

2021 ASHRAE Handbook - Fundamentals (SI)																
SAN MIGUEL DE TUCUMAN, ARGENTINA (WMO: 871210)																
Lat:26.8372S			Long:65.1083W			Elev:450		StdP: 96.03		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	3.3	4.9	-3.1	3.1	13.5	-1.4	3.6	11.8	8.0	16.3	6.9	14.8	2.9	320	0.368	
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	10.2	36.7	23.5	35.1	23.4	33.8	23.2	26.5	32.7	25.7	31.8	25.0	31.0	4.6	50	
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		
24.8	21.0	30.8	24.0	19.9	29.8	23.2	18.9	28.7	86.2	33.0	82.6	31.8	79.2	31.1	31.6	
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	
8.4	7.0	5.9	DB	0.6	40.4	1.7	1.5	-0.6	41.4	-1.5	42.3	-2.5	43.1	-3.7	44.2	
			WB	-0.4	28.2	1.8	1.0	-1.7	29.0	-2.7	29.5	-3.7	30.1	-5.0	30.8	
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	25.8	24.8	23.0	20.1	16.7	13.8	13.4	16.1	19.0	22.2	24.2	25.5		
	DBStd	5.57	2.89	3.11	3.05	3.37	3.33	2.89	3.55	4.20	4.41	4.04	3.61	3.19		
	HDD10.0	18	0	0	0	0	1	4	9	3	1	0	0	0		
	HDD18.3	542	0	1	4	20	72	137	157	95	43	12	2	1		
	CDD10.0	3804	491	414	404	304	209	119	116	192	272	377	424	480		
	CDD18.3	1286	232	181	149	74	22	2	4	26	64	131	177	222		
	CDH23.3	11904	2248	1551	1041	429	108	11	54	337	749	1363	1792	2221		
	CDH26.7	5150	1021	639	358	107	11	1	10	121	316	646	869	1052		
Wind		WSAvg	2.9	3.1	3.0	2.7	2.5	2.4	2.5	2.8	3.0	3.2	3.2	3.2	3.2	
Precipitation	PrecAvg	1018	223	184	167	66	27	13	9	9	16	65	104	164		
	PrecMax	1504	451	388	392	152	98	37	30	39	73	162	196	375		
	PrecMin	601	97	40	41	6	1	0	0	0	0	9	25	16		
	PrecStd	220	98	78	84	39	23	8	8	12	15	41	51	81		
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	37.5	36.2	34.0	31.2	28.1	24.9	27.8	34.0	35.9	38.2	38.2	38.8		
		MCWB	25.2	25.7	25.1	23.6	20.9	18.3	18.3	20.1	21.1	22.7	23.1	24.1		
	2%	DB	35.1	34.0	32.0	29.5	26.1	22.6	24.6	30.0	32.9	35.2	35.9	35.9		
		MCWB	24.9	25.2	24.5	22.9	19.8	16.4	16.3	18.1	19.4	21.8	22.3	24.0		
	5%	DB	33.5	32.2	30.2	27.8	24.2	21.0	22.5	27.0	30.4	32.9	33.8	34.0		
		MCWB	24.4	24.7	23.6	21.7	18.7	15.0	14.9	16.7	18.2	20.6	22.0	23.9		
	10%	DB	31.9	30.6	28.8	25.9	22.3	19.2	20.2	24.2	27.9	30.3	31.8	32.1		
		MCWB	24.0	24.0	22.9	20.8	17.7	14.4	13.7	15.2	16.9	19.6	21.4	23.2		
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	27.6	27.3	26.5	25.0	21.9	19.3	18.9	20.7	22.6	24.7	25.9	27.0		
		MCDB	33.9	33.1	31.8	30.0	26.2	23.2	26.4	31.5	31.7	34.3	33.0	34.1		
	2%	WB	26.3	26.3	25.3	23.6	20.7	17.6	17.3	19.0	20.8	23.1	24.6	25.8		
		MCDB	32.6	32.0	30.4	27.8	24.5	21.1	23.1	28.5	30.3	32.0	32.0	32.8		
	5%	WB	25.4	25.4	24.4	22.5	19.7	16.5	16.0	17.5	19.4	22.0	23.5	24.9		
		MCDB	31.5	30.8	29.0	26.3	23.0	19.5	20.7	25.6	27.7	29.6	30.8	32.0		
	10%	WB	24.6	24.5	23.4	21.5	18.6	15.3	14.5	16.0	18.1	20.8	22.5	24.0		
		MCDB	30.3	29.6	27.5	24.9	21.7	18.2	19.0	23.0	26.2	27.9	29.3	30.4		

Mean Daily Temperature Range		MDBR	10.2	9.2	8.6	8.7	8.7	9.7	11.8	13.5	13.7	12.3	11.7	10.9
	5% DB	MCDBR	12.7	11.9	11.3	11.5	11.6	12.6	15.0	17.3	17.7	16.8	15.5	14.2
		MCWBR	5.7	5.6	5.7	6.1	6.4	7.2	8.0	8.3	7.7	6.7	6.4	6.2
	5% WB	MCDBR	11.4	10.8	10.2	9.8	9.8	10.3	13.0	15.8	15.4	14.0	12.7	12.3
		MCWBR	5.8	5.6	5.6	5.6	5.8	6.4	7.4	7.9	7.7	6.7	6.4	6.2
Clear Sky Solar Irradiance	taub		0.408	0.407	0.392	0.370	0.331	0.318	0.318	0.361	0.429	0.433	0.414	0.413
	taud		2.390	2.388	2.430	2.447	2.508	2.510	2.478	2.346	2.156	2.227	2.325	2.368
	Ebn at noon		936	920	904	876	871	862	876	871	853	885	924	934
	Edn at noon		129	126	115	103	88	83	89	111	148	146	136	132
All-Sky Solar Radiation	RadAvg		6.29	5.75	4.83	4.03	3.35	3.15	3.65	4.57	5.48	5.93	6.35	6.27
	RadStd		0.47	0.46	0.40	0.35	0.34	0.28	0.24	0.28	0.44	0.49	0.56	0.41
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	+0.95	+0.37	N/A	N/A	N/A	N/A	N/A			
Regional (0 neighbors)		N/A	N/A	N/A	+0.76	+0.45	N/A	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