ELAMINATOR® Insulation System
300 Series Machines Thermal Performance

Technical Bulletin

The Owens Corning™ ELAMINATOR® 300 Series Machines install the insulation system facing first, followed by one or two layers of unfaced insulation. This enhances thickness recovery of the insulation and improves the overall thermal performance of the roof. The accompanying tables provide thermal performance levels achievable for the ELAMINATOR® Insulation System installed with 300 Series Machines with either MBI Plus Insulation or Certified-R Metal Building Insulation.

About the Numbers

The performance of an insulation system depends not only on the amount of insulation installed, but also on the construction details of the building envelope. This is particularly true for metal buildings where structural steel components and fasteners can have a dramatic effect on the overall thermal performance. To address the complexities involved, Owens Corning uses a combination of large scale hot box testing (per ASTM 976) and mathematical modeling to estimate the overall U-values of these systems. The modeling utilizes the ANSYS® finite element analysis (FEA) software package.

The tables provide estimates of the overall U-value of the standing-seam roof systems, including appropriate air films on top and bottom surfaces. Table 1 gives performance values at a mean temperature of 75°F using Owens Corning™ Certified-R Metal Building Insulation for single

300 Series installing single layer.

Table 1
ELAMINATOR® 300 Series Thermal Performance using Certified-R Metal Building Insulation

Insulation*	Thermal Block FOAMULAR®[1] 1" x 3"	Thermal Block FOAMULAR®[1] 1" x 6"	Thermal Block Polyisocyanurate 1" x 6"
R-10	0.084	0.082	0.081
R-11	0.080	0.078	0.076
R-13	0.074	0.072	0.070
R-16	0.064	0.062	0.061
R-19	0.059	0.057	0.056
R-10/R-10	0.057	0.055	0.054
R-10/R-11	0.056	0.054	0.053
R-10/R-13	0.054	0.052	0.050
R-11/R-13	0.053	0.051	0.049
R-13/R-13	0.050	0.049	0.047
R-10/R-19	0.048	0.046	0.045
R-11/R-19	0.047	0.045	0.044
R-13/R-19	0.046	0.044	0.043
R-16/R-19	0.045	0.043	0.042
R-19/R-19	0.044	0.042	0.040

Note: Units on U-values are Btu/(hr.•ft²•°F), R-values are hr.•ft²•°F/Btu.
Data obtained by ANSYS, finite-element model, validated by hot box test (ASTM C 976).
*Certified Metal Building Insulation NAIMA 202-96®.
1. FOAMULAR® is Owens Corning's extruded polystyrene.
MBI Plus Insulation not to be laminated.

and double layers. Table 2 gives performance values at a mean temperature of 75°F using Owens Corning™ unfaced MBI Plus Insulation for single and double layers.

300 Series Machines

The 300 Series Machines install Owens Corning™ MBI Plus or Certified-R Metal Building Insulation unfaced, out-of-package, for both single and double layers with a vapor retarder. This provides a cost-effective installation with an attractive appearance. Proper use of the 300 Series Machines enables the ELAMINATOR® licensee and contractor to comply with OSHA standards. Owens Corning has a Certified ELAMINATOR® Operator Program (CEOP) where a trained operator who is certified or an apprentice in the CEOP is required to operate the machines at all time for the entire project. This helps to insure proper use of the equipment. For a licensee near you, call 1-800-GET-PINK®.

300 Series installing double layer.

Table 2
ELAMINATOR® 300 Series Thermal Performance using unfaced MBI Plus Insulation

Insulation*	Thermal Block FOAMULAR®[1] 1" x 3"	Thermal Block FOAMULAR®[1] 1" x 6"	Thermal Block Polyisocyanurate 1" x 6"
R-10	0.092	0.090	0.088
R-11	0.088	0.086	0.084
R-13	0.080	0.078	0.077
R-16	0.071	0.068	0.067
R-19	0.065	0.062	0.061
R-10/R-10	0.063	0.060	0.058
R-10/R-11	0.061	0.059	0.058
R-10/R-13	0.058	0.056	0.054
R-11/R-13	0.058	0.055	0.054
R-13/R-13	0.055	0.053	0.052
R-10/R-19	0.052	0.050	0.049
R-11/R-19	0.052	0.050	0.048
R-13/R-19	0.050	0.048	0.047
R-16/R-19	0.049	0.046	0.045
R-19/R-19	0.048	0.045	0.044

Note: Units on U-values are Btu/(hr.•ft²•°F), R-values are hr.•ft²•°F/Btu.
Data obtained by ANSYS, finite-element model, validated by hot box test (ASTM C 976).
*Certified Metal Building Insulation NAIMA 202-96®.
1. FOAMULAR® is Owens Corning's extruded polystyrene.
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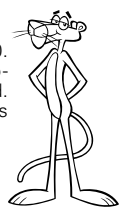

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