

2017 ASHRAE Handbook - Fundamentals (IP)																		
EL TORO MCAS, CA, USA (WMO: 722908)																		
Lat:33.667N			Long:117.733W			Elev:384			StdP: 14.49			Time zone:-8.00		Period:90-98		WBAN:99999		
Annual Heating and Humidification Design Conditions																		
Coldest Month	Heating DB		Humidification DP/MCDB and HR						Coldest month WS/MCDB				MCWS/PCWD to 99.6% DB					
			99.6%			99%			0.4%		1%							
	99.6%	99%	DP	HR	MCDB	DP	HR	MCDB	WS	MCDB	WS	MCDB	MCWS	PCWD				
12	43.2	45.3	10.4	9.5	59.4	15.4	12.1	59.8	23.6	59.9	19.5	59.2	2.9	90				
Annual Cooling, Dehumidification, and Enthalpy Design Conditions																		
Hottest Month	Hottest Month DB Range	Cooling DB/MCWB						Evaporation WB/MCDB						MCWS/PCWD to 0.4% DB				
		0.4%		1%		2%		0.4%		1%		2%						
		DB	MCWB	DB	MCWB	DB	MCWB	WB	MCDB	WB	MCDB	WB	MCDB	MCWS	PCWD			
8	19.6	91.9	67.8	88.9	67.5	86.0	66.8	71.7	86.1	70.4	84.5	69.2	82.8	6.0	270			
Dehumidification DP/MCDB and HR																		
0.4%			1%			2%			0.4%			1%			2%			Extreme Max WB
DP	HR	MCDB	DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCDB	Enth	MCDB				
66.4	98.5	79.1	65.0	93.8	77.8	63.9	90.1	76.3	35.7	86.3	34.4	85.2	33.4	82.9	80.4			
Extreme Annual Design Conditions																		
Extreme Annual WS			Extreme Annual Temperature						n-Year Return Period Values of Extreme Temperature									
			Mean		Standard deviation		n=5 years		n=10 years		n=20 years		n=50 years					
1%	2.5%	5%	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max				
15.5	12.3	10.6	DB	38.8	99.3	2.4	2.6	37.1	101.2	35.7	102.7	34.3	104.2	32.6	106.1			
			WB	32.4	75.5	2.5	2.3	30.6	77.2	29.2	78.6	27.8	79.9	25.9	81.6			
Monthly Climatic Design Conditions																		
Temperatures, Degree-Days and Degree-Hours	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
	DBAvg	65.2	57.7	58.3	59.7	63.0	65.3	68.9	72.4	74.4	73.0	68.6	63.0	57.4				
	DBStd	7.46	4.55	5.11	4.53	4.81	4.12	4.11	3.23	3.90	4.11	5.18	5.43	4.21				
	HDD50	7	1	3	0	0	0	0	0	0	0	0	0	3				
	HDD65	1111	233	199	175	94	47	11	0	0	0	16	99	237				
	CDD50	5544	239	235	301	389	476	566	695	756	690	575	389	233				
	CDD65	1172	6	10	10	33	57	127	230	291	241	126	38	3				
	CDH74	8313	74	112	133	356	313	792	1366	2155	1689	917	369	37				
CDH80	2652	7	20	27	80	79	237	350	776	618	358	97	3					
Wind	WSAvg	3.8	3.9	4.3	4.1	4.0	4.0	3.9	3.6	3.5	3.2	3.6	3.7	4.1				
Precipitation	PrecAvg	11.80	2.10	2.60	2.40	0.90	0.20	0.10	0.00	0.00	0.20	0.30	1.50	1.80				
	PrecMax	25.60	7.50	13.60	10.20	3.80	1.60	0.30	0.30	0.80	1.70	1.70	6.70	7.90				
	PrecMin	3.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
	PrecStd	5.60	2.00	3.20	2.20	1.10	0.40	0.10	0.10	0.10	0.40	0.40	1.50	1.90				
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	80.7	83.3	83.5	87.1	87.9	92.9	91.1	96.8	94.2	95.3	88.3	78.0				
		MCWB	56.2	59.0	59.1	62.5	65.1	67.6	69.0	71.4	68.8	65.0	60.6	54.0				
	2%	DB	75.6	77.4	77.5	81.9	81.1	86.2	86.9	91.4	90.2	88.7	82.1	73.7				
		MCWB	53.4	56.6	58.2	60.2	64.1	67.2	69.7	70.0	68.7	63.8	57.9	54.3				
	5%	DB	71.5	72.0	72.8	78.1	76.9	81.5	83.6	87.9	86.9	83.4	78.0	70.0				
		MCWB	52.8	54.9	57.5	60.6	62.9	65.9	68.4	69.1	68.3	62.2	56.5	52.8				
10%	DB	67.7	67.5	68.9	73.8	73.9	78.0	81.2	84.4	83.4	78.5	74.1	66.3					
	MCWB	51.6	54.7	56.6	59.4	61.4	64.6	67.4	68.6	68.0	62.5	55.3	52.0					
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	60.4	61.9	62.7	66.3	67.7	70.5	72.7	74.7	73.1	70.1	63.8	60.2				
		MCDB	65.9	75.6	75.9	80.5	82.9	86.3	87.1	89.6	86.5	87.8	79.5	69.2				
	2%	WB	58.3	59.3	60.6	64.0	65.3	68.4	70.6	72.2	71.0	67.6	61.4	57.3				
		MCDB	63.9	69.4	72.4	77.3	78.6	83.2	83.9	87.2	85.6	82.6	75.6	65.4				
	5%	WB	57.1	57.8	59.1	62.3	63.6	66.7	69.2	70.8	69.4	65.5	59.8	55.9				
		MCDB	63.5	66.4	69.4	74.3	75.2	80.2	81.4	84.5	84.2	77.8	72.5	64.6				
10%	WB	55.5	56.4	57.6	60.3	62.1	65.1	68.0	69.4	68.1	63.8	58.3	54.6					
	MCDB	63.3	64.2	65.8	71.3	73.1	77.5	79.5	82.7	82.0	74.6	69.0	63.3					
Mean Daily Temperature Range	5% DB	MDBR	17.3	17.2	17.5	19.0	16.2	17.6	17.6	19.6	19.4	19.2	19.7	17.9				
		MCDBR	24.6	25.4	25.1	26.4	21.2	24.2	21.3	24.0	25.3	26.9	25.4	23.3				
		MCWBR	13.6	13.5	13.5	13.7	11.3	12.1	10.0	11.2	12.7	14.3	14.4	13.7				
	5% WB	MCDBR	17.4	18.6	19.8	21.9	18.3	21.9	19.2	20.7	22.2	21.6	20.5	17.9				
MCWBR		12.3	11.5	11.7	12.8	10.0	11.2	9.3	10.5	12.7	14.3	14.4	13.7					
Clear Sky Solar	taub	0.313	0.321	0.345	0.354	0.353	0.367	0.376	0.362	0.346	0.344	0.305	0.303					

Irradiance	taud	2.555	2.545	2.457	2.436	2.473	2.438	2.479	2.505	2.539	2.520	2.620	2.622
	Ebn,noon	287	296	296	296	295	290	286	290	291	284	289	285
	Edn,noon	26	29	34	36	35	36	35	33	31	29	24	23
All-Sky Solar Radiation	RadAvg	1015	1269	1692	2048	2253	2337	2327	2211	1868	1400	1090	892
	RadStd	60	103	89	101	149	149	110	68	83	108	63	59
CDDn	Cooling degree-days base n°F, °F-day			Lat	Latitude, °			Period					Years used to calculate the design conditions
CDHn	Cooling degree-hours base n°F, °F-hour			Long	Longitude, °			Sd					Standard deviation of daily average temperature, °F
DB	Dry bulb temperature, °F			MCDB	Mean coincident dry bulb temperature, °F			StdP					Standard pressure at station elevation, psi
DP	Dew point temperature, °F			MCDBR	Mean coincident dry bulb temp. range, °F			taub					Clear sky optical depth for beam irradiance
Ebn,noon	Clear sky beam normal and diffuse horizontal irradiances at solar noon, Btu/h/ft ²			MCDP	Mean coincident dew point temperature, °F			taud					Clear sky optical depth for diffuse irradiance
Edh,noon				MCWB	Mean coincident wet bulb temperature, °F			Tavg					Average temperature, °F
Elev	Elevation, ft			MCWBR	Mean coincident wet bulb temp. range, °F			Time Zone					Hours ahead or behind UTC
Enth	Enthalpy, Btu/lb			MCWS	Mean coincident wind speed, mph			WB					Wet bulb temperature, °F
HDDn	Heating degree-days base n°F, °F-day			MDBR	Mean dry bulb temp. range, °F			Hours 8/4 & 55/69					Number of hours between 8 a.m. and 4 p.m. with DB between 55 and 69 °F
PCWD	Prevailing coincident wind direction, °, 0 = North, 90 = East			WS	Wind speed, mph			HR					Humidity ratio, grains of moisture per lb of dry air