

2021 ASHRAE Handbook - Fundamentals (SI)

BUENOS AIRES NEWBERRY, ARGENTINA (WMO: 875820)

Lat: 34.5589S	Long: 58.4197W	Elev: 6	StdP: 101.25			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				WSF												
		99.6%			99%			0.4%		1%														
	99.6%	99%	DP	HR	MCDB	DP	HR	MCDB	WS	MCDB	WS	MCDB	MCWS	PCWD										
7	4.8	5.9	-4.1	2.7	9.4	-2.1	3.2	9.9	11.0	10.9	10.0	11.3	3.6	230	0.453									
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%														
	DB	MCWB	DB	MCWB	DB	MCWB	WB	MCDB	WB	MCDB	WB	MCDB	MCWS	PCWD										
1	6.8	31.6	23.2	30.1	23.0	29.0	22.5	25.3	29.2	24.5	28.4	23.7	27.5	4.0	0									
Dehumidification DP/MCDB and HR																								
DP	HR	MCDB	0.4%		1%		2%		0.4%		1%		Extre Max WB											
			DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCDB	Enth	MCDB										
24.1	19.0	28.2	23.1	17.9	27.3	22.2	16.9	26.5	77.6	29.5	74.3	28.4	71.3	27.6	31.6									
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										
11.0	9.7	8.6	DB	2.3	35.0	1.0	1.6	1.6	36.2	1.0	37.1	0.4	38.1	-0.3	39.3									
			WB	0.2	27.4	1.1	1.2	-0.6	28.3	-1.2	29.0	-1.9	29.7	-2.7	30.6									
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	24.6	23.8	21.9	18.6	15.4	12.5	11.6	13.1	14.7	17.7	20.7	23.3									
	DBStd		5.34	2.55	2.67	2.69	3.02	2.98	2.90	3.07	3.25	2.95	2.90	3.05	2.99									
	HDD10.0		39	0	0	0	0	2	9	18	8	2	0	0	0									
	HDD18.3		862	0	1	4	33	99	177	208	166	113	46	12	2									
	CDD10.0		3001	452	385	369	257	167	83	69	104	143	239	321	412									
	CDD18.3		784	194	153	116	39	7	1	1	3	4	27	83	156									
	CDH23.3		4664	1492	1006	501	89	8	1	2	9	10	73	387	1087									
	CDH26.7		1040	391	215	62	11	1	0	0	1	1	9	66	284									
Wind	WSAvg	4.3	4.7	4.5	4.3	3.9	3.7	3.6	3.8	4.0	4.7	4.8	4.9	4.7										
Precipitation	PrecAvg	1049	108	103	125	99	76	55	59	64	64	104	100	99										
	PrecMax	1452	280	270	586	242	389	185	191	203	201	316	237	285										
	PrecMin	651	15	26	26	5	0	4	11	0	1	18	20	20										
	PrecStd	212	65	61	97	65	81	43	34	48	42	63	53	65										
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures		0.4%	DB	33.8	32.6	30.1	28.1	24.2	21.5	21.3	24.3	24.8	27.8	30.6	33.9									
			MCWB	24.9	23.7	23.2	21.8	19.3	18.1	17.4	18.9	17.9	20.5	21.7	22.4									
		2%	DB	31.7	30.2	28.2	25.7	22.0	19.3	18.9	21.1	22.1	25.1	28.3	31.1									
			MCWB	23.7	23.8	22.5	20.7	18.4	16.4	15.9	16.6	16.5	19.1	20.7	22.5									
		5%	DB	30.1	29.1	27.0	24.0	20.6	18.0	17.1	19.2	20.5	23.5	26.9	29.4									
			MCWB	23.2	23.4	22.1	19.8	17.7	15.3	14.6	15.5	15.9	18.3	20.5	22.2									
		10%	DB	28.9	27.9	26.0	22.9	19.5	16.7	16.0	17.9	19.1	22.1	25.4	28.0									
			MCWB	22.7	22.8	21.6	19.2	16.9	14.3	13.4	14.5	15.0	17.5	19.7	21.7									
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures		0.4%	WB	26.7	26.2	25.2	23.4	20.7	19.6	18.0	19.7	20.2	22.6	23.8	25.7									
			MCDB	31.1	30.0	27.9	26.5	23.1	21.1	20.6	23.4	23.1	26.2	27.8	30.1									
		2%	WB	25.4	25.2	24.0	21.9	19.4	17.6	16.6	17.9	18.4	20.6	22.6	24.4									
			MCDB	29.6	28.9	26.8	24.2	21.2	18.8	18.3	20.4	20.8	23.6	26.7	28.8									
		5%	WB	24.5	24.2	23.0	20.9	18.4	16.2	15.4	16.6	17.0	19.6	21.6	23.5									
			MCDB	28.7	27.9	25.9	23.0	20.0	17.5	16.8	18.6	19.3	22.3	25.6	27.8									
		10%	WB	23.6	23.4	22.2	19.9	17.4	14.8	14.1	15.2	15.9	18.6	20.6	22.6									
			MCDB	27.7	26.9	25.2	22.2	19.2	16.2	15.4	17.1	18.2	21.3	24.4	26.8									

Mean Daily Temperature Range	MDBR	6.8	6.4	6.0	6.0	5.4	5.6	5.5	6.1	6.1	6.2	7.0	7.4	
	5% DB	MCDBR	8.4	7.6	7.1	7.6	6.5	6.7	6.8	8.2	8.3	8.1	8.8	9.1
		MCWBR	5.3	4.6	4.3	5.0	4.4	5.1	4.8	5.4	5.1	5.2	5.2	5.4
	5% WB	MCDBR	7.3	6.6	5.9	6.1	5.3	5.4	5.6	7.0	6.4	6.6	7.4	7.5
		MCWBR	5.2	4.6	4.3	4.7	4.1	5.0	4.8	5.3	5.1	5.2	5.2	5.4

Clear Sky Solar Irradiance	taub	0.411	0.397	0.376	0.378	0.371	0.369	0.363	0.434	0.461	0.420	0.397	0.401
	taud	2.375	2.433	2.478	2.421	2.405	2.400	2.395	2.145	2.086	2.272	2.365	2.378
	Ebn at noon	927	918	900	836	780	751	779	758	799	885	934	940
	Edn at noon	129	117	105	98	88	84	88	127	152	136	129	130

All-Sky Solar Radiation	RadAvg	7.20	6.29	5.27	3.81	2.67	2.25	2.35	3.19	4.36	5.54	6.71	7.50
	RadStd	0.41	0.56	0.48	0.44	0.23	0.23	0.27	0.33	0.30	0.52	0.45	0.37

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		+0.24	N/A	-0.82	+0.62	+0.49	N/A	N/A	N/A	+106	+62		
Regional (0 neighbors)		+0.27	N/A	N/A	+0.60	+0.40	+0.40	N/A	N/A	+82	+42		

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,	MCDP	Mean coincident dew point temperature, °C	taud	Clear sky optical depth for diffuse irradiance
Edh,noon	W/m2	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	Pervailing coincident wind direction, °,0 = North, 90 = East	WS	Wind speed, m/s	HR	Humidity ratio, g of moisture per kg of dry air