

2021 ASHRAE Handbook - Fundamentals (SI)																	
SAN LUIS, ARGENTINA (WMO: 874360)																	
Lat:33.2744S			Long:66.3514W			Elev:713		StdP: 93.05			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	0.4	2.0	-12.4	1.4	11.0	-9.9	1.8	10.9	14.7	13.6	13.0	13.3	2.6	50	0.506		
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	11.6	35.0	20.6	33.6	20.1	32.2	19.7	23.0	31.0	22.2	30.3	21.5	29.4	5.1	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			
20.6	16.7	27.6	19.7	15.7	26.4	18.9	14.9	25.8	72.5	31.0	69.2	30.5	66.1	29.5	27.7		
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		
13.8	11.9	10.4	DB	-2.7	37.8	2.1	1.5	-4.2	38.9	-5.5	39.8	-6.6	40.6	-8.1	41.7		
			WB	-4.5	24.9	1.5	1.2	-5.5	25.7	-6.4	26.4	-7.2	27.1	-8.3	27.9		
Monthly Climatic Design Conditions																	
			Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Temperatures, Degree-Days and Degree-Hours	DBAvg	18.1	25.0	23.6	21.3	17.3	13.9	11.2	10.8	13.0	15.8	19.1	21.8	24.1			
	DBStd	6.18	3.02	3.46	3.40	3.66	3.63	3.30	3.86	4.39	4.48	4.16	3.91	3.50			
	HDD10.0	99	0	0	0	2	8	25	36	19	7	1	0	0			
	HDD18.3	994	1	4	13	59	142	213	234	173	98	41	13	3			
	CDD10.0	3041	465	381	350	222	129	62	61	113	182	283	356	438			
	CDD18.3	895	207	151	104	29	5	0	1	8	23	64	118	183			
	CDH23.3	8773	2168	1442	838	219	33	3	13	106	236	607	1177	1932			
	CDH26.7	3468	974	594	266	36	2	0	2	28	61	194	455	856			
Wind		WSAvg	4.6	5.0	4.6	4.3	3.8	3.5	3.6	3.9	4.7	5.1	5.7	5.5	5.2		
Precipitation	PrecAvg	629	109	100	91	41	16	8	6	9	20	43	80	101			
	PrecMax	986	213	368	203	148	107	75	27	55	94	126	189	228			
	PrecMin	230	11	29	3	0	0	0	0	0	0	0	10	1			
	PrecStd	149	50	60	52	37	22	13	6	13	22	32	47	51			
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	36.7	35.7	33.2	29.9	26.2	23.5	24.9	29.8	31.4	33.5	34.7	36.8			
		MCWB	21.1	21.3	21.0	19.6	16.7	13.7	14.7	15.5	16.5	18.1	19.5	21.4			
	2%	DB	34.9	33.5	31.2	27.6	24.0	21.1	21.9	26.3	28.3	30.8	32.9	34.8			
		MCWB	21.1	20.9	20.1	18.1	16.0	12.6	12.3	13.6	15.0	17.1	18.6	20.4			
	5%	DB	33.2	32.0	29.7	25.9	22.3	19.2	19.8	23.3	26.0	28.8	31.1	33.0			
		MCWB	20.5	20.8	19.6	17.0	14.8	11.6	11.1	12.5	13.9	16.0	18.0	19.8			
	10%	DB	31.6	30.5	28.1	24.1	20.4	17.5	17.7	20.8	23.9	26.8	29.4	31.2			
		MCWB	20.1	20.1	19.0	16.3	14.0	10.7	9.9	11.2	12.9	15.2	17.4	19.4			
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	24.3	24.1	23.1	21.5	18.4	16.0	16.0	17.1	17.9	20.4	21.8	23.5			
		MCDB	32.5	31.1	30.4	27.3	23.5	20.9	22.7	26.8	28.8	29.8	31.5	32.3			
	2%	WB	22.9	23.0	21.8	19.8	17.1	14.0	13.9	15.1	16.4	18.6	20.3	22.2			
		MCDB	31.4	30.4	28.9	24.4	22.1	19.0	19.5	23.7	25.7	27.1	29.2	31.3			
	5%	WB	22.0	22.1	20.7	18.6	16.1	12.7	12.3	13.4	14.9	17.4	19.2	21.3			
		MCDB	30.4	29.4	27.1	23.4	21.1	17.5	17.6	21.3	23.8	25.9	28.7	30.2			
	10%	WB	21.1	21.1	19.7	17.5	14.8	11.5	10.8	11.9	13.7	16.4	18.3	20.3			
		MCDB	29.3	28.4	26.1	22.7	19.2	16.2	16.5	19.8	21.9	24.6	27.4	28.9			

Mean Daily Temperature Range		MDBR	11.6	11.2	10.5	10.2	9.9	10.7	11.4	11.8	11.7	11.4	11.8	11.9
	5% DB	MCDBR	13.2	12.9	12.5	12.8	12.2	13.1	14.0	14.9	14.0	13.7	13.4	13.6
		MCWBR	5.3	5.3	5.6	6.1	6.2	7.0	7.2	7.2	6.6	6.2	5.8	5.9
	5% WB	MCDBR	11.5	11.2	10.9	10.3	10.4	11.3	12.4	13.4	12.5	12.1	12.3	12.2
		MCWBR	5.7	5.3	5.4	6.0	5.9	6.8	7.2	7.5	6.6	6.2	5.8	5.9
Clear Sky Solar Irradiance	taub		0.372	0.366	0.352	0.343	0.315	0.302	0.303	0.332	0.376	0.365	0.363	0.370
	taud		2.430	2.449	2.485	2.479	2.509	2.548	2.501	2.405	2.275	2.363	2.398	2.409
	Ebn at noon		966	951	929	880	855	845	860	877	887	941	968	971
	Edn at noon		122	116	104	94	80	72	79	99	126	125	126	126
All-Sky Solar Radiation	RadAvg		7.64	6.65	5.41	4.00	2.94	2.75	3.02	3.96	5.14	6.30	7.41	7.89
	RadStd		0.40	0.44	0.46	0.42	0.34	0.23	0.20	0.29	0.42	0.54	0.42	0.39
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	+0.57	N/A	+0.43	+0.81	+0.82	N/A	N/A	N/A	N/A				
Regional (0 neighbors)	N/A	N/A	N/A	+0.56	+0.62	+0.78	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