

2021 ASHRAE Handbook - Fundamentals (SI)																	
SAN ANTONIO OESTE, ARGENTINA (WMO: 877840)																	
Lat:40.757S			Long:65.031W			Elev:20		StdP: 101.08			Time zone:-3.00 (W03)			Period:95-09		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	-1.6	-11.2	1.4	13.6	-9.0	1.7	11.7	15.3	12.4	13.6	9.0	2.9	320	0.660		
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	12.2	35.2	17.9	33.3	17.3	31.3	16.7	20.6	28.6	19.6	27.3	18.8	26.5	8.8	320		
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			
18.2	13.2	23.1	17.1	12.2	22.5	16.1	11.5	21.6	59.5	28.4	56.2	27.3	53.4	26.4	26.9		
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	Min	Max
13.8	12.4	11.5	DB	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
			WB	-7.2	23.3	1.8	1.1	-8.5	24.1	-9.5	24.7	-10.5	25.3	-11.8	26.1		
Monthly Climatic Design Conditions																	
			Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Temperatures, Degree-Days and Degree-Hours	DBAvg	14.8	22.6	21.7	19.1	14.4	10.4	7.8	7.6	9.1	11.1	15.2	18.3	20.7			
	DBStd	6.43	3.32	4.00	3.94	3.72	3.15	3.15	3.49	3.35	3.93	3.81	3.94	3.54			
	HDD10.0	299	0	0	0	4	33	78	91	57	32	3	0	0			
	HDD18.3	1752	4	11	38	128	245	315	333	284	219	111	47	17			
	CDD10.0	2057	390	328	283	137	47	13	16	31	66	166	249	331			
	CDD18.3	468	136	106	62	11	1	0	0	0	2	15	47	89			
	CDH23.3	5046	1388	1126	616	122	8	0	0	3	31	208	578	967			
	CDH26.7	2068	613	526	224	25	1	0	0	0	4	59	221	394			
Wind		WSAvg	5.7	6.6	6.4	5.9	5.4	4.9	5.1	5.5	5.4	5.2	5.8	6.2	6.4		
Precipitation	PrecAvg	260	18	25	34	30	26	19	20	16	15	25	16	18			
	PrecMax	471	69	123	138	212	114	76	84	81	71	128	67	71			
	PrecMin	117	0	0	0	0	0	0	0	0	0	0	0	0			
	PrecStd	88	17	28	37	38	26	18	20	18	17	26	14	17			
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	37.1	38.1	34.8	29.5	24.2	18.8	20.5	23.4	27.3	31.5	35.4	36.8			
		MCWB	18.1	19.6	17.6	16.3	12.6	10.6	11.7	12.2	12.1	14.9	17.3	17.8			
	2%	DB	34.7	34.9	31.6	26.6	20.2	16.3	17.5	19.7	23.4	28.0	31.6	33.7			
		MCWB	17.7	18.3	17.6	15.1	12.2	9.4	9.7	10.9	11.4	13.8	15.7	17.2			
	5%	DB	32.6	32.6	29.1	24.3	18.1	15.0	15.8	17.7	20.8	25.5	29.1	31.1			
		MCWB	17.0	17.8	16.5	14.0	11.4	9.3	8.9	9.6	10.7	12.8	15.4	16.2			
	10%	DB	30.1	30.0	26.9	21.6	16.3	13.5	14.2	15.9	18.7	23.0	26.6	28.9			
		MCWB	16.0	17.4	16.1	13.1	10.7	8.6	8.3	8.9	9.9	12.0	14.3	16.0			
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	20.9	22.5	21.1	18.7	14.9	12.4	13.6	13.5	14.2	17.6	19.6	20.9			
		MCDB	29.6	29.7	29.6	25.5	19.6	16.0	16.8	18.8	21.2	24.3	28.6	28.3			
	2%	WB	19.6	21.0	19.5	16.7	13.5	11.2	11.4	11.9	12.7	15.4	17.8	19.7			
		MCDB	27.9	29.3	26.5	23.2	17.7	14.0	15.7	18.4	19.8	23.3	27.2	27.1			
	5%	WB	18.7	19.9	18.4	15.1	12.6	10.2	10.0	10.6	11.7	14.2	16.5	18.5			
		MCDB	27.6	27.6	25.5	20.3	16.4	13.0	14.1	15.8	18.8	22.1	25.4	26.0			
	10%	WB	18.0	18.9	17.4	14.1	11.7	9.3	8.7	9.7	10.7	13.2	15.5	17.5			
		MCDB	26.2	26.0	24.2	19.7	15.2	12.6	13.2	14.2	17.0	20.9	23.6	25.4			

Mean Daily Temperature Range		MDBR	12.2	12.1	11.6	11.8	10.5	9.7	10.8	11.3	11.7	12.0	12.5	12.3
	5% DB	MCDBR	17.5	17.4	16.1	15.7	13.2	11.3	12.7	13.5	15.3	16.9	17.7	18.1
		MCWBR	6.1	6.6	7.2	7.2	7.2	6.4	7.3	7.3	7.4	7.3	6.6	6.8
	5% WB	MCDBR	12.9	13.4	12.5	12.0	10.9	9.1	10.6	11.6	13.0	13.3	13.3	12.0
		MCWBR	6.1	6.1	6.8	6.8	7.0	5.8	7.0	7.1	7.4	7.3	6.6	6.8
Clear Sky Solar Irradiance	taub		0.395	0.380	0.363	0.351	0.331	0.312	0.316	0.333	0.363	0.363	0.369	0.392
	taud		2.339	2.394	2.442	2.448	2.480	2.537	2.511	2.465	2.367	2.390	2.389	2.342
	Ebn at noon		933	920	891	830	780	771	791	839	875	927	953	942
	Edn at noon		131	118	103	89	73	63	70	85	109	118	124	132
All-Sky Solar Radiation	RadAvg		8.05	6.85	5.27	3.62	2.21	1.76	2.01	2.84	4.27	5.84	7.35	8.17
	RadStd		0.33	0.29	0.24	0.22	0.20	0.14	0.18	0.23	0.33	0.31	0.31	0.37
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)		+0.28	N/A	N/A	+0.60	+0.66	+0.56	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