

2021 ASHRAE Handbook - Fundamentals (SI)																
PASO DE LOS LIBRES, ARGENTINA (WMO: 872890)																
Lat:29.6894S		Long:57.1486W		Elev:70		StdP: 100.49			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	2.9	4.3	-1.0	3.5	9.0	0.8	4.0	8.3	14.7	14.6	13.3	16.0	1.5	180	0.448	
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	11.0	36.1	24.8	34.8	24.2	33.2	23.7	26.7	32.9	26.0	31.9	25.3	30.6	5.4	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		
25.1	20.4	30.0	24.3	19.4	29.0	23.8	18.8	28.4	84.5	33.4	81.1	32.0	77.9	30.7	30.5	
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
13.4	11.6	10.2	DB	-0.3	38.6	1.7	1.3	-1.5	39.5	-2.5	40.3	-3.4	41.0	-4.7	42.0	
			WB	-0.7	28.4	1.8	1.1	-1.9	29.2	-3.0	29.8	-4.0	30.4	-5.3	31.2	
Monthly Climatic Design Conditions																
			Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Temperatures, Degree-Days and Degree-Hours	DBAvg	20.3	26.4	25.5	23.7	20.5	16.9	14.9	14.2	16.0	17.6	20.4	22.5	25.0		
	DBStd	5.55	2.50	2.75	3.07	3.66	3.80	4.55	4.85	4.87	4.17	3.17	2.89	2.85		
	HDD10.0	28	0	0	0	0	1	8	13	5	1	0	0	0		
	HDD18.3	554	0	1	2	18	75	124	148	106	61	14	4	0		
	CDD10.0	3779	507	433	423	317	214	154	144	192	229	324	376	466		
	CDD18.3	1262	249	201	167	85	29	20	21	35	39	80	129	208		
	CDH23.3	11131	2575	1875	1398	564	135	79	105	274	324	572	1131	2098		
	CDH26.7	4597	1220	816	552	186	23	9	17	83	116	183	425	966		
Wind		WSAvg	4.2	4.0	3.9	3.7	3.6	3.4	3.7	4.1	4.6	5.2	5.1	4.5	4.2	
Precipitation	PrecAvg	1492	133	148	153	159	120	87	83	73	111	163	131	141		
	PrecMax	2323	552	377	355	561	322	354	245	188	279	402	527	521		
	PrecMin	682	14	27	14	22	5	4	4	2	16	24	9	19		
	PrecStd	359	94	86	89	118	83	64	64	51	59	94	101	105		
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	37.8	37.2	36.4	33.2	29.2	28.0	28.6	31.8	34.0	34.0	35.1	37.4		
		MCWB	25.1	25.7	25.0	24.6	22.7	21.6	20.6	21.5	23.4	24.6	23.7	24.5		
	2%	DB	36.0	35.1	33.8	31.1	26.8	25.9	26.4	29.1	30.1	30.9	32.8	35.3		
		MCWB	24.6	24.4	24.7	24.0	21.0	20.9	20.1	20.8	22.0	22.5	22.6	24.2		
	5%	DB	34.2	33.1	31.7	28.8	24.7	23.3	23.8	26.2	27.1	28.6	31.0	33.8		
		MCWB	24.0	24.1	23.6	22.6	20.3	19.8	19.3	19.5	20.0	21.6	21.5	23.4		
	10%	DB	32.8	31.3	29.8	26.6	22.8	21.3	21.2	23.9	24.2	26.3	29.1	31.9		
		MCWB	23.5	23.4	22.8	21.5	19.5	18.6	17.7	18.6	18.7	20.3	21.1	22.9		
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	27.7	27.3	26.9	26.0	23.8	22.6	21.7	23.0	24.6	25.7	25.9	27.5		
		MCDB	33.6	33.5	33.3	31.0	27.2	26.2	25.6	29.8	31.0	31.9	32.3	33.8		
	2%	WB	26.6	26.2	25.9	24.7	22.3	21.4	20.7	21.4	22.6	24.2	24.3	26.5		
		MCDB	32.7	32.4	31.4	29.5	25.2	24.6	25.1	27.2	28.5	29.0	29.6	32.2		
	5%	WB	25.7	25.4	24.9	23.6	21.0	20.3	19.6	20.2	21.2	22.6	23.3	25.3		
		MCDB	31.4	31.0	29.4	27.5	23.5	23.0	23.2	25.5	25.9	26.7	28.2	30.5		
	10%	WB	24.9	24.6	23.9	22.5	19.7	19.1	18.4	19.0	19.8	21.4	22.3	24.2		
		MCDB	30.0	29.4	28.0	25.3	22.2	21.3	21.3	23.5	23.3	25.1	26.8	29.3		

Mean Daily Temperature Range		MDBR	11.0	10.5	10.5	9.7	9.2	9.1	9.8	11.0	10.6	9.8	11.1	11.3
	5% DB	MCDBR	13.5	13.3	13.2	12.3	11.2	10.2	11.5	13.7	14.3	13.1	14.3	14.2
		MCWBR	4.9	4.8	5.3	5.7	6.1	5.9	6.1	6.7	6.9	6.6	6.0	5.5
	5% WB	MCDBR	11.2	10.9	10.8	10.6	8.9	9.1	10.6	12.1	12.4	11.1	11.0	11.6
		MCWBR	5.2	4.8	5.2	5.5	5.4	5.6	6.1	6.5	6.9	6.6	6.0	5.5
Clear Sky Solar Irradiance	taub		0.408	0.402	0.393	0.394	0.371	0.385	0.385	0.476	0.519	0.458	0.396	0.411
	taud		2.377	2.398	2.406	2.365	2.406	2.359	2.332	2.025	1.929	2.169	2.362	2.347
	Ebn at noon		934	921	896	839	810	767	785	742	763	859	939	934
	Edn at noon		130	124	116	109	94	94	100	151	183	154	131	135
All-Sky Solar Radiation	RadAvg		6.86	6.19	5.35	4.05	2.99	2.53	2.88	3.63	4.46	5.45	6.66	6.95
	RadStd		0.63	0.39	0.46	0.51	0.31	0.23	0.30	0.32	0.49	0.67	0.77	0.53
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	+0.58	+0.61	N/A	N/A	N/A	N/A			
Regional (0 neighbors)		N/A	N/A	N/A	N/A	+0.47	+0.54	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