

VAPOR MIGRATION CALCULATIONS

PLANT: PATHMARK STORE

SYSTEM: WALK - IN COOLER

MATERIAL DESCRIPTION	THICKNESS (INCHES)	THERMAL RESISTANCE (R) HR-FT ² -F BTU	PERMEANCE (PERM) GRAINS W.V HR-FT ² -IN.Hg	RESISTANCE TO VAPOR TRANSMITTANCE (REP=1/PERM)	SURFACE DRY BULB DEG F	SURFACE DEW POINT DEG F	CALCULATED SURFACE VAPOR PW (IN. HG)	SATURATE AIR SURFACE VAPOR PX (IN. HG)
A. OUTDOOR AIR					95.00	71.8328	0.78668	1.66001
B. OUTDOOR AIR FILM		0.1700	1,000.0000	0.00100				
C. INNER SURFACE OUTSIDE AIR FILM					94.5878	71.8097	0.78668	1.63911
D. FALSE CEILING Inner Surface	0.5000	1.2500	40.0000	0.02500	91.5566	71.8097	0.78668	1.49231
E. FIBERGLASS INSUL. Inner Surface	4.0000	13.0000	30.0000	0.03333	60.0324	71.8096****	0.78668	0.52239
F. AIR SPACE Inner Surface	60.0000	0.9000	200.0000	0.00500	57.8500	71.8095****	0.78668	0.48318
G. SPRAYED FIBER Inner Surface	0.7500	3.0000	0.0100	100.00000	50.5752	71.5218****	0.77903	0.37051
H. POLYURETHANE INSUL. Inner Surface	4.0000	24.0000	0.2250	4.44444	-7.6233	71.5089****	0.77869	0.03127
I. STEEL DECK Inner Surface	0.0280	0.0001	0.0001	10,000.00000	-7.6236	-23.4695	0.01403	0.03127
J. CONCRETE Inner Surface	4.5000	0.3000	0.6670	1.49925	-8.3510	-23.6267	0.01392	0.03018
K. Indoor Air Film		0.6800	160.0000	0.00625				
L. Indoor air					-10.00	-23.6249	0.01392	0.02784
TOTALS	73.7780	43.3001		10,106.0142782				

- The total water vapor transmission in grains/ft²-hr -0.00007646542282
The total water vapor transmission in lbs./ft²-hr -0.00000001092
INDOOR AIR
Temperature (Deg. F) -10.00
Relative humidity (%) 50.00
- Sensible heat transfer through the roof/wall Btu/ft²-hr -2.4249
OUTDOOR AIR
Temperature (Deg. F) 95.00
Relative Humidity (%) 47.39

(A negative value indicates flow from outside to inside)

ELEVATION: Sea Level

NOTE !!!

- If PW is greater than or equal to PX, condensation will occur in that region.
- If the dew point temperature is greater than or equal to the dry bulb temperature, condensation will occur.