Increase Energy Efficiency With STYROFOAM™ Brand CAVITYMATE™ Products

PROVEN ENERGY-EFFICIENT SOLUTIONS . UNITED STATES/CANADA

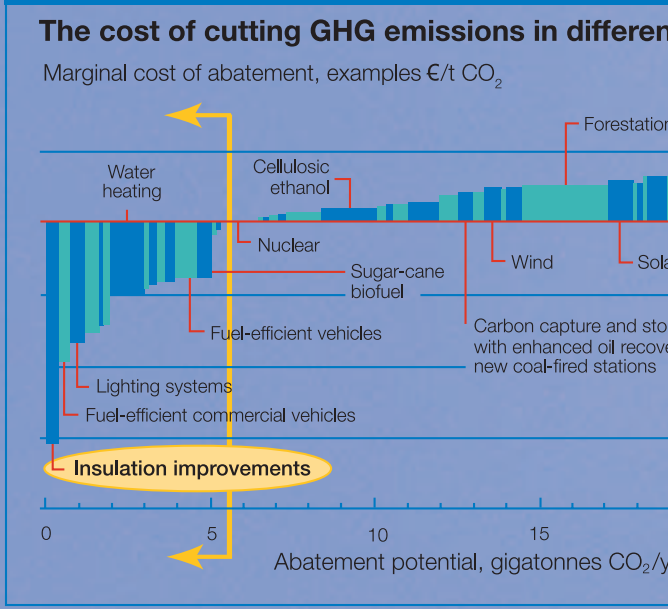
GET MORE

Setting the Curve

A wide range of solutions are under consideration to reduce carbon use and reverse its impact on our planet. At one end of the spectrum, they include measures such as retrofitting power plants to operate on alternative fuels and enhancing oil recovery and carbon capture methods. At the other end of the spectrum are simpler measures.

Some ways of reducing carbon are easier and less costly than others. McKinsey & Company has quantified which ones would be worth undertaking at what price (see figure below). Results of this research are consistent with what Dow and the building industry have known for many years: **Building insulation is one of the best ways to reduce energy consumption and greenhouse gas (GHG) emissions, save money and improve the bottom line.**

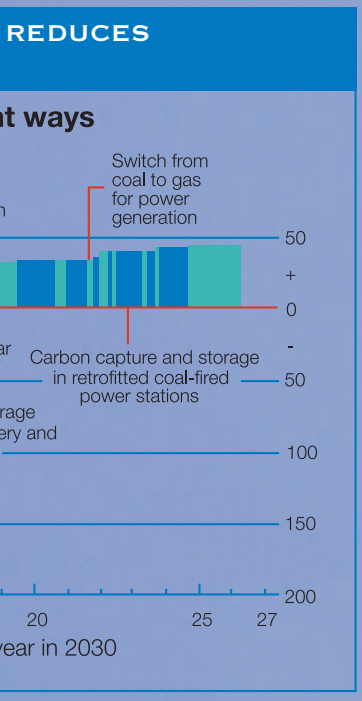
BUILDING INSULATION COST-EFFECTIVELY GREENHOUSE GAS EMISSIONS GLOBALLY



Source: Study conducted by McKinsey & Company, and Vattenfall

McKinsey & Company studied the costs of implementing various GHG abatement options. "Insulation improvements" is among the more economical measures at the left of the arrows that provide the fastest payback and should be implemented before doing any of the other measures. ***And as the graph shows, "insulation improvements" is by far the best measure in terms of a negative marginal cost.*** *This graph represents only a few of the abatement options researched. For the graph in its entirety, visit www.mckinseyquarterly.com/A_cost_curve_for_greenhouse_gas_reduction_1911.*

Building insulation is one of the best ways to reduce energy consumption and greenhouse gas emissions, save money and improve the bottom line.



Dow Building Solutions has embraced the challenge of Architecture 2030 to achieve carbon neutrality in new buildings by 2030.

Learn more about Architecture 2030 at www.architecture2030.org

The building sector accounts for 48 percent of all U.S. energy consumption and greenhouse gas emissions annually.

www.wbcsd.org

ENT AND THE BOTTOM LINE WITH IMPROVED ENERGY EFFICIENCY.

The Lasting Mark of Efficiency

The mark you make when you build lasts a long time … longer than a lifetime, in many cases. So it's important today to consider tomorrow's building envelope needs, even beyond beauty and comfort. Issues like increased energy efficiency, reduced greenhouse gas emissions, reusable materials and "green" resources now define the competitive edge needed to leave a positive mark with every construction project.

For every million buildings insulated with STYROFOAM™ Brand XPS Foam Insulation, energy consumption is reduced by over one billion barrels of oil during the average life of the structures.

Get more energy efficiency with Dow's extensive portfolio of products to help meet your needs for block-backed and steel stud wall construction:

- STYROFOAM™ Brand CAVITYMATE™ Insulation
- STYROFOAM™ Brand CAVITYMATE™ Plus* Insulation
- STYROFOAM™ Brand CAVITYMATE™ Ultra* Insulation
- STYROFOAM™ Brand CAVITYMATE™ SC Insulation

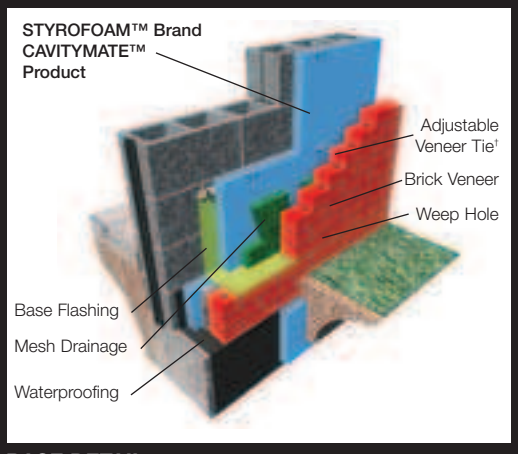
Dow Building Solutions offers a family of proven insulating products that help assure the mark you leave is lasting and environmentally responsible. Moisture-resistant, durable, energy-efficient and reusable in many applications, STYROFOAM™ Brand CAVITYMATE™ Extruded Polystyrene (XPS) Foam Insulation products are specially designed for use in wet cavity wall environments.

One square foot of properly installed STYROFOAM™ Brand XPS Foam Insulation (one inch thick) can avert over one ton of CO_2 emissions over the average life of a building.

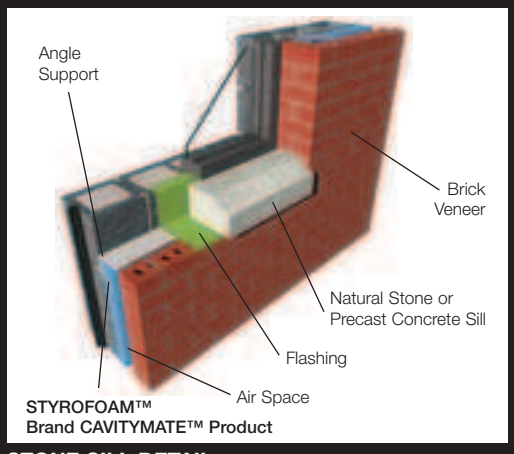
Respected Around the Block

For more than 60 years, the STYROFOAM™ brand has been the first name in rigid foam insulation for block-backed cavity wall construction, delivering high thermal performance, moisture resistance and durability. Manufactured through a proprietary process by Dow, the closed-cell structure of the insulation boards helps resist water and water vapor to deliver long-term R-value or RSI**, and can serve as an air barrier when the joints are properly sealed.

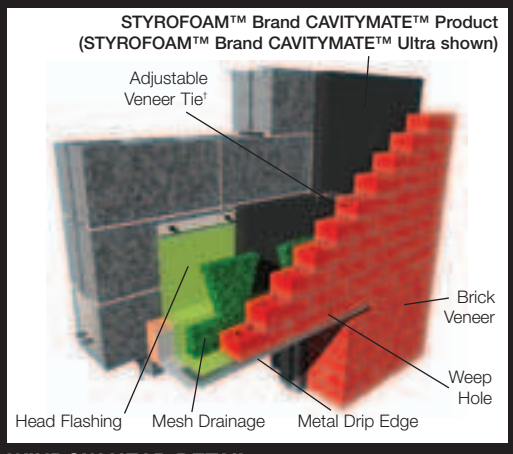
Architects, builders, building owners and masonry experts have long known that the moisture-resistant structure of STYROFOAM™ Brand XPS Foam Insulation products is a perfect choice for wet cavity wall protection. Dow makes STYROFOAM™ Brand CAVITYMATE™ Insulation products conveniently sized for a snug fit – without cutting – between wall ties in block-backed cavity walls. This unique size makes the insulation boards easy to install, saving time, labor and materials.



BASE DETAIL

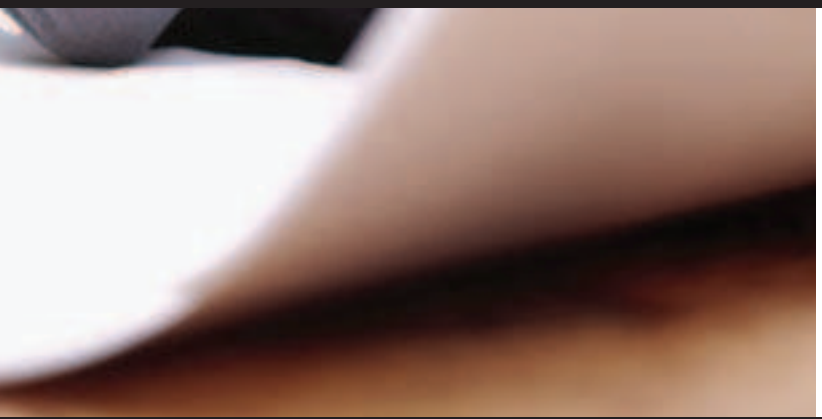


STONE SILL DETAIL



WINDOW HEAD DETAIL

Isometric drawings courtesy of MASONPRO, Inc.



While STYROFOAM™ Brand CAVITYMATE™ Insulation products have been time-tested and preferred for many years, Dow is committed to continuously improve its products and to help you earn respect around the block as you address new demands in this competitive business.

®™ Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow
** R means resistance to heat flow. The higher the R-value or RSI, the greater the insulating power. RSI (R-Value Système International) is the metric equivalent of R-value.
† Multiple tie options may be used, but ties must be designed specifically for rigid foam sheathing.

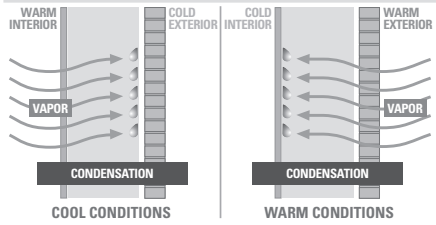
STYROFOAM™ Brand CAVITYMATE™ Insulation – First on the block for energy-efficient performance in block-backed construction.

Blocking out Moisture

Block-backed cavity wall construction is a smart and effective choice, offering cost and quality control advantages. But this construction method doesn't prevent water and condensation from entering the cavity wall. And, unfortunately, moisture robs a wall assembly of R-value (RSI).

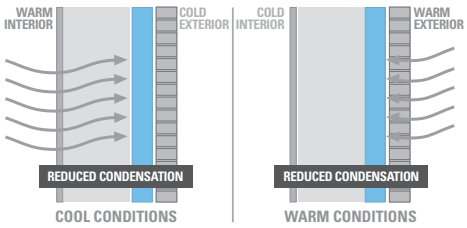
Dealing with the inevitable moisture in a cavity wall becomes critical in retaining the thermal performance of the insulation for the life of the building. Installed on the exterior of block-backed cavity walls, STYROFOAM™ Brand CAVITYMATE™ Insulation products help moderate the cavity temperature, reducing the potential for condensation and retaining high insulation value.

UNINSULATED BLOCK VS. STYROFOAM™ BRAND CAVITYMATE™ INSULATION



If either surface of the wall is colder than the dew point temperature, water vapor in the wall cavity will condense into liquid water.

STYROFOAM™ BRAND CAVITYMATE™ INSULATION PRODUCTS

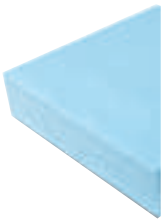


A layer of rigid foam insulation helps reduce condensation.

All STYROFOAM™ Brand CAVITYMATE™ Insulation products are exceptionally moisture resistant.

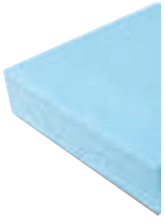
STYROFOAM™ Brand CAVITYMATE™ Products for Block-Backed Walls

SPECIAL 16" WIDTH (400 MM AND 600 MM IN CANADA) CONVENIENTLY FITS BETWEEN WALL TIES



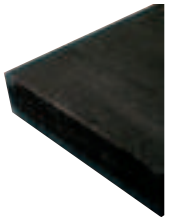
STYROFOAM™ Brand CAVITYMATE™ Insulation

- Minimum compressive strength of 15 psi (25 psi [170 kPa] in Canada)
- R-value of 5.0 (RSI 0.87) per 1" (25 mm)
- Square edge (and shiplap edge in Canada)(1)



STYROFOAM™ Brand CAVITYMATE™ Plus Insulation(2)

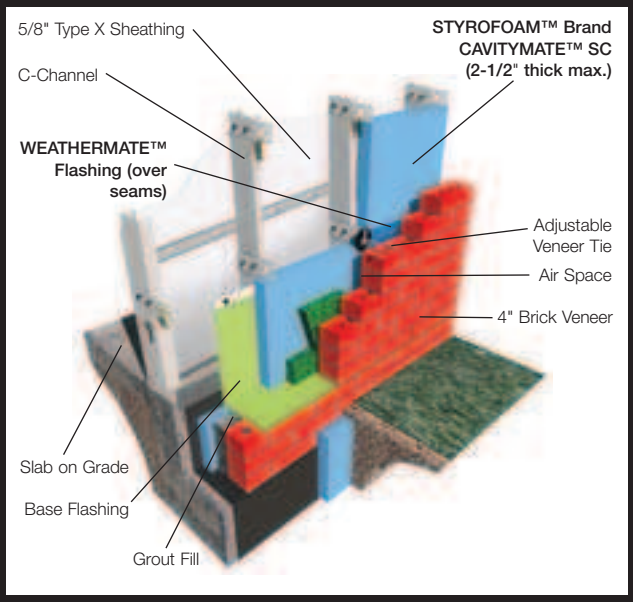
- Minimum compressive strength of 25 psi
- R-value of 5.0 at 1"
- Square edge



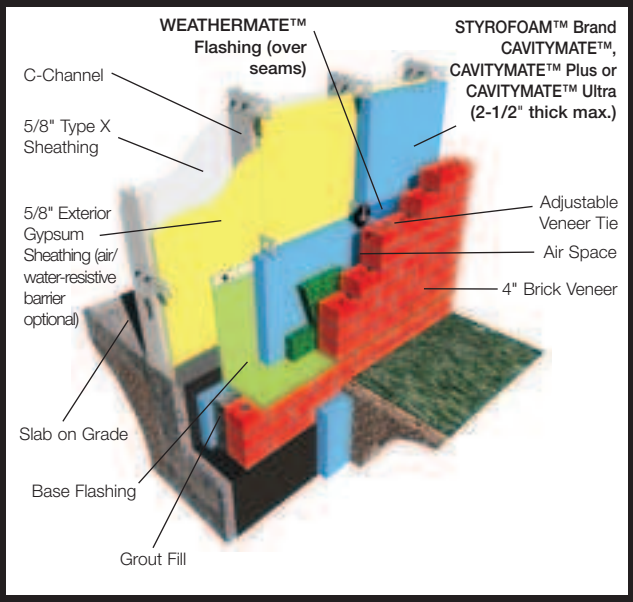
STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation

- Distinct carbon black technology absorbs infrared radiation
- R-value of 5.6 (RSI 0.97) per 1" (25 mm), the highest of all STYROFOAM™ Brand XPS Foam Insulation products – allows for thinner wall profile
- Minimum compressive strength of 25 psi (170 kPa)
- Square edge and shiplap edge, one of the most thermally efficient edge treatments(1)

(1) Edge treatments are available depending on geographic location and product thickness. Check with your Dow sales representative for complete details.
(2) STYROFOAM™ Brand CAVITYMATE™ Plus Insulation is available in the U.S. only.



DESIGN A: NFPA 285 Approved Assembly (Non-Hourly Rated System)



DESIGN B: NFPA 285 Approved Assembly and UL Hourly Rated Wall Design No. V454 – Bearing Wall Rating 1 Hour

Isometric drawings courtesy of MASONPRO, Inc.

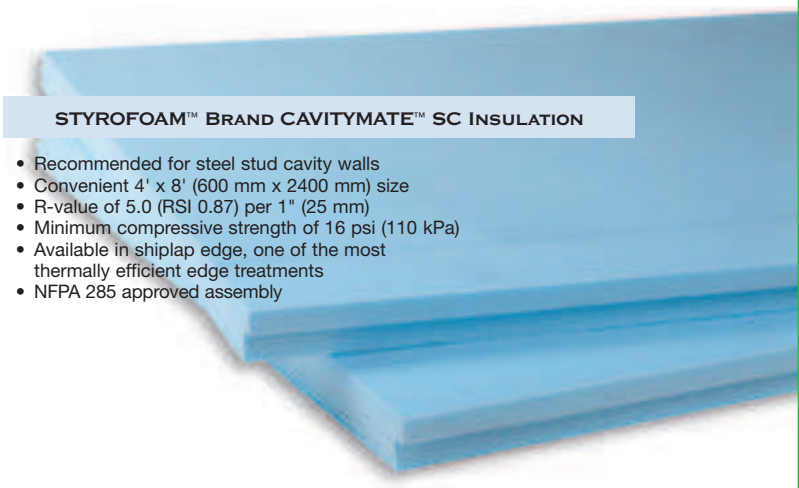
Designed for Steel Studs

Designs A and B achieve NFPA 285 approval (requires 1" [25 mm] thick mineral wool in all fenestration headings).

STYROFOAM™ Brand CAVITYMATE™ SC Insulation, as seen in Design A, provides the option of eliminating gypsum on the exterior, allowing for a thinner wall profile and helping lower wall assembly and installation costs.

In Design B, the removal of cavity insulation and placement of continuous insulation on the exterior of the studs moves the wall dew point to the exterior of the insulation.

Also, replacing fiberglass cavity insulation with STYROFOAM™ Brand CAVITYMATE™ Insulation, outboard of the steel studs, results in higher effective wall R-values (see Table 1).



STYROFOAM™ Brand CAVITYMATE™ SC Insulation

- Recommended for steel stud cavity walls
- Convenient 4' x 8' (600 mm x 2400 mm) size
- R-value of 5.0 (RSI 0.87) per 1" (25 mm)
- Minimum compressive strength of 16 psi (110 kPa)
- Available in shiplap edge, one of the most thermally efficient edge treatments
- NFPA 285 approved assembly

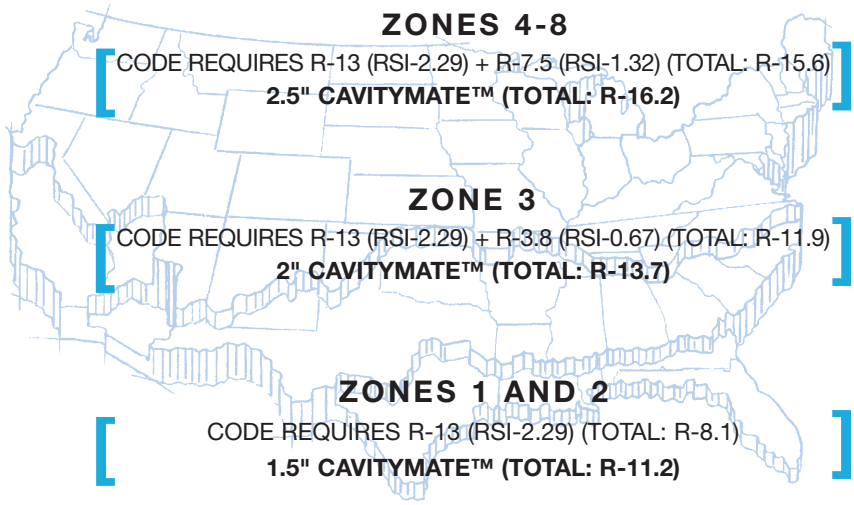
TABLE 1: Effective R-Value (RSI)[1] Comparison of Stud Cavity Insulation (Fiberglass) Alone vs. Wall Assembly With STYROFOAM™ Brand CAVITYMATE™ Insulation Product

Nominal Framing Depth and Spacing	Fiberglass Cavity Insulation R-Value (RSI)	Effective R-Value (RSI) of Fiberglass Stud Cavity Insulation and Framing Based on ASHRAE 90.1 Correction Factor[2]	Effective Assembly R-Value (RSI) With 1.5" (38 mm) STYROFOAM™ CAVITYMATE™ and Empty Cavity[3]	Effective Assembly R-Value (RSI) With 2" (50 mm) STYROFOAM™ CAVITYMATE™ and Empty Cavity[3]	Effective Assembly R-Value (RSI) With 2.5" (63 mm) STYROFOAM™ CAVITYMATE™ and Empty Cavity[3]
4" @ 16" o.c.	11.0 (1.94)	5.5 (0.97)	11.2 (1.97)	13.7 (2.41)	16.2 (2.85)
	13.0 (2.29)	6.0 (1.06)	11.2 (1.97)	13.7 (2.41)	16.2 (2.85)
	15.0 (2.64)	6.4 (1.13)	11.2 (1.97)	13.7 (2.41)	16.2 (2.85)
4" @ 24" o.c.	11.0 (1.94)	6.6 (1.16)	11.2 (1.97)	13.8 (2.43)	16.3 (2.87)
	13.0 (2.29)	7.2 (1.27)	11.2 (1.97)	13.8 (2.43)	16.3 (2.87)
	15.0 (2.64)	7.8 (1.37)	11.2 (1.97)	13.8 (2.43)	16.3 (2.87)
6" @ 16" o.c.	19.0 (3.35)	7.1 (1.25)	11.2 (1.97)	13.7 (2.41)	16.2 (2.85)
	21.0 (3.70)	7.4 (1.30)	11.2 (1.97)	13.7 (2.41)	16.2 (2.85)
6" @ 24" o.c.	19.0 (3.35)	8.6 (1.51)	11.3 (1.99)	13.8 (2.43)	16.3 (2.87)
	21.0 (3.70)	9.0 (1.58)	11.3 (1.99)	13.8 (2.43)	16.3 (2.87)

(1) R-value (RSI) is determined by ASTM C518.
(2) Effective R-value (RSI) calculations based on ASHRAE 90.1-2007 Table A9.2B for effective R-value of batt insulation and cavity.
All cases have 1/2" (13 mm) interior gypsum with R-0.45 and no air films or exterior finishes.
(3) The ORNL Modified Zone Calculator was used to calculate effective R-values. Interior and exterior gypsum, as well as interior and exterior winter air films, are included in calculations.

Are You in the Zone?

In most U.S. climate zones, updated insulation requirements for steel-framed, above-grade walls call for continuous insulation per ASHRAE 90.1-2007. STYROFOAM™ Brand CAVITYMATE™ Insulation products can effectively fulfill these requirements.



ZONES 4-8

CODE REQUIRES R-13 (RSI-2.29) + R-7.5 (RSI-1.32) (TOTAL: R-15.6)
2.5" CAVITYMATE™ (TOTAL: R-16.2)

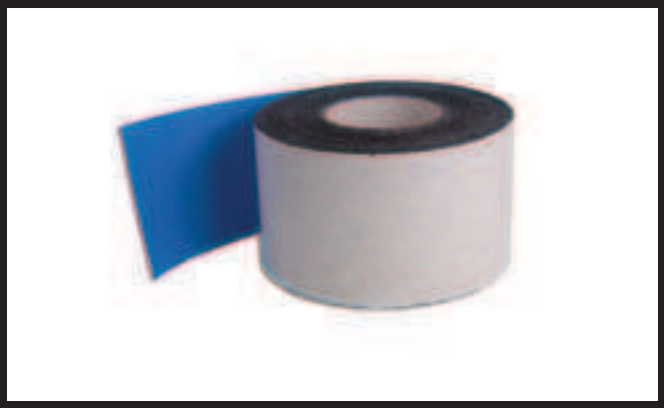
ZONE 3

CODE REQUIRES R-13 (RSI-2.29) + R-3.8 (RSI-0.67) (TOTAL: R-11.9)
2" CAVITYMATE™ (TOTAL: R-13.7)

ZONES 1 AND 2

CODE REQUIRES R-13 (RSI-2.29) (TOTAL: R-8.1)
1.5" CAVITYMATE™ (TOTAL: R-11.2)

Minimum R-values according to ASHRAE prescriptive continuous insulation requirements.
ASHRAE 90.1-2007 Energy Standard for Buildings Except Low-Rise Residential Buildings
U.S. Department of Energy Climate Zones



A Strong Finish

For a tear-resistant seal that resists water intrusion, Dow recommends taping seams of STYROFOAM™ Brand CAVITYMATE™ Insulation products with WEATHERMATE™ Flashing. It combines a BLUE™, high-density polyethylene (HDPE) film facer with a proprietary butyl rubber adhesive that forms a strong mechanical and chemical bond to STYROFOAM™ Brand CAVITYMATE™ Insulation products.

Stack up the Benefits

You and your customers will appreciate the many benefits of STYROFOAM™ Brand CAVITYMATE™ Insulation products.

CODE COMPLIANCE. Meet IBC requirements for foam plastic insulation, the ASHRAE 90.1-2007 continuous insulation prescriptive requirements and more.

MOISTURE RESISTANCE. Resist moisture in all forms and help prevent moisture (condensation) from forming in cavity walls.

INSULATING POWER. Achieve high R-value (RSI) with little loss of insulating value over the long term; STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation has the highest R-value of all STYROFOAM™ Brand XPS Foam Insulation products.

COMPRESSIVE STRENGTH. Stand up to job site handling with minimum compressive strengths from 15 psi to 25 psi (110 kPa to 170 kPa), depending on product.

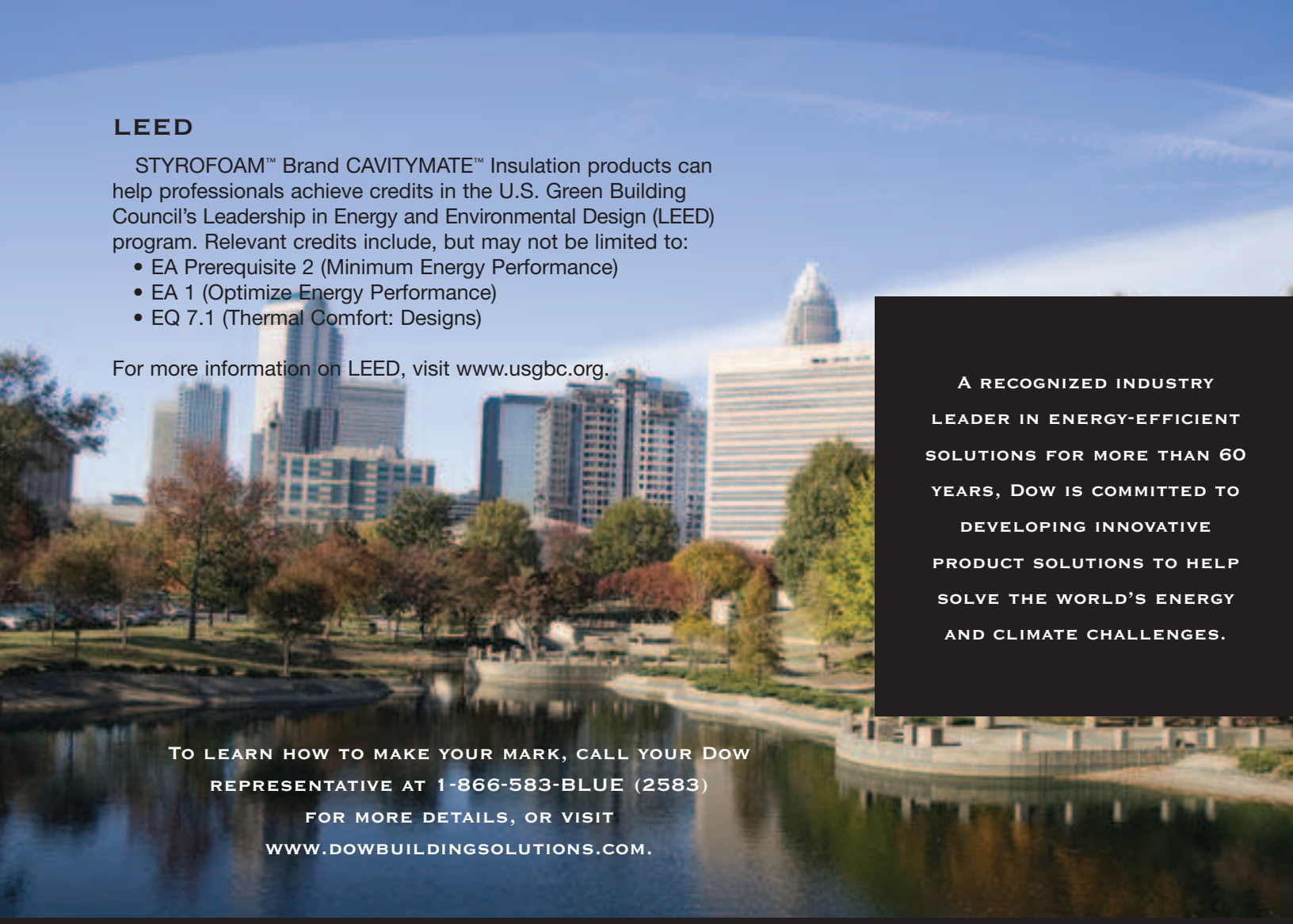
VERSATILITY. Design for load-bearing and non-load bearing walls in block-backed and steel stud cavity wall applications.

EASE OF INSTALLATION. Install easily and efficiently using common building tools and equipment.

CONVENIENT SIZE. Save time and money on the job site with insulation products sized for a precise fit between wall ties.

VALUE. Reliable insulating performance and moisture management add up to long-term energy savings and value.

ENVIRONMENTAL RESPONSIBILITY. Help reduce a building's carbon footprint and decrease greenhouse gas emissions.



LEED

STYROFOAM™ Brand CAVITYMATE™ Insulation products can help professionals achieve credits in the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program. Relevant credits include, but may not be limited to:

- EA Prerequisite 2 (Minimum Energy Performance)
- EA 1 (Optimize Energy Performance)
- EQ 7.1 (Thermal Comfort: Designs)

For more information on LEED, visit www.usgbc.org.

A RECOGNIZED INDUSTRY LEADER IN ENERGY-EFFICIENT SOLUTIONS FOR MORE THAN 60 YEARS, DOW IS COMMITTED TO DEVELOPING INNOVATIVE PRODUCT SOLUTIONS TO HELP SOLVE THE WORLD'S ENERGY AND CLIMATE CHALLENGES.

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