Dehumidifying & Drying

To select models of dehumidifying and drying series mainly includes selecting standard hopper dryer, hopper dryer and dehumidifier. It mainly depends on required drying capacity, bulk density and required air volume of materials. Secondly, it also depends on parameters of material form, mobility and drying temperature.

Standard Hopper Dryer

Generally, standard hopper dryer is for processing material whose moisture absorption is not strong, like PP and PE. The hopper capacity of models is calculated basing on the material whose bulk density is 0.65kg/L. It can be calculated according to the following formula:

$L_C=M\times T_H\times S/D_B\times 0.65$

Notes:
L_C=Required hopper capacity (L)
M=Required drying capacity per hour (kg/hr)
T_H=Drying time (hr)
S=Safety factor (1.2)
D_B=Material bulk density (kg/L)

Hopper Dryer

Generally, hopper dryer is for processing materials whose moisture absorption is not strong, like PP and PE. The hopper capacity of models is its actual effective capacity. The required drying tank capacity can be calculated according to the following formula:

$L_C=M\times T_H\times S/D_B$

Notes:
L_C=Required hopper capacity (L)
M=Required drying capacity per hour (kg/hr)
T_H=Drying time (hr)
S=Safety factor (1.2)
D_B=Material bulk density (kg/L)

Honeycomb Dehumidifier

Usually, honeycomb dehumidifier can't be used alone. Instead, it should be used together with hopper dry barrel, hopper dryer or other drying devices. Honeycomb dehumidifier provides clients with air of -40℃ dew-point. Model of -50℃ dew-point is optional. Air volume is the main factor for selecting honeycomb dehumidifier, which can be calculated according to the following formula:

$L_A=M\times W$

Notes:
L_A=Required drying air volume (m^3/hr)
M=Required drying capacity of materials per hour (kg/hr)
W=Required air volume per hour for unit weight of material (m^3/kg.hr)

Dehumidifying Dryer "All-in-One" Compact Dryer

These two types of models can be selected by referring to the selecting ways of the 3 above models.

Material Properties Guideline

Material	Drying Temp. (℃)	Bulk Density (kg/L)	Drying Time (hr)	Initial Moisture Content (%)	Residual Moisture Content (%)	Airflow Requirement (Nm^3/kg.hr)
ABS	80	0.6	2~3	0.2	0.02	1.8~2.4
CA	75	0.5	2~3	1.0	0.02	2.5~3.5
CAB	75	0.5	2~3	0.8	0.02	3.0~3.5
CP	75	0.6	2~3	1.0	0.02	2.9~3.5
LCP	150	0.6	4	0.04	0.02	1.8
PA	70~80	0.65	3~6	1.0	0.05	2.4~3.0
PBT	120~140	0.7	4	0.3	0.02	1.8~2.4
PC	120	0.7	2~3	0.3	0.01	1.8
PE	90	0.6	1	>0.01	>0.01	1.8~2.4
PEEK	150	0.6	3~4	0.4	0.02	1.8
PEI	150	0.6	3~4	0.25	0.02	1.8
PEN	170	0.85	5	0.01	0.005	2.4~3.5
PES	150~180	0.7	4	0.8	0.02	1.56~2.4
PET	160~180	0.85	4~6	0.08	0.005	2.4~3.5
PETG	60~70	0.6	4~6	0.5	0.02	2.4
PI	120~140	0.6	3	0.4	0.02	1.5~1.8
PMMA	70~100	0.65	3	0.5	0.02	2.0~2.4
POM	95~110	0.6	3	0.2	0.02	1.7~2.4
PP	90	0.5	1	>0.01	0.02	1.8~2.4
PPO	110~125	0.5	2	0.13	0.04	1.8~2.1
PPS	140~150	0.6	3~4	0.1	0.02	1.8
PS	80	0.5	1	>0.01	0.02	1.5~1.8
PSU	120~170	0.65	4	0.3	0.02	1.8~2.0
PUR	80~90	0.7	3	0.2	0.02	2.5~2.8
PVC	70	0.5	1	0.1	0.02	1.7~2.1
SAN	80	0.5	2~3	0.1	0.05	1.7~2.1
SB	80	0.6	2	0.2	0.05	1.7~2.1
TPE	105	0.7	3	0.1	0.02	2.9

Notes:
1、Airflow requirement has included air flow margin.
2、Above datas are references only for equipment selection. In actual application, please refer to parameters provided by raw material suppliers.

Unit Conversion

	Before Conversion	After Conversion	Conversion Value
Temp.	°F ℃	℃ °F	(°F-32)×5/9=℃ (℃+32)×9/5=°F
Unit Volume	GPM CFM L/min	m^3/hr m^3/hr m^3/hr	0.2271 1.6992 0.06
Unit Weight	PSI bar Kpa	kg/m^2 kg/m^2 kg/m^2	0.07031 0.001 0.01
Length	inch foot dm	mm mm mm	25.4 304.8 100
Volume	cu inches cu feet L(dm^3) L(dm^3)	L(dm^3) L(dm^3) m^3 cm^3	0.0164 28.3168 0.001 1000
Power	kW kW kW kW kW	kcal/hr BTU/hr hp kj/hr RT	860 3413 1.341 3612 3.5163
Weight	kg pounds	pound kg	2.2046 0.4536