



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/ E180/ Arg/ i89(#6) (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		0.88	0.15	0.230	0.625	0.110
7		0.87	0.15	0.230	0.612	0.108
6		0.86	0.15	0.230	0.601	0.106
5		0.86	0.15	0.230	0.600	0.106
4		0.86	0.15	0.230	0.597	0.105
Marine North		0.86	0.15	0.230	0.595	0.105
Marine South	✓	0.85	0.15	0.230	0.592	0.104
3	✓	0.86	0.15	0.230	0.594	0.105
2 West	✓	0.83	0.15	0.230	0.555	0.098
2 East	✓	0.83	0.15	0.230	0.555	0.098
Universal Outswing Casement Cardinal Endur		FRAME		Psi-spacer		Psi-opaque
		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	1.15 0.20	0.009	0.005	0.141
Sill		105 4.13	1.15 0.20	0.009	0.005	BTU/hr.ft.F
left jamb		105 4.13	1.14 0.20	0.010	0.006	0.082
right jamb		105 4.13	1.14 0.20	0.010	0.006	Grade B


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ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing West - facing			Cardinal E366/ Arg/ E180/ Arg/ i89(#6) (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	W/m2K	BTU/hr.ft2.F
8		0.88	0.15	0.201	0.625	0.110
7		0.87	0.15	0.201	0.612	0.108
6		0.86	0.15	0.201	0.601	0.106
5		0.86	0.15	0.201	0.600	0.106
4		0.86	0.15	0.201	0.597	0.105
Marine North		0.86	0.15	0.201	0.595	0.105
Marine South	✓	0.85	0.15	0.201	0.592	0.104
3	✓	0.86	0.15	0.201	0.594	0.105
2 West	✓	0.83	0.15	0.201	0.555	0.098
2 East	✓	0.83	0.15	0.201	0.555	0.098
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	1.15	0.20	0.009
Sill		105	4.13	1.15	0.20	0.005
left jamb		105	4.13	1.14	0.20	0.010
right jamb		105	4.13	1.14	0.20	0.010


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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		0.88	0.15	0.201	0.625	0.110
7		0.87	0.15	0.201	0.612	0.108
6		0.86	0.15	0.201	0.601	0.106
5		0.86	0.15	0.201	0.600	0.106
4		0.86	0.15	0.201	0.597	0.105
Marine North		0.86	0.15	0.201	0.595	0.105
Marine South	✓	0.85	0.15	0.201	0.592	0.104
3	✓	0.86	0.15	0.201	0.594	0.105
2 West	✓	0.83	0.15	0.201	0.555	0.098
2 East	✓	0.83	0.15	0.201	0.555	0.098
Universal Outswing Casement		FRAME		Psi-spacer		Psi-opaque
Cardinal Endur		Frame height		Ψ		W/mK
		mm	in	W/mK	BTU/hr.ft.F	
Head		105	4.13	1.15	0.20	0.009
Sill		105	4.13	1.15	0.20	0.005
left jamb		105	4.13	1.14	0.20	0.010
right jamb		105	4.13	1.14	0.20	0.006


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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/ E180/ Arg/ i89(#6) (6mm) 44,0mm Internal grids And SDL with Internal grids < 25.4mm			
Climate specific recommendations:			Whole-window installed U-value		Ucog-Value			
			W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F	
8			0.93	0.16	0.201	0.625	0.110	
7			0.92	0.16	0.201	0.612	0.108	
6			0.92	0.16	0.201	0.601	0.106	
5			0.92	0.16	0.201	0.600	0.106	
4			0.91	0.16	0.201	0.597	0.105	
Marine North		✓	0.91	0.16	0.201	0.595	0.105	
Marine South	✓	✓	0.91	0.16	0.201	0.592	0.104	
3	✓	✓	0.91	0.16	0.201	0.594	0.105	
2 West	✓	✓	0.88	0.16	0.201	0.555	0.098	
2 East	✓	✓	0.88	0.16	0.201	0.555	0.098	
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	1.15	0.20	0.009	0.005	0.141
Sill		105	4.13	1.15	0.20	0.009	0.005	BTU/hr.ft.F
left jamb		105	4.13	1.14	0.20	0.010	0.006	0.082
right jamb		105	4.13	1.14	0.20	0.010	0.006	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/ E180/ Arg/ i89(#6) (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	W/m2K	BTU/hr.ft2.F	
8			0.88	0.15	0.173	0.625	0.110	
7			0.87	0.15	0.173	0.612	0.108	
6			0.86	0.15	0.173	0.601	0.106	
5			0.86	0.15	0.173	0.600	0.106	
4		✓	0.86	0.15	0.173	0.597	0.105	
Marine North		✓	0.86	0.15	0.173	0.595	0.105	
Marine South	✓	✓	0.85	0.15	0.173	0.592	0.104	
3	✓	✓	0.86	0.15	0.173	0.594	0.105	
2 West	✓	✓	0.83	0.15	0.173	0.555	0.098	
2 East	✓	✓	0.83	0.15	0.173	0.555	0.098	
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	1.15	0.20	0.009	0.005	0.141
Sill		105	4.13	1.15	0.20	0.009	0.005	BTU/hr.ft.F
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8		0.88	0.15	0.173	0.625 0.110
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5		0.86	0.15	0.173	0.600 0.106
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Universal Outswing Casement		FRAME		Psi-spacer	
Cardinal Endur	Frame height		U-frame		Psi-opaque
	mm	in	W/m2K	BTU/hr.ft2.F	
Head	105	4.13	1.15	0.20	0.009 0.005 0.141
Sill	105	4.13	1.15	0.20	0.009 0.005 BTU/hr.ft.F
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