

## HEAT LOAD CALCULATIONS

JOB NAME: **Dominos-Una (Himachal Pradesh)**

SPACE FOR: **Kitchen Area**

SIZE: **405 Sq ft**                      **4982**      **Cu ft**

Estimate for: **SUMMER**

SOLAR GAIN GLASS				HEAT GAIN Btu/hour	CONDITION				
ITEM	Area (Sq ft)	Sun Gain (Btu/h.sq ft)	Factor		DB (°F)	WB (°F)	% RH	DP (°F)	GR/LB
N - Glass		14	0.47	0	86	83			93.3
NE - Glass		12	0.47	0					
E - Glass		12	0.47	0					
SE - Glass		12	0.47	0					
S - Glass		12	0.47	0					
SW - Glass		100	0.47	0					
W - Glass		164	0.47	0					
NW - Glass		123	0.47	0					
<b>SOLAR &amp; TRANS. GAIN WALLS &amp; ROOF</b>				HEAT GAIN Btu/hour	ROOM				
ITEM	Area (Sq ft)	Eq. temp. diff. (°F)	U (Btu/h.sq ft)		DB (°F)	WB (°F)	% RH	DP (°F)	GR/LB
N - Wall	444	16	0.45	3195	75	55		70.7	
NE - Wall		22	0.45	0					
E - Wall		30	0.45	0					
SE - Wall		30	0.45	0					
S - Wall		28	0.45	0					
SW - Wall		26	0.45	0					
W - Wall		24	0.45	0					
NW - Wall		18	0.45	0					
Roof Sun		47	0.14	0					
<b>TRANS. GAIN EXCEPT WALLS &amp; ROOF</b>				HEAT GAIN Btu/hour	DIFFERENCE				
ITEM	Area (Sq ft)	Temp. diff. (°F)	U (Btu/h.sq ft)		DB (°F)	WB (°F)	% RH	DP (°F)	GR/LB
All Glass	200	11	0.72	1584	11	XXXX	XXXX	XXXX	22.6
Partition wall	242	6	0.38	552					
Ceiling		6	0.43	0					
Floor	405	6	0.32	778					
<b>INTERNAL HEAT GAIN</b>				HEAT GAIN Btu/hour	OUTSIDE AIR (VENTILATION)				
People	10 Nos X		245		2450	10 People X	12	CFM/Person	120
Light	405 W X 1.25		3.4	1721	405 Sq ft X	0.18	CFM/Sq ft	73	
Eq. Load	3000 W X		3.4	10200			CFM VENTILATION=	193	
<b>ROOM SENSIBLE HEAT (RSH)</b>				20480	EFF. SENSIBLE HEAT FACTOR (ESHF) = 0.79				
Supply duct heat gain +	Supply duct leak. loss +		12.0	2556	Indicated ADP = 57.4 °F				
<b>Outside &amp; Infiltered Air</b>				HEAT GAIN Btu/hour	Selected ADP = 52.0 °F				
CFM	°F	BF	FACTOR		Dehum. temp rise = 19.78 °F				
246.45	11	1	1.08	2928	DEHUMIDIFIED CFM = 1254				
493	11	0.14	1.08	820					
<b>EFFECTIVE ROOM SENSIBLE HEAT (ERSH)</b>				26784					
<b>LATENT HEAT</b>				HEAT GAIN Btu/hour	<b>NOTES</b>				
People	10	Nos X	205		2050	Occupancy = 41 Sqft/person			
Permeation Load				0	Light = 1.0 W/Sqft				
<b>Outside &amp; Infiltered Air</b>				HEAT GAIN Btu/hour	Eq. Load = 3.00 kW				
CFM	GR/LB	BF	FACTOR		Air Change per hour = 5.94				
246.45	22.6	1	0.68	3787					
493	22.6	0.14	0.68	1060					
<b>EFFECTIVE ROOM LATENT HEAT (ERLH)</b>				7053					
<b>EFFECTIVE ROOM TOTAL HEAT (ERTH)</b>				33837					
<b>OUTSIDE AIR HEAT (SENSIBLE)</b>				HEAT GAIN Btu/hour	<b>CHECK FIGURES</b>				
CFM	°F	1 - BF	FACTOR		Btu/h/ Sq ft = 115.4				
493	11	0.86	1.08	5036	CFM / Sq ft = 3.10				
<b>OUTSIDE AIR HEAT (LATENT)</b>				HEAT GAIN Btu/hour	Sq ft / TR = 104				
CFM	GR/LB	1 - BF	FACTOR		CFM/ TR = 322				
493	22.6	0.86	0.68	6514					
<b>HEAT SUB TOTAL</b>				45387					
Return duct heat gain & leak. loss +	HP Pump +	Dehum. & Pipe loss (%)	3.0	1362					
<b>TONS</b>				<b>3.9</b>	<b>GRAND TOTAL HEAT</b>				
				<b>46749</b>					