



Creating more  
sustainable buildings with  
DuPont Weatherization Systems



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**Tyvek.**

## Leadership in sustainability for today's construction

The need for truly sustainable options for 21<sup>st</sup> century life remains one of the most critical challenges facing the global community. As a market-driven science company, DuPont is committed to developing sustainable solutions essential to a better, safer, healthier life for people everywhere. We continue to create products and processes that pass rigorous criteria for reducing the use of energy, water and materials. In residential and commercial construction, innovative DuPont Weatherization System products can play an important role in increasing the overall sustainability of homes and buildings.



A complete system of products that work together to seal the building envelope, DuPont Weatherization Systems can help increase energy efficiency, protect building structures from water damage and provide improved comfort and indoor air quality for occupants. The full system also features low-VOC materials, which helps reduce the overall indoor environmental impact of structures. DuPont Weatherization Systems help building owners save energy which helps to reduce the overall carbon footprint of homes or buildings and ultimately lowers the cost of building operation.

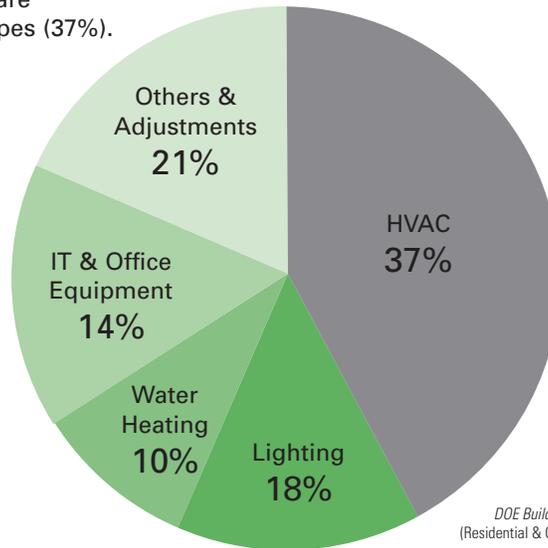
# Increase energy efficiency

The energy consumed during building operation accounts for the major share of energy consumption over the life of a building—making energy efficiency one of the most critical components in reducing the environmental impact of homes and commercial spaces. By helping to increase the airtightness of the building envelope, DuPont Weatherization System products can have a positive impact on energy efficiency in three key ways.

## 1. Helps contribute to ventilation effectiveness

Air leakage can have a significant impact on the effectiveness of HVAC systems. By increasing the airtightness of the building envelope, DuPont Weatherization System products can help increase energy efficiency in one of a structure's highest energy use systems.

HVAC represents the largest share of energy use by all building types (37%).

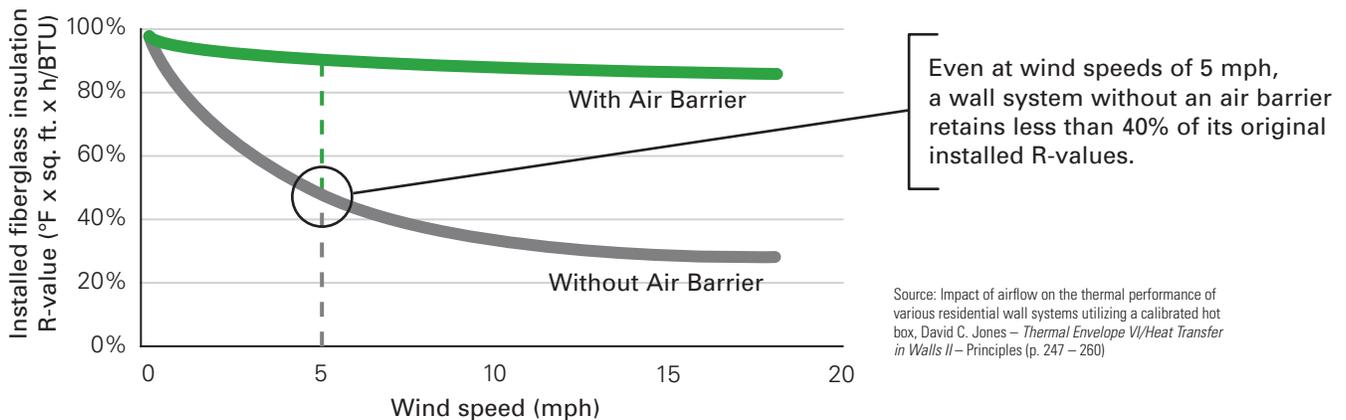


Source: 2007 US data, DOE Buildings Energy Databook (Residential & Commercial combined)

## 2. Helps protect against loss of R-value due to wind washing

Properly installed DuPont Weatherization System products create an air barrier system that reduces unwanted air flow and helps maintain installed R-values of insulation.

Reducing air flow through the wall and between transitions helps maintain thermal values (insulation R-value).

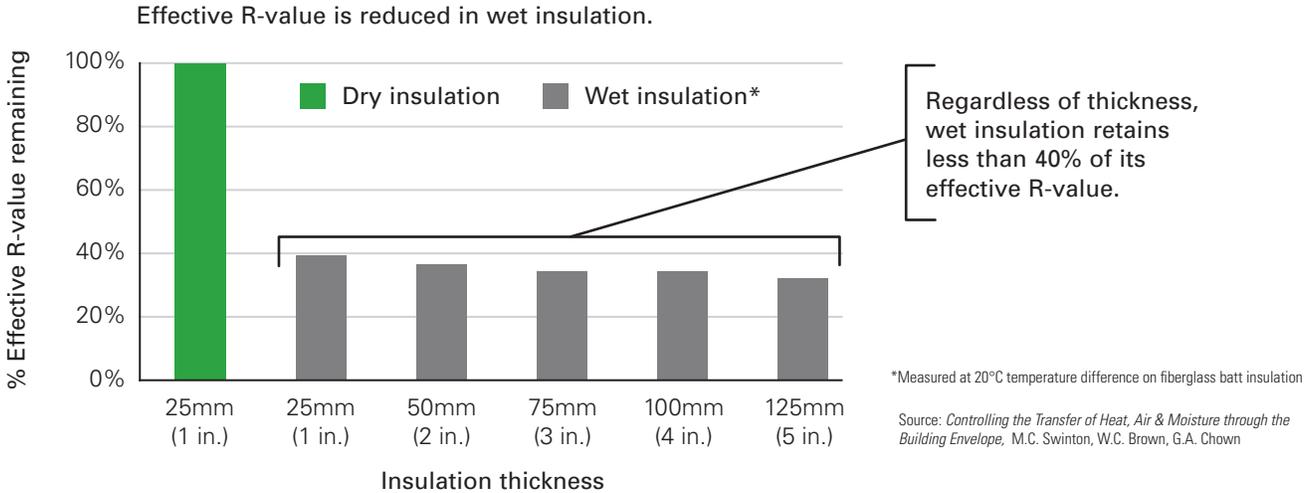


Even at wind speeds of 5 mph, a wall system without an air barrier retains less than 40% of its original installed R-values.

Source: Impact of airflow on the thermal performance of various residential wall systems utilizing a calibrated hot box, David C. Jones – *Thermal Envelope VI/Heat Transfer in Walls II – Principles* (p. 247 – 260)

### 3. Helps protect against loss of R-value due to wetting of insulation

Wet conditions can dramatically reduce the effectiveness of insulation, regardless of its thickness. DuPont Weatherization System products help protect structures against bulk water intrusion and air-transported moisture, two factors that not only cause wet insulation, but can also lead to wood damage or steel corrosion as the water accumulates in the wall system.



## Sample Energy Savings

### Average House

(2,500 sq. ft., 2-story) – Chicago climate\*

An average house that is airtight uses less primary energy, resulting in lower CO<sub>2</sub> emissions:

Energy saved is equivalent to burning 1.5 tons of coal

CO<sub>2</sub> emission reduction is equivalent to taking 1.2 cars per year off the road

Within 5 months, DuPont™ Tyvek® weather barrier system will provide an energy savings equal to the energy used in producing the material, with a net benefit for the rest of its product life

\*LCA (Life Cycle Analysis) based on the following assumptions and using the Energy-10 simulation model: Location = Chicago, IL. Two-story, 2,500 sq. ft. house. Reference house had an assumed air infiltration rate as per default value in Energy-10. The house with DuPont™ Tyvek® had a 20% reduction in air leakage. Reduced air infiltration was assumed to be achieved due to DuPont™ Tyvek® HomeWrap™ with a basis weight of 1.8 oz./sq. ft.



## Improve indoor air quality

DuPont Weatherization System products can help improve indoor air quality by reducing uncontrolled air leakage which helps the HVAC system to maintain comfortable temperatures. They also help to reduce the formation of mold and mildew by preventing bulk water intrusion into the wall system. In addition, the weatherization barriers help prevent external contaminants from entering the home or building, which also helps to meet garage separation recommendations from green rating systems for residential construction.

**“In mechanically ventilated buildings, a tight envelope\* is desired, as... uncontrolled and unconditioned outdoor air intake has several potentially negative consequences—thermal comfort problems, material degradation and moisture problems that can lead to microbial growth and serious indoor air quality problems.”**

\*ASHRAE 189 Sustainability Standard (under development) defines an airtight envelope assembly as having an air leakage rate  $\leq 0.04$  cfm/sq. ft.

Source: ASHRAE JOURNAL, March 1999; *Myths About Building Envelopes*, Andrew K. Persily, Ph.D., Member ASHRAE

## Increase durability of the building envelope

DuPont Weatherization System products' unique balance of air and water hold-out, combined with superior vapor permeability, help contribute to better moisture management within the wall system. By helping to prevent bulk moisture from entering wall systems and allowing moisture vapor to escape, DuPont Weatherization System products help keep walls drier. Dry walls can help extend the life of the structure by reducing the risk of water damage or corrosion to structural materials.

# A commitment to sustainability through building innovation

DuPont is at the forefront of the search for sustainable building solutions that improve comfort, enhance life around the world and have reduced environmental impact.

## Sustainable Materials

### DuPont™ Sorona® Renewably Sourced™ Materials

Sustainable options for textiles and carpeting  
[sorona.dupont.com](http://sorona.dupont.com)

### DuPont™ Corian® solid surface Terra Collection & DuPont™ Zodiaq® quartz surface Terra Collection

New collections made with recycled materials  
[surfaces.dupont.com](http://surfaces.dupont.com)

## Sustainable Building Systems

### DuPont Refrigerants

Cooling solutions with zero ozone depletion potential  
[refrigerants.dupont.com](http://refrigerants.dupont.com)

### DuPont Fire Extinguishants

Clean agent fire suppression solutions  
[cleanagents.dupont.com](http://cleanagents.dupont.com)

## DuPont is a proud participant in leading sustainability initiatives



World Business Council for Sustainable Development



## For more information

To learn more about DuPont Weatherization Systems, or to set up a meeting with a DuPont™ Tyvek® Specialist, please call or visit:  
[1-800-44-Tyvek](tel:1-800-44-Tyvek) | [weatherizationsystems.com](http://weatherizationsystems.com) | [sustainability.dupont.com](http://sustainability.dupont.com)



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