

Calculation based on ISO 10077-2, EN 673, EN 410

Product name: Alpen Tyrol TR-9 PH+ Fixed		Center-of-glass properties						
ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing	West - facing						
		Alpen Balanced-9 PH+		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		0.67	0.12	0.333	0.417	0.074		
7	✓	0.66	0.12	0.333	0.397	0.070		
6	✓	0.64	0.11	0.333	0.376	0.066		
5	✓	0.64	0.11	0.333	0.373	0.066		
4	✓	0.64	0.11	0.333	0.376	0.066		
Marine North	✓	0.64	0.11	0.333	0.378	0.067		
Marine South	✓	0.65	0.11	0.333	0.381	0.067		
3	✓	0.64	0.11	0.333	0.379	0.067		
2 West		0.65	0.11	0.333	0.388	0.068		
2 East		0.65	0.11	0.333	0.388	0.068		
Alpen Tyrol TR-9 PH+ Fixed SS-D	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	74	2.92	0.74	0.13	0.042	0.024	0.100
	Sill	74	2.92	0.74	0.13	0.042	0.024	BTU/hr.ft.F
left jamb	74	2.92	0.74	0.13	0.042	0.024	0.058	
right jamb	74	2.92	0.74	0.13	0.042	0.024	Grade A	

Valid through April 2022

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Product name: Alpen Tyrol TR-9 PH+ Fixed		Center-of-glass properties						
ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing West - facing			Alpen HighGain-9 PH+ 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		0.72	0.13	0.453	0.470	0.083		
7	✓	0.70	0.12	0.453	0.451	0.079		
6	✓	0.69	0.12	0.453	0.434	0.077		
5	✓	0.69	0.12	0.453	0.432	0.076		
4		0.69	0.12	0.453	0.434	0.076		
Marine North		0.69	0.12	0.453	0.436	0.077		
Marine South	✓	0.69	0.12	0.453	0.440	0.077		
3	✓	0.69	0.12	0.453	0.438	0.077		
2 West		0.70	0.12	0.453	0.448	0.079		
2 East		0.70	0.12	0.453	0.448	0.079		
Alpen Tyrol TR-9 PH+ Fixed SS-D	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	74	2.92	0.74	0.13	0.042	0.024	0.100
	Sill	74	2.92	0.74	0.13	0.042	0.024	BTU/hr.ft.F
left jamb	74	2.92	0.74	0.13	0.042	0.024	0.058	
right jamb	74	2.92	0.74	0.13	0.042	0.024	Grade A	

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Product name: Alpen Tyrol TR-9 PH+ Tilt Turn				Center-of-glass properties				
ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing	West - facing						
			Alpen Balanced-9 PH+		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			0.75	0.13	0.333	0.417	0.074	
7			0.74	0.13	0.333	0.397	0.070	
6		✓	0.72	0.13	0.333	0.376	0.066	
5		✓	0.72	0.13	0.333	0.373	0.066	
4		✓	0.72	0.13	0.333	0.376	0.066	
Marine North		✓	0.72	0.13	0.333	0.378	0.067	
Marine South	✓		0.72	0.13	0.333	0.381	0.067	
3	✓		0.72	0.13	0.333	0.379	0.067	
2 West			0.73	0.13	0.333	0.388	0.068	
2 East			0.73	0.13	0.333	0.388	0.068	
Alpen Tyrol TR-9 PH+ Tilt Turn SS-D	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	117	4.61	0.86	0.15	0.047	0.027	0.157
	Sill	117	4.61	0.86	0.15	0.047	0.027	BTU/hr.ft.F
left jamb	117	4.61	0.85	0.15	0.047	0.027	0.091	
right jamb	117	4.61	0.85	0.15	0.047	0.027	Grade C	

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Product name: Alpen Tyrol TR-9 PH+ Tilt Turn				Center-of-glass properties				
ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing	West - facing						
			Alpen HighGain-9 PH+ 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		0.79	0.14	0.453	0.470	0.083		
7		0.77	0.14	0.453	0.451	0.079		
6	✓	0.76	0.13	0.453	0.434	0.077		
5	✓	0.76	0.13	0.453	0.432	0.076		
4		0.76	0.13	0.453	0.434	0.076		
Marine North		0.76	0.13	0.453	0.436	0.077		
Marine South	✓	0.76	0.13	0.453	0.440	0.077		
3	✓	0.76	0.13	0.453	0.438	0.077		
2 West		0.77	0.14	0.453	0.448	0.079		
2 East		0.77	0.14	0.453	0.448	0.079		
Alpen Tyrol TR-9 PH+ Tilt Turn SS-D	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	117	4.61	0.86	0.15	0.048	0.028	0.157
	Sill	117	4.61	0.86	0.15	0.047	0.027	BTU/hr.ft.F
left jamb	117	4.61	0.85	0.15	0.047	0.027	0.091	
right jamb	117	4.61	0.85	0.15	0.047	0.027	Grade C	

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