SYRACUSE GLASS COMPANY

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TECH TIPS

For New York's Glazing & Design Professionals

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#12 – GLASS AND ENERGY – CENTER-OF-GLASS U VALUES

U values describe how well glass and framing materials allow for heat transfer. Glass U values generally range from .20 to 1.20. The lower the U value, the better the product's resistance to heat flow and the better the insulating value.

Glass U values are improved by:

- combining multiple glass plies in double or triple insulating glass units
- employing "low-e" coatings
- using "warm edge" insulating glass airspacers instead of box aluminum airspacers
- filling an insulating glass unit with argon gas

Center-of-glass U values are published by the glass manufacturers or fabricators derived from a database at the Lawrence Berkley National Lab. Center-of-glass U values for some common glass products are:

- 1/4" glass	1.03
- 1" insulating glass	.47
- 1" Pilkington Low-e insulating	.34
- 1" Guardian SN-68 insulating with argon	.25

A good way to keep these center-of-glass U value "milestones" in mind is to remember 1, 1/2, 1/3, 1/4 for monolithic glass, insulating glass, hard coat low e insulating, and soft coat low e insulating with argon.

The center-of-glass U value is the starting point for calculating the whole glazing system U value, in accordance with NFRC 100, the method adopted in the code to determine compliance.

Aluminum framing material does not perform as well as glass as an insulator. Aluminum framing systems that contain thermal barriers or allow for structural glazing provide a big improvement.

A very useful reference for evaluating glass and aluminum framing options is AAMA 507-07 Standard Practice for Determining the Thermal Performance Characteristics of Fenestration Systems Installed in Commercial Buildings. The AAMA standard also can be used to evaluate the contribution of "warm edge" insulating glass air spacers.

The aluminum system manufacturers also provide good reference material covering the thermal performance of their individual systems. We can provide lab reports of simulations using Tubelite thermally broken systems on request.