DOW CORNING

High Performance Building
Solutions

An Evaluation of Thermal Performance

Dow Corning® *Building Insulation Blanket*

Meeting the Challenges of Building Efficiency

Expanding on a proven record in the construction industry, Dow Corning is moving forward with a new line of innovative solutions to help meet near-zero-energy building requirements. Collaborating with industry leaders around the world, Dow Corning is developing solutions to improve the energy efficiency of buildings. *Dow Corning*® Building Insulation Blanket, which provides high-performance insulation in challenging, space-limited situations, is one of those solutions.

Easy installation, improved thermal resistance

Effective building insulation requires complete coverage, even at the tough connection points and transitions in building envelopes, such as where glazing systems meet cavity walls, where below-grade systems meet above-grade systems and where parapets meet roofs. Thin-profile *Dow Corning* Building Insulation Blanket is easy to install in difficult profiles, including curves and corners. Fire-resistant and hydrophobic, it significantly increases thermal resistance compared with conventional insulating materials.

Evaluation by thermal modeling

To predict accurate thermal performance of a building design, including the effects of thermal bridging, insulation materials are better evaluated as part of the overall system rather than on their R-value alone. Using thermal modeling software, *Dow Corning* Building Insulation Blanket was evaluated in a variety of details using a steady-state conduction model based on ASHRAE 1365-RP. In each case, the details were analyzed with and without *Dow Corning* Building Insulation Blanket to compare heat loss. A sampling of these results is shared here.

Modeling results

CURTAINWALL TO AT-GRADE SLAB TRANSITION

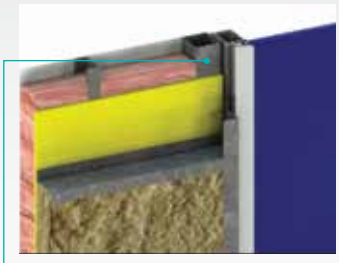
Without insulation blanket

With *Dow Corning*® Building Insulation Blanket placed to cover the neck of the curtainwall to the below-grade insulation

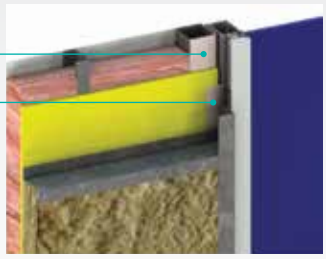
PERIMETER HEAT LOSS FOR CURTAINWALL AT-GRADE BY VARYING U-VALUES

Depth of Insulation (inches)	Below-Grade Insulation (hr·ft²·°F/BTU)	Slab Perimeter Heat Loss (BTU/hr·ft·°F)		% Reduction in Heat Loss
		Without Insulation Blanket	With 10 mm *Dow Corning*® Building Insulation Blanket	
24	R-10	0.495	0.370	25

CURTAINWALL TO INTERIOR/EXTERIOR INSULATED STEEL STUD WALL TRANSITION



Without insulation blanket



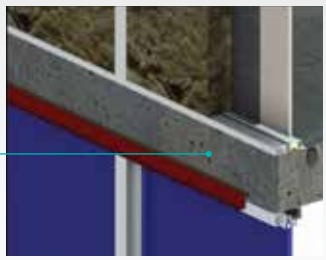
With *Dow Corning*® Building Insulation Blanket around the interior steel studs adjacent to the curtain mullion

With *Dow Corning*® Building Insulation Blanket bridging the curtainwall neck to the exterior sheathing

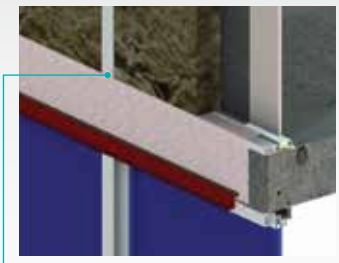
LINEAR TRANSMITTANCE CALCULATIONS FOR STEEL STUD WALL TRANSITION

Transmittance Description	Linear Transmittance (BTU/hr·ft·°F)		% Reduction in Heat Loss
	Without Insulation Blanket	With 10 mm *Dow Corning*® Building Insulation Blanket	
Curtainwall jamb to an interior and exterior insulated steel stud assembly	0.069	0.019	73

WINDOW-WALL AT FLOOR SLAB



Without insulation blanket



With *Dow Corning*® Building Insulation Blanket modeled over the slab face and both the horizontal and vertical mullions

LINEAR TRANSMITTANCE CALCULATIONS FOR A WINDOW-WALL SPANDREL SECTION SLAB FACE

Transmittance Description	Linear Transmittance (BTU/hr·ft·°F)		% Reduction in Heat Loss
	Without Insulation Blanket	With 10 mm *Dow Corning*® Building Insulation Blanket	
Window-wall spandrel section	0.556	0.264	53

Summary

Transmittance Description	Linear Transmittance (BTU/hr·ft·°F)		% Reduction in Heat Loss
	Without Insulation Blanket	With 10 mm *Dow Corning*® Building Insulation Blanket	
Curtainwall to at-grade slab transition	0.495	0.370	25
Curtainwall to interior/exterior insulated steel stud wall transition	0.069	0.019	73
Window-wall at floor slab	0.556	0.264	53

For more information

Dow Corning High Performance Building Solutions include proven materials for structural and protective glazing, weatherproofing, insulating glass, window and door fabrication, and building materials protection, as well as innovations for high-efficiency insulation, air barrier systems, LED lighting, thermal management systems, and the incorporation of photovoltaic and solar panels into building design.

To learn more about Dow Corning High Performance Building Solutions, visit **dowcorning.com/HPInsulation**.

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