

2021 ASHRAE Handbook - Fundamentals (SI)																	
SAENZ PENA, ARGENTINA (WMO: 871480)																	
Lat:26.7464S			Long:60.4867W			Elev:93		StdP: 100.21			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	1.2	3.3	-3.0	3.0	8.8	-1.1	3.5	9.3	12.3	22.8	11.7	25.3	0.7	230	0.377		
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	11.4	38.1	24.8	36.7	24.9	35.4	24.5	27.3	33.9	26.7	33.1	26.1	32.3	5.8	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			
25.7	21.2	30.6	25.1	20.4	29.9	24.5	19.7	29.3	87.6	34.0	84.5	33.4	82.0	32.4	34.2		
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		
11.7	9.1	7.8	DB	-3.1	41.1	2.3	1.5	-4.7	42.1	-6.1	43.0	-7.4	43.8	-9.0	44.9		
			WB	-3.0	28.7	2.5	1.5	-4.8	29.8	-6.3	30.6	-7.7	31.5	-9.5	32.5		
Monthly Climatic Design Conditions																	
			Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Temperatures, Degree-Days and Degree-Hours	DBAvg	21.8	27.4	26.6	24.5	21.8	18.2	16.1	15.8	17.7	20.2	22.9	24.4	26.5			
	DBStd	5.92	2.67	3.30	3.22	4.14	4.69	5.07	5.62	5.89	5.34	4.25	3.42	3.16			
	HDD10.0	20	0	0	0	0	1	5	9	4	1	0	0	0			
	HDD18.3	439	0	0	1	14	62	104	122	88	39	8	1	0			
	CDD10.0	4334	539	464	449	354	257	189	189	242	305	401	432	512			
	CDD18.3	1710	281	231	192	118	59	38	42	67	94	151	184	254			
	CDH23.3	17972	3306	2506	1813	971	413	224	348	776	1072	1584	1991	2968			
	CDH26.7	8456	1704	1226	801	364	125	52	118	364	509	746	933	1513			
Wind		WSAvg	3.1	2.8	2.8	2.5	2.6	2.6	2.9	3.2	3.7	3.9	3.9	3.4	3.0		
Precipitation	PrecAvg	1054	147	132	146	141	54	25	21	24	41	77	129	130			
	PrecMax	1729	402	291	397	362	185	100	91	58	129	242	242	304			
	PrecMin	643	18	23	24	20	1	0	0	0	0	17	16	18			
	PrecStd	254	80	78	82	83	43	25	20	20	33	48	61	71			
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	38.6	38.6	37.5	34.4	32.7	30.1	32.1	36.1	38.5	39.4	38.6	39.3			
		MCWB	25.4	25.5	24.5	24.3	23.9	22.3	20.4	22.5	22.8	24.4	25.2	25.0			
	2%	DB	37.0	36.7	35.1	32.7	29.9	28.3	29.9	33.8	35.6	36.3	35.9	37.0			
		MCWB	25.4	25.6	24.4	24.3	22.6	21.8	20.7	21.5	22.0	24.5	24.5	25.4			
	5%	DB	35.6	34.9	33.1	30.8	27.5	26.2	27.5	31.1	32.4	33.4	33.8	35.4			
		MCWB	25.1	25.3	24.1	23.4	21.9	21.1	20.0	21.0	21.2	23.1	23.6	24.9			
	10%	DB	34.0	33.0	31.1	28.8	25.3	23.7	24.6	27.8	29.3	30.8	31.8	33.6			
		MCWB	24.9	24.8	23.6	22.7	20.9	19.9	18.5	19.5	19.8	21.8	22.7	24.4			
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	28.2	28.1	27.5	26.6	25.1	23.7	23.0	24.0	24.6	26.6	27.4	27.7			
		MCDB	34.2	34.2	33.3	32.0	29.7	27.7	29.0	33.5	34.2	34.4	34.8	34.9			
	2%	WB	27.2	27.1	26.3	25.6	23.9	22.5	21.5	22.4	23.4	25.4	26.1	26.8			
		MCDB	33.6	33.4	31.7	30.3	28.3	26.5	27.6	31.6	31.6	33.5	33.0	33.7			
	5%	WB	26.5	26.2	25.4	24.7	22.9	21.5	20.4	21.1	22.2	24.3	25.0	26.2			
		MCDB	32.7	32.3	30.6	29.1	26.4	25.3	26.0	29.8	30.1	31.9	31.5	32.8			
	10%	WB	25.8	25.5	24.6	23.7	21.7	20.4	19.3	19.8	21.0	23.2	24.1	25.5			
		MCDB	31.6	31.1	29.2	27.3	24.5	23.6	24.3	26.7	27.9	29.6	29.6	31.7			

Mean Daily Temperature Range		MDBR	11.4	10.7	11.0	10.2	10.4	10.4	12.2	13.5	13.3	11.7	12.0	11.6
	5% DB	MCDBR	13.7	13.0	13.8	12.3	11.9	11.2	13.7	16.1	16.5	15.3	15.1	13.9
		MCWBR	4.5	4.2	5.2	5.1	5.5	5.4	6.0	6.4	6.6	5.9	5.8	4.6
	5% WB	MCDBR	11.0	10.7	11.0	9.9	9.4	9.9	12.3	15.2	13.7	13.2	12.0	11.3
		MCWBR	4.5	4.3	5.1	4.8	4.7	5.2	6.2	6.7	6.6	5.9	5.8	4.6
Clear Sky Solar Irradiance	taub		0.408	0.405	0.393	0.395	0.369	0.375	0.370	0.462	0.539	0.476	0.403	0.408
	taud		2.391	2.407	2.429	2.391	2.424	2.397	2.388	2.090	1.889	2.138	2.363	2.379
	Ebn at noon		936	923	903	850	829	797	818	770	756	847	934	938
	Edn at noon		129	124	115	109	96	94	98	145	194	160	131	131
All-Sky Solar Radiation	RadAvg		6.75	6.13	5.28	4.04	3.23	2.70	3.25	4.04	4.82	5.56	6.52	6.69
	RadStd		0.51	0.40	0.35	0.44	0.39	0.27	0.26	0.37	0.56	0.55	0.46	0.47
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	+0.50	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