



Tyvek.

DUPONT™ TYVEK® THERMAWRAP® R5.0

Energy Savings: New Construction Homes

When installed in accordance with DuPont Installation Guidelines, 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 new home's HERS Index Score. 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 for new construction homes using a REM/Rate™ analysis, which is the standard software used for the HERS Index. Three cities representative of three climate zones were modeled. Results were generated for three typical types of single family residential dwellings.

Modeling results predicted heating energy usage savings of as much as 29% versus the reference home when Tyvek® ThermaWrap® R5.0 is used in the wall assembly in new construction applications. Additionally, the modeling showed HERS Index reductions of 2-9 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: New construction home 2009 IECC compliant, 5 ACH @ 50Pa	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 air leakage is reduced</i> (compared to reference home)		
	Minneapolis Climate Zone 6A	Roanoke, VA Climate Zone 4A	Oklahoma City Climate Zone 3A	Minneapolis Climate Zone 6A	Roanoke, VA Climate Zone 4A	Oklahoma City Climate Zone 3A
2 Story Single Family Detached Home (2500 ft ² - US Average)	13%	20%	13%	24%	26%	20%
1 Story Single Family Detached Home (1700 ft ² small home)	12%	19%	11%	22%	25%	17%
2 Story Townhome (1500 ft ² center unit)	9%	17%	14%	26%	29%	26%



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Reference Home: New construction home 2009 IECC compliant, 5 ACH @ 50Pa	HERS index reduction when Tyvek® ThermaWrap® R5.0 is added to the wall assembly (compared to reference home)			HERS index reduction when Tyvek® ThermaWrap® R5.0 is added to the wall assembly <i>and air leakage is reduced</i> (compared to reference home)		
	Minneapolis Climate Zone 6A	Roanoke, VA Climate Zone 4A	Oklahoma City Climate Zone 3A	Minneapolis Climate Zone 6A	Roanoke, VA Climate Zone 4A	Oklahoma City Climate Zone 3A
2 Story Single Family Detached Home (2500 ft ² - US Average)	5	5	5	9	7	7
1 Story Single Family Detached Home (1700 ft ² small home)	3	3	3	7	5	4
2 Story Townhome (1500 ft ² center unit)	2	2	3	5	4	5

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

Same cladding type

- 16" on center stud configuration
- ½" drywall on the interior of the wall
- 2x6 construction in Minneapolis with R21 cavity insulation
- 2x4 construction in Roanoke and Oklahoma City with R13 cavity insulation
- 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 2009 IECC compliant home with 5.0 air changes per hour (ACH) @ 50 Pa. 2009 IECC chosen as baseline due to code adoption across the United States at the time the modeling was completed. 5.0 ACH chosen as the baseline due to real world data showing that 5.0 ACH was achievable for a home built to 2009 IECC standards, even though the 2009 IECC requirement was 7.0 ACH.

Air leakage reduction in the modeling was assumed to be reduced from 5.0 ACH @ 50 Pa to 3.0 ACH @ 50 Pa when Tyvek® ThermaWrap® R5.0 was added to the assembly.

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

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 Index 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 Index 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.