

2021 ASHRAE Handbook - Fundamentals (SI)																	
TRELEW, ARGENTINA (WMO: 878280)																	
Lat:43.2089S			Long:65.2822W			Elev:43		StdP: 100.81			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	-3.6	-2.0	-10.6	1.5	12.5	-9.0	1.8	10.6	17.5	11.8	14.7	11.7	2.4	320	0.676		
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	13.5	34.0	17.8	31.9	17.0	30.0	16.3	19.6	29.3	18.5	27.7	17.5	26.6	8.6	270		
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			
16.8	12.0	21.4	15.4	11.0	20.5	14.2	10.1	20.0	56.3	28.8	52.6	27.9	49.5	26.5	25.1		
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		
15.4	13.9	12.6	DB	-7.1	38.0	2.0	1.3	-8.5	38.9	-9.7	39.7	-10.8	40.4	-12.3	41.3		
			WB	-7.6	21.9	2.0	1.2	-9.0	22.8	-10.2	23.6	-11.3	24.3	-12.8	25.2		
Monthly Climatic Design Conditions																	
			Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Temperatures, Degree-Days and Degree-Hours	DBAvg	13.9	21.2	20.1	18.0	14.1	10.1	7.0	6.7	8.5	10.8	14.1	17.0	19.6			
	DBStd	6.17	3.38	3.88	3.90	3.69	3.51	3.51	3.57	3.40	3.50	3.62	3.61	3.36			
	HDD10.0	373	0	0	1	6	42	100	114	69	31	8	1	0			
	HDD18.3	1938	12	23	54	134	254	339	361	304	228	138	66	24			
	CDD10.0	1801	347	283	249	131	47	11	12	24	54	134	211	299			
	CDD18.3	326	101	73	44	8	1	0	0	0	1	6	27	66			
	CDH23.3	3807	1124	837	482	94	5	0	0	0	21	109	363	771			
	CDH26.7	1431	472	358	170	19	0	0	0	0	4	22	111	275			
Wind		WSAvg	5.8	7.0	6.6	5.9	5.2	4.5	4.6	5.0	5.4	5.7	6.4	6.9	6.7		
Precipitation	PrecAvg	184	11	20	20	16	20	17	19	13	13	17	14	14			
	PrecMax	323	59	141	83	136	72	107	64	54	48	99	51	102			
	PrecMin	87	0	0	0	0	0	0	0	0	0	0	0	0			
	PrecStd	58	11	24	20	22	17	18	16	12	13	20	13	18			
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	36.2	36.5	34.4	29.1	24.0	19.0	19.1	21.8	26.3	29.3	33.2	34.7			
		MCWB	18.4	19.0	18.4	16.3	13.4	10.4	10.9	11.1	12.5	14.8	16.6	17.4			
	2%	DB	33.7	33.5	30.7	26.0	20.8	16.4	16.7	19.0	22.3	26.1	29.6	31.9			
		MCWB	17.7	18.2	16.8	14.3	12.0	9.1	9.3	10.3	11.2	13.4	15.4	16.7			
	5%	DB	31.4	31.1	28.2	23.6	18.7	14.8	14.9	17.1	20.0	23.9	27.2	29.7			
		MCWB	16.8	17.1	15.9	13.4	10.9	8.5	8.4	9.1	10.1	12.6	14.3	15.7			
	10%	DB	29.3	28.6	25.9	21.2	16.8	13.1	13.1	15.1	17.9	21.7	25.1	27.8			
		MCWB	16.0	16.3	15.1	12.3	10.1	7.7	7.5	8.0	9.3	11.6	13.3	15.0			
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	20.7	21.2	20.6	17.2	14.7	11.8	11.7	12.7	13.7	16.6	18.1	19.6			
		MCDB	31.2	30.9	30.3	26.1	21.1	16.3	16.8	19.0	22.5	26.4	29.1	29.4			
	2%	WB	19.2	19.6	18.6	15.6	13.3	10.4	10.3	11.1	12.0	14.8	16.5	18.0			
		MCDB	29.7	28.9	25.9	22.1	18.3	14.1	15.3	17.0	19.9	23.6	26.5	28.2			
	5%	WB	18.0	18.5	17.2	14.6	12.1	9.4	9.1	9.9	10.9	13.3	15.2	16.8			
		MCDB	27.6	27.5	25.0	20.8	16.9	13.2	13.9	15.4	18.1	21.5	25.1	27.2			
	10%	WB	17.0	17.4	16.1	13.5	11.0	8.4	7.9	8.9	10.0	12.2	14.1	15.7			
		MCDB	26.4	25.9	23.8	19.6	15.3	12.2	12.2	14.0	16.3	20.0	23.5	25.7			

Mean Daily Temperature Range		MDBR	13.5	13.3	12.7	12.3	11.1	10.3	10.6	11.3	11.8	12.6	13.2	13.4
	5% DB	MCDBR	17.6	17.9	16.6	15.2	13.4	11.8	12.3	13.9	15.2	16.3	16.8	17.1
		MCWBR	6.6	6.5	6.9	7.3	7.5	6.9	7.1	7.6	7.5	7.5	7.1	6.7
	5% WB	MCDBR	15.4	15.3	14.3	12.9	11.5	10.4	11.3	12.1	13.4	14.6	15.4	15.6
		MCWBR	6.6	6.5	6.6	6.7	7.1	6.7	7.0	7.3	7.5	7.5	7.1	6.7
Clear Sky Solar Irradiance	taub		0.369	0.366	0.344	0.330	0.314	0.297	0.301	0.317	0.340	0.342	0.352	0.367
	taud		2.413	2.430	2.485	2.510	2.532	2.564	2.550	2.512	2.431	2.445	2.428	2.408
	Ebn at noon		954	928	903	842	783	766	791	845	891	943	965	963
	Edn at noon		121	113	97	80	66	58	63	78	100	110	118	123
All-Sky Solar Radiation	RadAvg		7.79	6.60	5.01	3.34	1.98	1.52	1.75	2.61	4.06	5.66	7.10	7.87
	RadStd		0.25	0.29	0.22	0.18	0.16	0.10	0.13	0.19	0.29	0.25	0.26	0.42
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	+0.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	+34			
Regional (0 neighbors)	N/A	N/A	N/A	N/A	N/A	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