

BRY-AIR DEHUMIDIFIER CALCULATION SHEET
PROJECT: EXAMPLE 1 – PRODUCTION OF HARD CANDY

Conditions				Room Size			
Surrounding	95 FDB	75 FWB	121gr	60 L	42 W 16 H =40,320		
Design	$\frac{75 \text{ FDB}}{20 \Delta T}$	0 FWB	$\frac{46 \text{ gr}}{75 \Delta \text{ gr}}$ 35 RH	$\frac{40,320 \text{ FT}^3}{60}$	= 672		
Permeation					GR/HR		
Volume	$\frac{40,320 \text{ FT}^3}{14}$	$\times \frac{75}{(\Delta \text{ gr})}$	$\times \frac{1.94}{(F_1)}$	$\times \frac{0.5}{(F_2)}$	$\times \frac{1}{(F_3)}$	$\times \frac{0.75}{(F_4)}$	=157,140
Door Load							
Openings/hr	6	$\times \text{Area} \frac{42 \text{ FT}^2}{7}$	$\times \frac{75}{(\Delta \text{ gr})}$	$\times \frac{1.94}{(F_1)}$		= 5,238	
Openings/hr	0	$\times \text{Area} \frac{0 \text{ FT}^2}{7}$	$\times \frac{75}{(\Delta \text{ gr})}$	$\times \frac{1.94}{(F_1)}$		= 0	
Fixed Opening							
	0 (area)	$\times \frac{300}{14}$	$\times \frac{1}{(\text{dep})}$	$\times \frac{75}{(\Delta \text{ gr})}$	$\times \frac{1.94}{(F_1)}$	= 0	
People Load							
	10 (No. People)	$\times \frac{2540}{(F_5)}$				= 25,400	
Product Load							
			0 gr/hr removed			= 0	
Product Load							
			0 gr/hr added			= 0	
TOTAL ROOM LOAD					=187,778		
CFM required							
14	$\times \frac{187,778}{60}$	\div	46-14	=	1369 CFM		
Make-up Air							
	$\frac{350}{14}$	$\times \frac{75}{(\Delta \text{ gr})}$	$\times 60$		= 112,500		
TOTAL GR/HR					= 300,278		
1,650 CFM RETURN AIR @ 75 FDB 46 GR							
350 CFM MAKE-UP AIR @ 95 FDB 121 GR							
= DEHUMIDIFIER INLET CONDITION:							
				CFM	2,000		
				DB TEMP.	79		
				GR/LB	59		
Dehumidifier Sizing							
14	$\times \frac{300,278}{60}$	\div	59-23	=	1,946		
					CFM Required		
Proof							
	$\frac{2000}{14}$	$\times (46 - 23) \times 60$			=197,143		
					System Capability		
DEHUMIDIFIER REQUIRED VFB-24							
PROCESS OUTLET TEMP. 130 DEG.F							