

2017 ASHRAE Handbook - Fundamentals (SI)															
CAIRO INTL, EGYPT (WMO: 623660)															
Lat:30.122N		Long:31.406E		Elev:116		StdP: 99.93			Time zone:2.00		Period:90-14		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%	99.6%			99%			0.4%		1%		MCWS	PCWD	
	DP	HR	MCDB	DP	HR	MCDB	WS	MCDB	WS	MCDB	MCWS	PCWD			
1	7.9	8.9	-3.2	2.9	21.3	-1.1	3.5	20.2	11.3	15.6	10.0	16.5	2.5	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%		MCWS	PCWD
	DB	MCWB	DB	MCWB	DB	MCWB	WB	MCDB	WB	MCDB	WB	MCDB	MCWS		
8	10.5	38.2	21.2	36.9	21.5	35.7	21.6	25.2	32.1	24.5	31.3	24.0	30.6	5.2	350
Dehumidification DP/MCDB and HR									Enthalpy/MCDB						Extreme Max WB
0.4%			1%			2%			0.4%		1%		2%		
DP	HR	MCDB	DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCDB	Enth	MCDB	
23.2	18.3	27.7	22.8	17.8	27.4	22.1	17.0	27.0	77.6	32.0	74.9	31.5	72.7	30.6	28.3
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	
9.3	8.1	7.2	DB	5.5	42.0	2.3	1.7	3.8	43.2	2.4	44.2	1.1	45.1	-0.5	46.4
			WB	3.2	26.5	1.7	0.8	2.0	27.1	1.0	27.5	0.0	28.0	-1.2	28.6
Monthly Climatic Design Conditions															
		Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Temperatures, Degree-Days and Degree-Hours	DBAvg	22.6	14.5	15.5	18.1	21.8	25.4	28.1	29.1	29.2	27.7	24.7	20.1	16.0	
	DBStd	5.87	2.15	2.78	3.36	3.57	2.89	2.13	1.62	1.34	1.85	2.27	2.54	2.32	
	HDD10.0	1	1	1	0	0	0	0	0	0	0	0	0	0	
	HDD18.3	344	120	87	43	5	0	0	0	0	0	0	10	79	
	CDD10.0	4586	141	155	252	355	476	543	592	596	529	456	304	186	
	CDD18.3	1887	2	8	37	109	218	293	334	338	279	197	64	7	
	CDH23.3	20755	16	72	359	1152	2380	3534	4141	4135	3003	1604	328	32	
CDH26.7	10233	1	19	134	529	1182	1931	2213	2133	1429	588	69	5		
Wind	WSAvg	3.6	3.2	3.7	4.0	4.2	4.2	4.0	3.5	3.3	3.5	3.3	3.0	3.1	
Precipitation	PrecAvg	23	6	4	5	1	0	0	0	0	0	1	3	6	
	PrecMax	45	22	16	30	10	6	1	0	0	0	14	21	25	
	PrecMin	5	0	0	0	0	0	0	0	0	0	0	0	0	
	PrecStd	11	6	4	6	2	1	0	0	0	0	3	5	7	
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	25.4	29.8	34.8	38.9	39.9	40.6	39.8	38.0	38.9	36.0	31.8	26.8	
		MCWB	13.8	15.9	16.4	18.6	19.6	21.3	22.4	23.3	21.4	20.4	18.3	15.6	
	2%	DB	22.2	25.2	30.1	35.1	36.7	38.0	37.0	36.5	36.0	33.1	28.4	23.4	
		MCWB	13.0	13.7	16.1	17.9	19.1	21.3	22.8	23.2	21.8	20.5	18.3	15.0	
	5%	DB	20.2	22.8	27.1	32.1	34.5	36.1	35.8	35.2	34.1	31.2	26.7	21.9	
		MCWB	12.9	13.0	14.9	17.0	18.9	21.1	22.7	23.0	22.0	20.4	17.8	14.7	
10%	DB	19.0	20.8	24.4	29.6	32.4	34.4	34.4	34.1	32.8	29.9	25.0	20.5		
	MCWB	12.5	12.7	14.6	16.4	18.7	20.9	22.6	22.9	21.9	20.3	17.3	14.0		

<b>Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures</b>	0.4%	WB	16.0	16.9	19.5	20.9	21.7	24.3	26.0	26.3	24.9	23.6	21.4	17.8
		MCDB	21.3	26.5	28.5	32.8	32.9	33.3	33.1	32.7	31.7	29.5	26.2	22.7
	2%	WB	14.7	15.1	17.4	19.2	20.8	23.2	25.0	25.4	24.0	22.4	20.2	16.6
		MCDB	19.4	21.9	26.5	31.0	31.8	32.4	32.1	32.1	30.5	28.3	25.0	21.6
	5%	WB	13.8	14.1	16.2	18.1	20.1	22.6	24.3	24.8	23.4	21.7	19.2	15.7
		MCDB	18.7	20.1	24.1	29.6	30.4	31.6	31.4	31.3	29.7	27.4	24.2	20.3
	10%	WB	13.1	13.4	15.2	17.1	19.5	22.0	23.8	24.2	22.8	21.1	18.3	14.8
		MCDB	17.7	19.0	22.5	26.9	29.2	30.6	30.9	30.5	29.1	26.9	23.3	19.1
<b>Mean Daily Temperature Range</b>	5% DB	MDBR	8.8	9.2	10.4	12.1	12.7	12.3	11.1	10.5	10.5	10.0	9.2	8.8
		MCDBR	10.3	12.3	14.0	16.2	15.3	14.3	12.4	11.6	12.1	11.7	10.9	10.2
		MCWBR	5.3	5.3	5.4	5.8	5.0	4.0	3.7	3.4	3.5	3.7	4.5	5.2
	5% WB	MCDBR	9.4	10.4	12.5	14.5	13.3	12.7	11.5	11.0	11.0	10.7	9.8	9.5
		MCWBR	5.3	5.0	5.3	5.6	4.4	3.8	3.6	3.4	3.5	3.7	4.5	5.2
<b>Clear Sky Solar Irradiance</b>	taub	0.442	0.490	0.537	0.569	0.575	0.487	0.474	0.476	0.483	0.494	0.432	0.418	
	taud	1.966	1.845	1.736	1.693	1.710	1.946	1.994	1.990	1.962	1.934	2.069	2.067	
	Ebn,noon	757	758	753	748	746	811	820	814	791	745	765	762	
	Edn,noon	153	188	224	242	240	188	179	178	176	170	137	132	
<b>All-Sky Solar Radiation</b>	RadAvg	3.51	4.35	5.58	6.49	7.27	7.79	7.56	7.07	6.11	4.74	3.76	3.27	
	RadStd	0.11	0.20	0.20	0.24	0.21	0.09	0.12	0.15	0.09	0.14	0.10	0.08	

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 <sup>2</sup>	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