



Tyvek.

DUPONT™ TYVEK® THERMAWRAP™ R5.0

Heating Energy Savings: Residential Single Family Home Reside/Remodel Projects

When installed in accordance with DuPont Installation Guidelines, DuPont™ Tyvek® ThermaWrap™ R5.0 significantly contributes to home energy savings and improves comfort in the home. The addition of Tyvek® ThermaWrap™ R5.0 can also significantly reduce a retrofitted home's HERS rating. Older homes can often lack air barriers and other air sealing methods that are required by today's building codes. Not only does Tyvek® ThermaWrap™ R5.0 provide a continuous R-value of 5.0 to the exterior of the home, it also serves as an air barrier which can help to further reduce energy usage. Energy modeling was completed to simulate a reside/remodel project using a REM/Rate™ analysis, which is the standard software used for HERS ratings. Cities representative of two climate zones were modeled. Results were generated for two typical types of single family residential dwellings.

Modeling results predicted heating energy usage savings of as much as 23% versus the reference home when DuPont™ Tyvek® ThermaWrap™ R5.0 is used in reside/remodel projects. Additionally, the modeling showed HERS Index reductions of 6-14 points after Tyvek® ThermaWrap™ R5.0 was added. Individual savings will depend upon many factors, including but not limited to: climate zone, house size, number of windows, energy use habits, etc.



Reference Home: Home built to standard building practices in 1984	Percentage reduction of annual heating energy when Tyvek® ThermaWrap™ R5.0 is added to the wall assembly (compared to reference home)		Percentage reduction of annual heating energy when Tyvek® ThermaWrap™ R5.0 is added to the wall assembly <i>and</i> air leakage is reduced (compared to reference home)	
	Minneapolis, MN Climate Zone 6A	Roanoke, VA Climate Zone 4A	Minneapolis, MN Climate Zone 6A	Roanoke, VA Climate Zone 4A
2 Story Single Family Detached Home (2500 ft ² - US Average)	14%	16%	23%	22%
1 Story Single Family Detached Home (1700 ft ² small home)	13%	17%	21%	23%



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The following assumptions were used for the homes modeled in each city:

- Original siding removed
- New vinyl cladding installed
- 1/2" drywall on the interior of the wall
- 2 x 4 construction with 16" on center stud framing
- R-11 cavity insulation (Type III installation)
- Heating energy representative of the energy used in that city, i.e. electric, oil, etc.

The reference home in the analysis was based on a home constructed to approximate 1984 construction practices with 9 air changes per hour (ACH) @ 50 Pa. Base home specifications can vary widely for retrofit analysis of 1980's era homes due to building codes not addressing energy efficiency measures during that period.

Air leakage reduction in the modeling was assumed to be reduced from 9 ACH @ 50 Pa to 7 ACH @ 50 Pa when Tyvek® ThermaWrap™ R5.0 was added to the assembly. This corresponds to a 22% reduction in air leakage.

Actual air leakage reductions will vary when installing Tyvek® ThermaWrap™ R5.0. Installing Tyvek® ThermaWrap™ R5.0 will create an air barrier for the exterior walls of the home, but other measures should be taken to minimize air leakage in other parts of the home such as in the attic space.

Cooling energy modeling was also completed but is not referenced in this document. Cooling savings can be misleading and they are widely dependent on the types of windows, orientation, exterior surface colors, lights, appliance loads, occupants, internal mass, and air change rates.

The modeling results presented in this document are a predictor of heating energy savings and HERS rating reductions based on the REM/Rate™ software analysis of the specific cities, the specific home types, the stated conditions, and the stated assumptions.

Actual energy savings are subjective and can vary widely due to factors such as climate zone, house size, number of windows, HVAC equipment, energy use habits, etc.

Actual HERS Rating reductions are subjective and can vary widely due to factors such as the degree of air leakage reduction achieved when installing an air barrier, the climate zone, the house size, the number of windows, etc.

**For more information on DuPont™ Tyvek®
ThermaWrap™ R5.0, please call 1-800-44-TYVEK or
visit www.thermawrapr5.tyvek.com**