

## Hot Climate Residential Window Classes and Selection Conditions

\* Center-of-glass

Conditions for use or selection	Window description/class	Overall U-factor	COG* SHGC	COG* VT
<ul style="list-style-type: none"> <li>North-facing window, with a modest degree of shading (as with a roof overhang), and with a dark exterior scene</li> <li>Well-shaded east, west, or south-facing window receiving very little or no direct sun and relatively little diffuse skylight, as with awning-covered or dense tree canopy</li> </ul>	<b>Single pane clear no-coating, no-tint</b> Normally sold with uninsulated frame	6 - 7 Wm <sup>-2</sup> K <sup>-1</sup> .9 - 1.1 Btu/(hrft <sup>2</sup> F)	.81 - .86	.89
<ul style="list-style-type: none"> <li>Same as above when acoustic isolation is desired and to improve comfort during cold nights and warm</li> <li>To reduce peak loads on heating and cooling systems</li> <li>To reduce A/C and heating system size in new construction</li> </ul>	<b>Double pane clear, no-coating, no-tint and with ↓</b> COG →	3.5 - 4.5 Wm <sup>-2</sup> K <sup>-1</sup> .45 - .55 Btu/(hrft <sup>2</sup> F)	.7 - .75	.78 - .82
Above, when acoustic isolation is also important, energy conservation less so	Uninsulated frame	4 - 5 Wm <sup>-2</sup> K <sup>-1</sup> .6 - .8 Btu/(hrft <sup>2</sup> F)	X	X
Above, when energy conservation and peak load reduction are even more important, and to reduce frame condensation	Insulated frame	3 - 4 Wm <sup>-2</sup> K <sup>-1</sup> .45 - .55 Btu/(hrft <sup>2</sup> F)	X	X
<b>Single pane with:</b>		X	X	X
<ul style="list-style-type: none"> <li>For unshaded north-facing and moderately shaded other windows, modest reductions in SHGC and VT are needed</li> <li>When acoustic isolation is not important</li> <li>When the cost of double pane is to be avoided</li> </ul>	Reflective hard coat high-LSG, High-VT, comes with cold-climate low-e automatically	5 - 6 Wm <sup>-2</sup> K <sup>-1</sup> .8 - 1.1 Btu/(hrft <sup>2</sup> F)	.5 - .6	.6 - .7
<ul style="list-style-type: none"> <li>For unshaded windows, all directions, with bright exterior scenes, lowered SHGC and VT are needed</li> <li>When acoustic isolation is not important</li> <li>When the cost of double pane is to be avoided</li> </ul>	Reflective hard coat high-LSG, Low-VT, comes with cold-climate low-e automatically	5 - 6 Wm <sup>-2</sup> K <sup>-1</sup> .8 - 1.1 Btu/(hrft <sup>2</sup> F)	.3 - .4	.4 - .5
Above, when acoustic isolation is not important, energy conservation only moderately so	with uninsulated frame	3.5 - 4.5 Wm <sup>-2</sup> K <sup>-1</sup> .5 - .7 Btu/(hrft <sup>2</sup> F)	X	X
Above, when energy conservation and peak load reduction are important	with insulated frame	2.5 - 3.5 Wm <sup>-2</sup> K <sup>-1</sup> .4 - .5 Btu/(hrft <sup>2</sup> F)	X	X
<b>Double pane with:</b>		X	X	X
<ul style="list-style-type: none"> <li>Unshaded north-facing window</li> <li>Slightly shaded south-, east-, or west-facing window, as with pine trees</li> </ul>	Absorptive High-LSG High-VT glass, Comes with low-e COG →	2 - 3 Wm <sup>-2</sup> K <sup>-1</sup> .3 - .5 Btu/(hrft <sup>2</sup> F)	.3 - .6	.4 - .7
<ul style="list-style-type: none"> <li>Unshaded south-, east-, or west-facing window</li> <li>Good for bright exterior scenes</li> </ul>	Absorptive High-LSG Low-VT glass, Comes with low-e COG →	1.8 - 3 Wm <sup>-2</sup> K <sup>-1</sup> .28 - .4 Btu/(hrft <sup>2</sup> F)	.2 - .5	.3 - .6
Not advised	with uninsulated frame	X	X	X
Usually required for this type of window	with insulated frame	2 - 2.5 Wm <sup>-2</sup> K <sup>-1</sup> .3 - .43 Btu/(hrft <sup>2</sup> F)	X	X
<b>Double pane with:</b>		X	X	X
<ul style="list-style-type: none"> <li>Unshaded or moderately shaded north-facing window</li> <li>Slightly shaded south-, east-, or west-facing window, as with pine trees</li> </ul>	reflective High LSG High VT glass, COG, comes with hot and low solar gain low-e	1.7 - 3 Wm <sup>-2</sup> K <sup>-1</sup> .25 - .45 Btu/(hrft <sup>2</sup> F)	.4 - .6	.4 - .7
<ul style="list-style-type: none"> <li>Unshaded south-, east-, or west-facing window</li> <li>Bright exterior scenes</li> </ul>	reflective High LSG Low VT glass, COG, comes with hot and low solar gain low-e	1.6 - 2.8 Wm <sup>-2</sup> K <sup>-1</sup> .22 - .4 Btu/(hrft <sup>2</sup> F)	.2 - .5	.3 - .6
Not advised	Uninsulated frames	3.8 - 4.5 Wm <sup>-2</sup> K <sup>-1</sup> .44 - .7 Btu/(hrft <sup>2</sup> F)	X	X
Usually required for this type of window	Insulated frames	1.8 - 2.5 Wm <sup>-2</sup> K <sup>-1</sup> .3 - .43 Btu/(hrft <sup>2</sup> F)	X	X
For radical energy efficiency and maximum protection from future energy shortages and cost increases	<b>Double or triple pane</b> with argon gas fill, well-insulated frames, reflective high-LSG, low VT glazing	Less than 1.5 Wm <sup>-2</sup> K <sup>-1</sup> or .2 Btu/(hrft <sup>2</sup> F)	Less than .2	.25 - .4
Use when exterior shade or shutter is absent or insufficient to meet impact resistance requirements	<b>Laminated glass</b> for impact resistance	Replace single pane or outer pane with laminated glass		