



**BERKLEY LAB WINDOW V7.7.1.0
GLAZING SYSTEM THERMAL AND OPTICAL
PROPERTIES**

WINDOW

Berkeley Lab WINDOW is a publicly available computer program for calculating total window thermal performance indices (i.e. U-values, solar heat gain coefficients, shading coefficients, and visible transmittances). Berkeley Lab WINDOW provides a versatile heat transfer analysis method consistent with the updated rating procedure developed by the National Fenestration Rating Council (NFRC) that is consistent with the ISO 15099 standard. The program can be used to design and develop new products, to assist educators in teaching heat transfer through windows, and to help public officials in developing building energy codes.

OPTICS

The Optics computer program is designed for work with optical data for glass and glazing layers. Integration with the International Glazing Database (IGDB) makes it easy to build stacks of multiple glass layers and calculate the resulting optical properties. The program works transmittance and reflectance as a function of wavelength. This allows for calculation of integrated values, such as visible transmittance, according to a range of standards.

WEBSITE:

<https://windows.lbl.gov/software>

CARDINAL 180

GLASS MAKE-UP

6mm Cardinal 180 LoE Surface #2
½" Dual Seal Black Warm Edge Spacer
Argon 90% / Air 10%
6mm Clear

All specifications below are center-of-glass (CoG) values and do not take into account framing systems.

Cardinal 180/Clear

U-Value – Imperial / Metric	0.26 / 1.48
SHGCc - Solar Heat Gain Coefficient	0.60
SCc – Shade Coefficient	0.69
VLT – Visible Light Transmission	77%
RHG – Relative Heat Gain	141.97
LSG – Light to Solar Gain	1.28

Clear/Guardian CG80/70

U-Value – Imperial / Metric	0.27 / 1.54
SHGCc - Solar Heat Gain Coefficient	0.65
SCc – Shade Coefficient	0.75
VLT – Visible Light Transmission	79%
RHG – Relative Heat Gain	153.18
LSG – Light to Solar Gain	1.22