

2021 ASHRAE Handbook - Fundamentals (SI)																
MONTE CASEROS, ARGENTINA (WMO: 873930)																
Lat: 30.2617S		Long: 57.6389W		Elev: 54		StdP: 100.68			Time zone: -3.00 (W03)			Period: 94-19		WBAN: 99999		
Annual Heating, Humidification, and Ventilation Design Conditions																
Coldest Month	Heating DB		Humidification DP/MCDB and HR						Coldest month WS/MCDB				MCWS/PCWD to 99.6% DB		WSF	
			99.6%			99%			0.4%		1%					
	99.6%	99%	DP	HR	MCDB	DP	HR	MCDB	WS	MCDB	WS	MCDB	MCWS	PCWD		
7	3.5	5.0	-1.0	3.5	7.9	0.6	4.0	8.1	11.7	16.8	10.4	14.8	1.1	270	0.332	
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	
1	9.9	35.3	23.9	33.8	23.6	32.4	23.3	26.1	31.7	25.5	30.8	24.8	29.9	3.2	0	
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		
24.6	19.7	29.1	24.0	19.0	28.6	23.4	18.3	27.9	81.5	31.8	78.6	30.9	76.0	29.9	28.1	
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
10.8	9.1	7.5	DB	0.5	38.2	1.0	0.7	-0.2	38.7	-0.8	39.1	-1.3	39.5	-2.0	40.1	
			WB	0.1	27.3	1.4	0.5	-0.8	27.7	-1.6	28.0	-2.4	28.2	-3.4	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	20.4	26.6	25.8	23.8	20.6	17.0	14.8	14.3	16.2	17.6	20.3	22.8	25.2		
	DBStd	5.57	2.59	2.82	3.13	3.65	3.46	4.57	4.58	4.62	4.25	3.18	2.77	3.06		
	HDD10.0	21	0	0	0	0	0	8	10	3	1	0	0	0		
	HDD18.3	539	0	0	2	17	69	126	144	100	63	16	2	0		
	CDD10.0	3809	516	444	427	318	216	153	142	196	228	318	383	470		
	CDD18.3	1285	257	211	170	85	27	21	18	34	41	76	135	212		
	CDH23.3	10349	2608	1851	1248	445	83	58	71	208	291	464	994	2028		
	CDH26.7	3927	1144	728	442	118	10	5	9	55	96	130	323	868		
Wind		WSAvg	2.6	2.2	2.2	2.2	2.3	2.1	2.4	2.7	3.2	3.3	3.1	2.7	2.5	
Precipitation	PrecAvg	1466	141	154	157	154	110	77	80	66	98	143	144	136		
	PrecMax	2067	430	433	356	488	310	201	278	218	316	353	392	379		
	PrecMin	877	8	12	22	24	0	14	2	11	14	36	17	32		
	PrecStd	292	93	103	79	119	73	49	64	45	57	83	78	85		
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	37.3	36.4	35.1	32.3	28.0	27.5	27.8	31.0	33.2	32.8	34.2	37.0		
		MCWB	24.5	24.3	24.5	24.4	22.0	21.7	20.4	21.1	22.7	22.5	22.9	24.3		
	2%	DB	35.2	34.0	32.8	29.7	25.6	25.1	25.4	28.3	29.2	29.8	32.0	34.7		
		MCWB	23.7	24.3	23.8	22.9	20.6	20.5	19.8	19.9	21.1	21.4	22.1	23.7		
	5%	DB	33.5	32.3	30.9	27.7	23.8	23.1	22.9	25.6	26.5	27.7	30.2	32.9		
		MCWB	23.5	23.7	23.2	22.0	19.8	19.9	18.8	19.0	19.8	20.5	21.3	23.2		
	10%	DB	32.0	30.7	29.1	25.8	22.0	21.3	20.7	23.2	24.1	25.8	28.5	31.0		
		MCWB	23.2	23.3	22.7	21.2	19.0	18.7	17.3	18.1	18.7	19.5	20.6	22.7		
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	27.0	26.7	26.4	25.3	23.3	22.5	21.8	22.1	23.6	24.2	25.1	26.6		
		MCDB	33.0	31.8	32.2	30.4	26.3	25.9	25.4	28.5	29.9	30.2	31.2	32.7		
	2%	WB	25.9	25.8	25.4	24.1	21.9	21.4	20.2	20.7	22.0	22.9	23.6	25.7		
		MCDB	31.5	31.3	30.2	28.1	24.2	24.1	24.3	26.5	27.6	27.7	29.0	31.3		
	5%	WB	25.2	25.1	24.6	23.1	20.5	20.2	19.1	19.7	20.6	21.7	22.7	24.7		
		MCDB	30.6	30.2	28.7	26.5	23.0	22.5	22.4	24.8	25.4	26.0	27.6	30.5		
	10%	WB	24.5	24.4	23.8	22.0	19.4	19.0	17.8	18.5	19.3	20.6	21.8	23.8		
		MCDB	29.7	29.0	27.6	24.6	21.6	21.2	20.6	22.6	23.5	24.4	26.3	29.3		

Mean Daily Temperature Range		MDBR	9.9	9.4	9.6	8.4	8.2	8.4	8.9	10.1	9.8	9.5	10.3	10.3
	5% DB	MCDBR	12.2	11.2	11.7	10.5	9.9	9.2	10.8	12.8	13.2	12.5	12.8	12.6
		MCWBR	3.7	3.6	4.4	4.5	5.2	5.0	5.5	5.7	5.9	5.5	5.0	4.3
	5% WB	MCDBR	9.2	9.6	9.5	8.5	7.7	8.2	9.5	11.3	11.2	10.3	9.8	10.3
		MCWBR	3.8	3.9	4.2	4.1	4.5	4.6	5.3	5.5	5.9	5.5	5.0	4.3
Clear Sky Solar Irradiance	taub		0.407	0.401	0.392	0.391	0.370	0.376	0.384	0.465	0.513	0.460	0.401	0.414
	taud		2.374	2.398	2.406	2.364	2.401	2.376	2.317	2.046	1.934	2.154	2.345	2.332
	Ebn at noon		935	921	896	840	808	773	781	749	766	856	934	931
	Edn at noon		130	123	115	109	94	92	101	147	182	156	133	137
All-Sky Solar Radiation	RadAvg		6.92	6.18	5.34	4.02	2.95	2.51	2.83	3.61	4.49	5.49	6.70	7.03
	RadStd		0.64	0.43	0.45	0.54	0.29	0.25	0.30	0.32	0.49	0.65	0.75	0.49
Historical Trends														
	DBAvg	Heating		Cooling			Degree-Days							
		99% DB	99% DP	1% DB	1% WB	1% DP	HDD10.0	HDD18.3	CDD10.0	CDD18.3				
Station Only	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Regional (0 neighbors)	N/A	N/A	N/A	N/A	+0.47	+0.54	N/A	N/A	N/A	N/A				

CDDn	Cooling degree-days base n°C, °C-day	Lat	Latitude, °	Period	Years used to calculate the design conditions
CDHn	Cooling degree-hours base n°C, °C-hour	Long	Longitude, °	Sd	Standard deviation of daily average temperature, °C
DB	Dry bulb temperature, °C	MCDB	Mean coincident dry bulb temperature, °C	StdP	Standard pressure at station elevation, kPa
DP	Dew point temperature, °C	MCDBR	Mean coincident dry bulb temp. range, °C	taub	Clear sky optical depth for beam irradiance
Ebn,noon	Clear sky beam normal and diffuse horizontal irradiances at solar noon, W/m2	MCDP	Mean coincident dew point temperature, °C	taud	Clear sky optical depth for diffuse irradiance
Edh,noon		MCWB	Mean coincident wet bulb temperature, °C	Tavg	Average temperature, °C
Elev	Elevation, m	MCWBR	Mean coincident wet bulb temp. range, °C	Time Zone	Hours ahead or behind UTC
Enth	Enthalpy, kJ/kg	MCWS	Mean coincident wind speed, m/s	WB	Wet bulb temperature, °C
HDDn	Heating degree-days base n°C, °C-day	MDBR	Mean dry bulb temp. range, °C	Hours 8/4 & 12.8/20.6	Number of hours between 8 a.m. and 4 p.m with DB between 12.8 and 20.6 °C
PCWD	Prevailing coincident wind direction, °,0 = North, 90 = East	WS	Wind speed, m/s	HR	Humidity ratio, g of moisture per kg of dry air