

2021 ASHRAE Handbook - Fundamentals (SI)																	
SANTIAGO DEL ESTERO, ARGENTINA (WMO: 871290)																	
Lat:27.7547S			Long:64.2997W			Elev:199		StdP: 98.96			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	-0.6	1.6	-7.6	2.0	7.3	-5.6	2.4	8.7	9.9	18.1	8.9	20.9	0.8	320	0.363		
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	12.1	39.2	23.6	37.6	23.5	36.1	23.1	26.4	33.7	25.7	33.1	25.0	32.3	4.7	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			
24.6	20.0	30.2	23.8	19.1	29.1	23.1	18.3	28.3	84.1	33.9	80.5	33.1	77.6	32.4	30.4		
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		
9.2	8.0	6.5	DB	-4.0	42.0	1.7	1.3	-5.2	43.0	-6.2	43.7	-7.2	44.4	-8.4	45.4		
			WB	-5.1	27.7	1.7	0.9	-6.3	28.4	-7.3	28.9	-8.2	29.4	-9.5	30.1		
Monthly Climatic Design Conditions																	
			Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Temperatures, Degree-Days and Degree-Hours	DBAvg	20.9	27.3	26.2	24.1	20.6	16.7	13.6	13.2	15.9	19.1	23.0	25.0	26.8			
	DBStd	6.27	3.21	3.50	3.31	3.85	3.84	3.48	4.05	4.60	4.62	4.14	3.78	3.45			
	HDD10.0	27	0	0	0	0	1	8	14	4	1	0	0	0			
	HDD18.3	571	0	1	2	20	78	145	167	105	44	7	2	0			
	CDD10.0	4017	537	453	436	317	210	117	112	186	275	402	451	521			
	CDD18.3	1520	279	220	179	88	29	4	7	29	69	152	202	262			
	CDH23.3	17151	3343	2397	1678	712	204	33	111	449	910	1756	2394	3162			
	CDH26.7	8508	1816	1204	733	249	46	3	27	185	398	874	1254	1718			
Wind		WSAvg	2.6	2.6	2.5	2.3	2.3	2.1	2.0	2.4	2.7	3.1	3.2	3.1	2.9		
Precipitation	PrecAvg	593	123	104	87	36	14	7	3	1	11	43	68	97			
	PrecMax	1163	323	523	202	188	61	47	22	10	72	212	256	298			
	PrecMin	282	18	7	12	0	0	0	0	0	0	1	1	5			
	PrecStd	160	68	78	49	34	15	9	5	2	14	44	46	57			
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	40.7	39.7	37.4	34.1	30.4	27.0	30.1	35.5	37.9	39.9	40.4	41.4			
		MCWB	24.2	24.1	24.2	23.1	21.5	19.7	18.4	20.0	20.6	22.7	23.7	23.5			
	2%	DB	38.3	37.1	34.7	31.7	27.8	23.9	26.1	31.3	33.9	36.8	37.5	38.8			
		MCWB	24.2	24.5	24.0	22.3	20.3	17.2	17.3	18.8	19.6	22.0	22.5	23.8			
	5%	DB	36.6	35.2	32.8	29.5	25.6	22.0	23.8	28.1	31.2	34.1	35.5	36.6			
		MCWB	23.8	24.3	23.5	22.0	19.1	15.7	15.6	17.0	18.3	20.8	21.9	23.5			
	10%	DB	34.7	33.2	30.8	27.3	23.5	20.2	21.3	25.2	28.6	31.6	33.3	34.5			
		MCWB	23.6	23.7	22.7	20.8	18.0	14.8	13.7	15.4	17.2	20.0	21.4	23.1			
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	27.2	27.4	26.5	25.2	22.7	20.4	19.7	21.1	22.6	24.9	26.7	27.1			
		MCDB	34.5	34.7	32.9	30.9	28.3	24.9	28.0	32.0	34.0	35.8	33.2	35.2			
	2%	WB	26.2	26.1	25.3	24.0	21.5	18.9	18.1	19.4	21.0	23.5	24.7	25.7			
		MCDB	33.9	33.0	31.7	29.1	25.6	22.4	24.8	30.0	30.6	33.3	33.2	34.4			
	5%	WB	25.3	25.4	24.6	22.9	20.4	17.5	16.8	18.0	19.7	22.3	23.6	24.9			
		MCDB	33.0	32.1	30.5	27.3	23.9	20.2	22.2	26.8	28.9	30.9	32.3	33.1			
	10%	WB	24.6	24.6	23.7	21.9	19.3	16.2	15.2	16.2	18.3	21.1	22.5	24.1			
		MCDB	31.9	31.0	28.8	25.8	22.7	18.8	19.5	23.8	26.6	29.1	30.5	31.8			

Mean Daily Temperature Range		MDBR	12.1	11.2	10.6	10.6	10.8	11.7	14.1	15.5	15.1	13.1	13.0	12.4
	5% DB	MCDBR	14.9	14.1	13.9	13.7	13.7	14.8	17.6	19.6	18.7	17.2	16.2	15.9
		MCWBR	4.8	4.5	5.4	6.3	7.1	8.8	10.0	9.6	8.4	6.8	5.9	5.3
	5% WB	MCDBR	12.4	11.7	11.0	10.4	10.5	10.2	14.9	17.9	15.8	14.4	13.1	12.9
		MCWBR	4.9	4.7	4.9	5.5	5.7	6.7	8.8	8.9	8.4	6.8	5.9	5.3
Clear Sky Solar Irradiance	taub		0.410	0.407	0.393	0.380	0.354	0.339	0.341	0.396	0.462	0.442	0.411	0.412
	taud		2.396	2.405	2.443	2.436	2.461	2.481	2.441	2.267	2.077	2.219	2.339	2.375
	Ebn at noon		934	919	901	862	840	833	845	831	820	876	926	934
	Edn at noon		128	123	113	103	91	85	91	120	160	147	134	131
All-Sky Solar Radiation	RadAvg		6.70	6.06	4.85	3.82	3.08	2.79	3.37	4.34	5.25	5.86	6.59	6.65
	RadStd		0.50	0.43	0.49	0.43	0.39	0.35	0.28	0.31	0.49	0.57	0.59	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	N/A	+0.50	N/A	N/A	N/A	N/A	N/A				
Regional (0 neighbors)	N/A	N/A	N/A	+0.82	N/A	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