

2021 ASHRAE Handbook - Fundamentals (SI)																	
RIO CUARTO, ARGENTINA (WMO: 874530)																	
Lat:33.0956S			Long:64.2769W			Elev:421		StdP: 96.37			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	0.2	1.8	-10.2	1.7	10.4	-8.0	2.0	9.8	14.6	15.0	12.9	14.8	2.6	270	0.525		
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	10.7	34.0	20.7	32.4	20.4	31.1	20.1	23.9	29.6	22.9	28.5	22.1	27.7	7.3	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			
22.2	17.8	26.6	21.2	16.7	25.8	20.3	15.8	24.9	74.2	29.7	70.4	28.6	67.2	27.8	28.0		
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		
13.3	11.9	10.4	DB	-3.0	37.5	2.3	2.0	-4.6	38.9	-6.0	40.1	-7.3	41.2	-9.0	42.7		
			WB	-4.3	26.0	2.0	1.1	-5.8	26.8	-6.9	27.5	-8.1	28.1	-9.5	29.0		
Monthly Climatic Design Conditions																	
			Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Temperatures, Degree-Days and Degree-Hours	DBAvg	17.0	23.4	22.1	20.4	17.0	13.6	10.5	9.9	12.0	14.6	17.7	20.6	22.7			
	DBStd	5.85	2.89	3.28	3.32	3.76	3.65	3.05	3.53	4.19	4.21	3.93	3.57	3.25			
	HDD10.0	119	0	0	0	2	8	29	45	25	9	1	0	0			
	HDD18.3	1151	2	7	18	68	153	234	261	203	124	59	18	4			
	CDD10.0	2676	414	338	322	212	121	46	43	86	147	239	317	393			
	CDD18.3	668	158	111	81	28	7	0	1	6	13	39	85	139			
	CDH23.3	6046	1405	892	611	229	42	3	9	88	163	423	843	1338			
	CDH26.7	2191	551	316	182	47	4	0	2	27	44	144	317	557			
Wind		WSAvg	4.8	4.8	4.5	4.4	4.3	3.9	3.9	4.5	5.1	5.6	5.8	5.5	5.3		
Precipitation	PrecAvg	808	130	98	108	55	29	16	12	14	40	83	122	137			
	PrecMax	1131	295	356	465	142	218	111	113	85	156	266	232	325			
	PrecMin	467	11	23	10	2	0	0	0	0	0	2	36	27			
	PrecStd	152	65	66	74	35	37	20	17	18	34	50	55	63			
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	35.3	34.6	32.8	30.7	27.0	23.2	24.1	30.0	30.9	33.8	34.5	36.1			
		MCWB	21.4	21.9	21.1	19.9	18.2	14.2	14.4	17.1	16.7	19.6	19.2	21.6			
	2%	DB	33.2	32.1	30.7	27.9	24.2	20.3	20.9	25.5	27.4	30.2	32.1	33.8			
		MCWB	21.6	22.0	21.2	18.8	16.9	12.6	12.7	14.7	15.5	17.5	18.6	20.7			
	5%	DB	31.5	30.2	28.8	26.1	22.0	18.3	18.7	22.1	25.0	27.8	30.2	31.9			
		MCWB	21.3	21.5	20.4	17.6	15.4	11.5	11.2	12.3	14.4	16.6	18.1	20.0			
	10%	DB	29.8	28.4	27.0	24.1	19.9	16.6	16.3	19.8	22.6	25.2	28.2	29.9			
		MCWB	20.8	20.9	19.7	17.1	14.5	10.8	10.1	11.5	13.1	15.2	17.3	19.5			
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	25.1	25.1	24.2	22.6	19.7	17.0	16.9	18.7	19.2	21.5	22.4	24.1			
		MCDB	30.0	30.8	29.8	27.1	24.2	20.8	21.6	26.4	26.9	27.7	28.9	31.6			
	2%	WB	23.7	23.7	22.7	20.8	18.2	14.8	14.5	16.2	17.1	19.5	20.8	22.7			
		MCDB	29.3	28.7	27.5	24.4	22.5	17.5	17.8	22.7	23.4	26.5	27.5	29.9			
	5%	WB	22.7	22.7	21.6	19.4	16.9	13.4	12.9	14.2	15.7	18.2	19.7	21.6			
		MCDB	28.7	27.3	26.4	23.8	20.3	16.0	15.8	19.6	22.2	24.5	26.7	28.5			
	10%	WB	21.8	21.8	20.5	18.2	15.6	12.0	11.4	12.4	14.4	16.9	18.6	20.7			
		MCDB	27.8	26.6	25.2	22.5	18.5	15.0	15.0	18.4	20.4	23.0	25.4	27.2			

Mean Daily Temperature Range		MDBR	10.7	10.1	10.3	10.4	9.9	10.7	11.0	12.0	12.1	11.6	11.8	11.5
	5% DB	MCDBR	13.2	12.5	12.7	13.8	12.9	14.1	14.9	16.3	15.9	15.3	15.0	14.4
		MCWBR	5.5	5.1	5.6	6.4	6.7	7.8	8.1	7.9	7.5	6.7	6.1	5.7
	5% WB	MCDBR	11.3	10.4	10.9	10.9	10.3	10.8	11.3	13.9	13.0	12.7	12.6	12.1
		MCWBR	5.9	5.7	5.5	6.0	6.1	7.1	7.4	7.7	7.5	6.7	6.1	5.7
Clear Sky Solar Irradiance	taub		0.386	0.378	0.362	0.362	0.330	0.310	0.322	0.356	0.404	0.389	0.380	0.385
	taud		2.374	2.407	2.453	2.418	2.459	2.515	2.441	2.325	2.189	2.293	2.352	2.366
	Ebn at noon		952	939	918	859	837	834	836	849	858	917	952	957
	Edn at noon		129	121	108	100	85	75	85	107	138	134	132	132
All-Sky Solar Radiation	RadAvg		7.25	6.24	5.24	3.83	2.83	2.63	2.83	3.77	4.90	5.82	6.90	7.38
	RadStd		0.44	0.49	0.46	0.47	0.31	0.29	0.23	0.32	0.42	0.54	0.44	0.49
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	+0.62	+0.50	+0.73	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