



Calculation based on ISO 15099

Product name: Universal Outswing Casement Window				Center-of-glass properties		
ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing West - facing			Cardinal E366/ Arg/ Clear/ Arg/ E180 (6mm) 44,0mm No Grids		
Climate specific recommendations:		Whole-window installed U-value		Ucog-Value		
		W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F
8		0.94	0.17	0.239	0.710	0.125
7		0.93	0.16	0.239	0.693	0.122
6		0.92	0.16	0.239	0.681	0.120
5		0.92	0.16	0.239	0.680	0.120
4		0.92	0.16	0.239	0.679	0.120
Marine North		0.92	0.16	0.239	0.679	0.120
Marine South	✓	0.92	0.16	0.239	0.681	0.120
3	✓	0.92	0.16	0.239	0.680	0.120
2 West	✓	0.93	0.16	0.239	0.686	0.121
2 East	✓	0.93	0.16	0.239	0.686	0.121
Universal Outswing Casement		FRAME		Psi-spacer		Psi-opaque
Cardinal Endur		Frame height		Ψ		W/mK
		mm	in	W/m2K	BTU/hr.ft2.F	
Head		105	4.13	1.08	0.19	0.019
Sill		105	4.13	1.08	0.19	0.011
left jamb		105	4.13	1.07	0.19	0.021
right jamb		105	4.13	1.07	0.19	0.012


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Product name: Universal Outswing Casement Window				Center-of-glass properties		
ASHRAE/IECC /DOE North American Climate Zone	South- facing	North, East, West - facing				Cardinal E366/ Arg/ Clear/ Arg/ E180 (6mm) 44,0mm SDL/no Internal grids < 25.4mm
Climate specific recommendations:			Whole-window installed U-value		Ucog-Value	
			W/m2K	BTU/hr.ft2.F	SHGC	BTU/hr.ft2.F
8			0.94	0.17	0.208	0.125
7			0.93	0.16	0.208	0.122
6			0.92	0.16	0.208	0.120
5			0.92	0.16	0.208	0.120
4			0.92	0.16	0.208	0.120
Marine North		✓	0.92	0.16	0.208	0.120
Marine South	✓	✓	0.92	0.16	0.208	0.120
3	✓	✓	0.92	0.16	0.208	0.120
2 West	✓	✓	0.93	0.16	0.208	0.121
2 East	✓	✓	0.93	0.16	0.208	0.121
Universal Outswing Casement		FRAME		Psi-spacer		Psi-opaque
Cardinal Endur		Frame height		U-frame		W/mK
		mm	in	W/m2K	BTU/hr.ft2.F	
Head		105	4.13	1.08	0.19	0.019
Sill		105	4.13	1.08	0.19	0.011
left jamb		105	4.13	1.07	0.19	0.021
right jamb		105	4.13	1.07	0.19	0.012


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ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing West - facing			Cardinal E366/ Arg/ Clear/ Arg/ E180 (6mm) 44,0mm Internal grids And SDL with Internal grids < 25.4mm maintain 3mm clearance		
Climate specific recommendations:		Whole-window installed U-value		Ucog-Value		
		W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F
8		0.94	0.17	0.208	0.710	0.125
7		0.93	0.16	0.208	0.693	0.122
6		0.92	0.16	0.208	0.681	0.120
5		0.92	0.16	0.208	0.680	0.120
4		0.92	0.16	0.208	0.679	0.120
Marine North		0.92	0.16	0.208	0.679	0.120
Marine South	✓	0.92	0.16	0.208	0.681	0.120
3	✓	0.92	0.16	0.208	0.680	0.120
2 West	✓	0.93	0.16	0.208	0.686	0.121
2 East	✓	0.93	0.16	0.208	0.686	0.121
Universal Outswing Casement Cardinal Endur		FRAME		Psi-spacer		Psi-opaque
		Frame height		U-frame		W/mK BTU/hr.ft.F 0.083 Grade B
		mm	in	W/m2K	BTU/hr.ft2.F	
Head	105	4.13	1.08	0.19	0.019	0.011
Sill	105	4.13	1.08	0.19	0.019	0.011
left jamb	105	4.13	1.07	0.19	0.021	0.012
right jamb	105	4.13	1.07	0.19	0.021	0.012


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Climate specific recommendations:		Whole-window installed U-value		Ucog-Value	
		W/m2K	BTU/hr.ft2.F	SHGC	BTU/hr.ft2.F
				W/m2K	
8		1.00	0.18	0.208	0.125
7		0.99	0.17	0.208	0.122
6		0.98	0.17	0.208	0.120
5		0.98	0.17	0.208	0.120
4		0.98	0.17	0.208	0.120
Marine North		0.98	0.17	0.208	0.120
Marine South	✓	0.98	0.17	0.208	0.120
3	✓	0.98	0.17	0.208	0.120
2 West	✓	0.98	0.17	0.208	0.121
2 East	✓	0.98	0.17	0.208	0.121
Universal Outswing Casement		FRAME		Psi-spacer	Psi-opaque
Cardinal Endur		U-frame		Ψ	
		mm	in	W/mK	BTU/hr.ft.F
Head		105	4.13	1.08	0.19
Sill		105	4.13	1.08	0.19
left jamb		105	4.13	1.07	0.19
right jamb		105	4.13	1.07	0.19
				W/mK	BTU/hr.ft.F
				0.019	0.011
				0.019	0.011
				0.021	0.012
				0.021	0.012
				Grade B	


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Climate specific recommendations:			Whole-window installed U-value		Ucog-Value			
			W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F	
8			0.94	0.17	0.179	0.710	0.125	
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Universal Outswing Casement		FRAME				Psi-spacer		Psi-opaque
Cardinal Endur		Frame height		U-frame		Ψ		W/mK
		mm	in	W/m2K	BTU/hr.ft2.F	W/mK	BTU/hr.ft.F	
Head		105	4.13	1.08	0.19	0.019	0.011	0.143
Sill		105	4.13	1.08	0.19	0.019	0.011	BTU/hr.ft.F
left jamb		105	4.13	1.07	0.19	0.021	0.012	0.083
right jamb		105	4.13	1.07	0.19	0.021	0.012	Grade B


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ASHRAE/IECC /DOE North American Climate Zone	South-facing	North, East, West - facing	<div> Passive House Institute US</div>			Cardinal E366/ Arg/ Clear/ Arg/ E180 (6mm) 44,0mm Internal grids And SDL/Internal grids >= 25.4mm maintain 3mm clearance		
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3	✓	✓	0.92	0.16	0.179	0.680 0.120		
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Cardinal Endur		Frame height		U-frame		Ψ		W/mK
		mm	in	W/m2K	BTU/hr.ft2.F	W/mK	BTU/hr.ft.F	
Head		105	4.13	1.08	0.19	0.019	0.011	0.143
Sill		105	4.13	1.08	0.19	0.019	0.011	BTU/hr.ft.F
left jamb		105	4.13	1.07	0.19	0.021	0.012	0.083
right jamb		105	4.13	1.07	0.19	0.021	0.012	Grade B

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