall systems in 4 Hot/ Humid climates throughout the south. WUFI is considered the gold standard for predicting building system performance over time.

The wall system consisted of commonly used products seen in Climate Zones 1,2 and 3A which include Fiber Cement Siding, (The WRB in Question), OSB, Low Density Fiberglass Insulation, Interior Gypsum wall board and latex paint. The study used Miami Florida, Birmingham Alabama, Houston and Austin Texas for the simulations. The lone variable was the WRB. The non permeable (vapor closed) product was the self adhered Poly Wall Aluma Flash Plus membrane and the other was a popular brand of mechanically fastened (nailed or stapled) permeable (vapor open) sheet housewrap commonly seen on construction sites. The simulation covered a 10 year period starting 1/1/21 and concluding 12/31/30.

For the purposes of the results that follow, moisture was measured at the outer layer of the OSB and is presented as a % of Water Content (M-%). A 19% moisture content is considered the upper limit by many Building Science experts relative to moisture content of a given product or system. Simply put, above 19% is a fail, below 19% is a pass.

Results: Both Aluma Flash Plus non permeable (vapor closed) and the Housewrap permeable (vapor open) performed well in all 4 cities as noted by Positive Energy Corp.: ***“These results indicate that Poly-Walls A+ Wall System, designed with their Aluma Flash “Plus”, a vapor impermeable WRB is suitable to use in Climate Zones 1,2 and 3a (hot and humid) and will perform comparably to a wall assembly that utilizes a vapor permeable WRB”***- Positive Energy April 2020. Furthermore, in 3 of the 4 cities the Aluma Flash Plus system performed better than the Housewrap system in terms of delivering lower moisture content. See the following summary graphs.

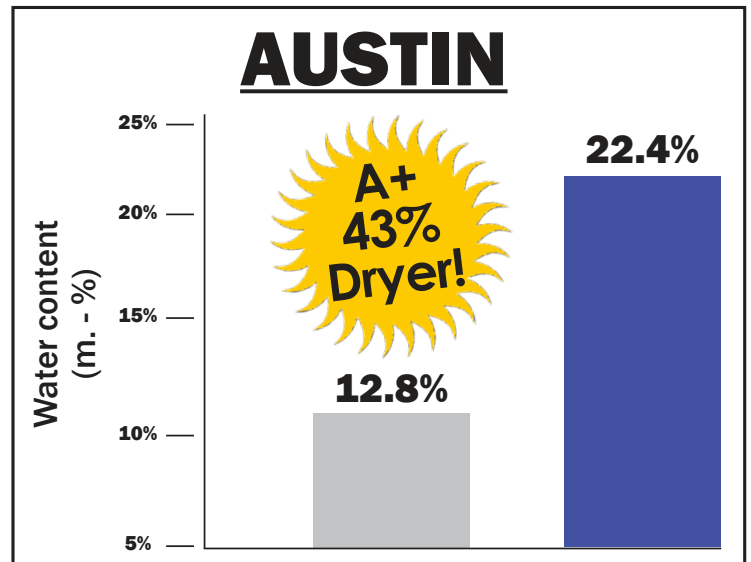
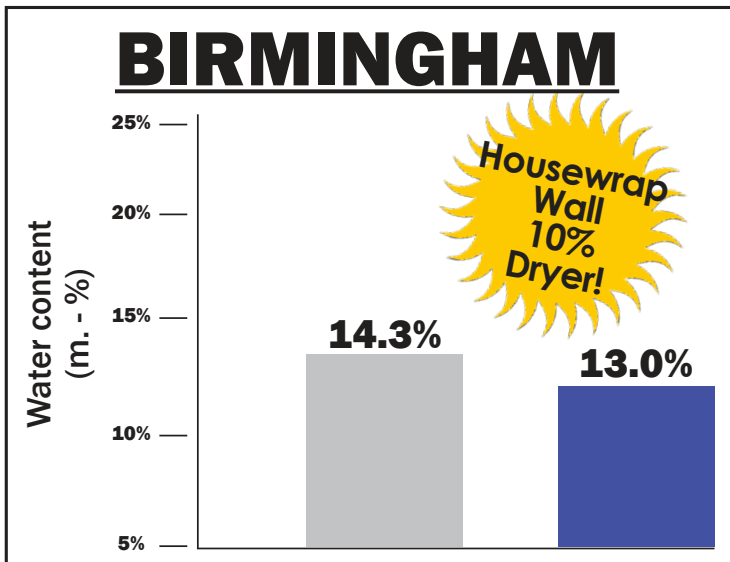
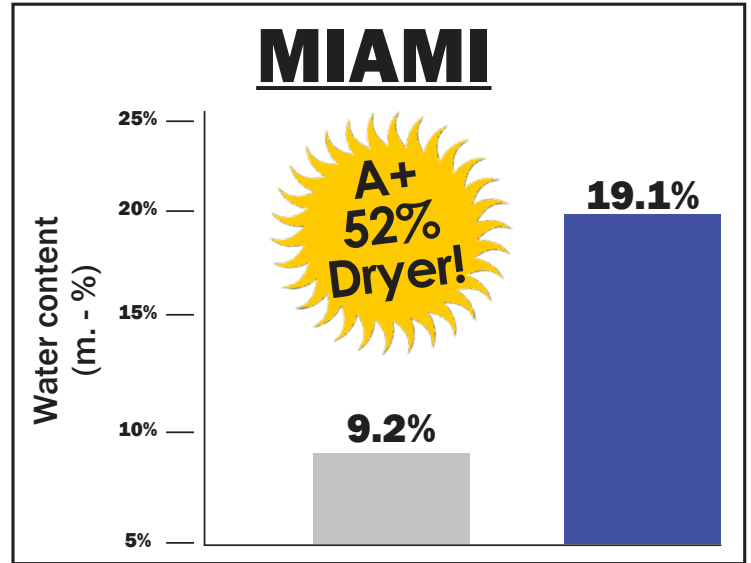
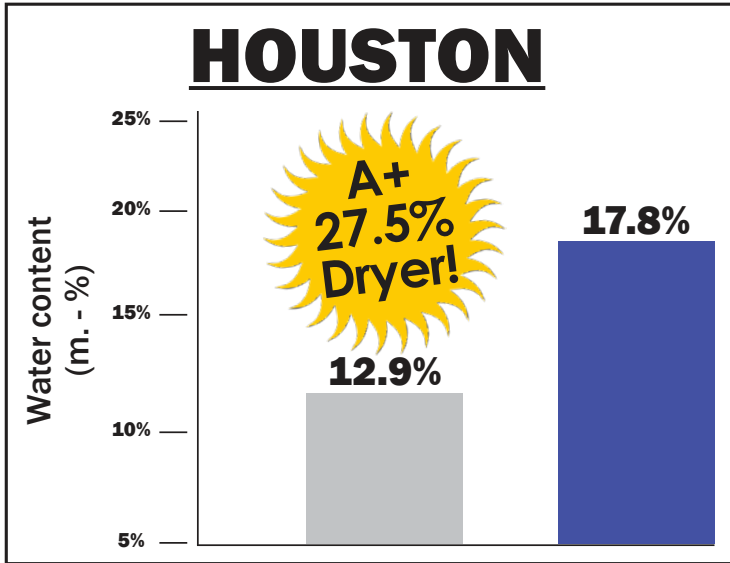


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* IBC TABLE 2304.7(1) ALLOWABLE SPANS FOR LUMBER FLOOR AND ROOF SHEATHING c. Maximum 19-percent moisture content.

* UBC TABLE 23-II-D-1—ALLOWABLE SPANS FOR LUMBER FLOOR AND ROOF SHEATHING 3. Maximum 19 percent moisture content.

Estimated Average Moisture Content over 10-Year Period (1/1/21 - 12/31/30)



 **Aluma Flash PLUS A+ Wall System**

 **Popular Mechanically Fastened Housewrap**

The above graphs were created from the actual study itself to summarize the findings. The numbers utilized were approximations of data on graph curves created over the ten year period.

Summary:

Both wall systems perform well in Climate Zones 1,2, and 3a!

The Poly Wall Building Solutions system utilizing Aluma Flash Plus provided for a dryer wall in 3 of the 4 cities. Additionally Aluma Flash Plus can be left exposed for up to 24 months making it the most UV resistant WRB available.

Please note: Installation of the A+ Wall System utilizing Aluma Flash Plus beyond Climate Zones 1, 2 and 3a should only be used with a properly designed HVAC System and Insulation package that have been determined by a properly conducted dew point analysis.



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