

2021 ASHRAE Handbook - Fundamentals (SI)																	
ESQUEL, ARGENTINA (WMO: 878030)																	
Lat:42.9058S			Long:71.145W			Elev:797		StdP: 92.11			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	-7.5	-5.4	-10.9	1.6	0.4	-9.0	1.9	2.1	19.5	8.1	15.7	7.4	1.4	20	0.742		
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	11.3	27.8	14.7	25.6	13.7	23.6	12.8	15.4	25.7	14.4	24.0	13.4	22.3	5.0	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			
10.7	8.8	18.4	9.7	8.2	17.9	8.7	7.7	17.1	45.6	26.1	42.7	24.1	40.0	22.3	20.0		
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		
17.4	14.3	12.5	DB	-11.3	31.2	3.1	1.6	-13.5	32.3	-15.3	33.3	-17.0	34.2	-19.3	35.4		
			WB	-11.7	17.3	3.0	1.3	-13.9	18.2	-15.6	19.0	-17.3	19.7	-19.5	20.6		
Monthly Climatic Design Conditions																	
			Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Temperatures, Degree-Days and Degree-Hours	DBAvg	8.8	15.2	15.1	12.6	8.9	5.8	3.1	2.4	3.9	6.0	8.6	11.1	13.7			
	DBStd	5.54	3.53	3.65	3.20	3.15	3.37	3.57	3.78	2.95	2.86	2.85	3.07	3.36			
	HDD10.0	1059	3	3	11	57	136	209	236	191	123	62	22	7			
	HDD18.3	3502	110	103	178	284	389	458	494	448	371	301	217	148			
	CDD10.0	629	163	145	92	23	5	1	1	1	3	19	56	121			
	CDD18.3	29	12	12	1	0	0	0	0	0	0	0	1	4			
	CDH23.3	482	166	179	37	0	0	0	0	0	0	2	19	79			
	CDH26.7	106	37	47	5	0	0	0	0	0	0	0	2	14			
Wind		WSAvg	5.2	6.7	5.4	5.0	4.6	4.1	4.2	4.1	4.4	4.8	5.6	6.5	6.7		
Precipitation	PrecAvg	473	22	18	21	41	70	81	68	55	32	29	21	23			
	PrecMax	707	123	60	72	164	176	214	187	159	116	105	59	101			
	PrecMin	262	0	0	3	2	2	10	3	13	1	0	0	0			
	PrecStd	121	24	18	15	34	47	49	43	32	26	24	15	24			
Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB	30.0	30.8	27.1	21.8	16.8	13.5	13.4	15.1	18.3	22.2	26.1	28.6			
		MCWB	15.9	16.1	14.5	12.3	10.1	7.9	7.2	8.4	8.7	10.8	13.0	15.4			
	2%	DB	27.4	28.0	23.9	18.7	14.8	11.3	10.8	12.3	15.4	19.2	22.5	25.4			
		MCWB	14.5	14.7	13.4	10.9	9.2	6.7	6.0	6.9	7.6	9.6	11.5	13.5			
	5%	DB	25.0	25.4	21.8	16.8	13.0	9.9	9.2	10.6	13.4	16.8	20.0	23.2			
		MCWB	13.6	13.7	12.3	9.7	8.2	5.7	5.2	5.8	6.6	8.4	10.4	12.2			
	10%	DB	22.8	23.0	19.4	15.0	11.3	8.4	7.7	9.0	11.6	14.8	17.7	20.9			
		MCWB	12.5	12.8	11.5	9.0	7.0	4.7	4.1	4.8	5.7	7.6	9.4	11.4			
Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB	17.1	17.1	15.6	13.1	11.1	8.8	8.0	9.3	9.6	12.0	13.7	16.4			
		MCDB	28.5	29.0	25.2	19.9	15.3	12.6	11.4	14.0	16.6	20.2	24.3	27.2			
	2%	WB	15.2	15.3	14.1	11.5	9.7	7.2	6.5	7.5	8.2	10.2	12.1	14.2			
		MCDB	25.7	25.5	22.4	16.9	13.9	10.6	10.0	11.2	14.2	17.7	21.0	24.1			
	5%	WB	14.0	14.3	13.0	10.4	8.5	6.1	5.5	6.3	7.1	9.1	10.9	12.9			
		MCDB	23.7	24.0	20.6	15.4	12.3	9.3	8.6	9.8	12.3	15.9	18.9	21.8			
	10%	WB	13.0	13.2	11.9	9.4	7.5	5.0	4.4	5.1	6.1	8.0	9.7	11.8			
		MCDB	21.5	21.9	18.6	14.3	10.8	7.7	7.2	8.4	10.8	13.8	16.9	20.0			

Mean Daily Temperature Range		MDBR	11.3	11.9	11.2	10.1	8.3	7.0	7.3	8.1	9.7	10.3	10.5	10.7
	5% DB	MCDBR	16.1	16.6	15.9	13.6	10.4	8.3	8.8	10.5	13.2	15.1	15.2	15.8
		MCWBR	6.8	7.0	7.7	7.4	6.4	5.5	5.4	6.2	7.1	7.6	7.3	6.9
	5% WB	MCDBR	14.3	14.9	14.0	11.6	9.2	8.0	8.1	9.2	11.4	13.5	13.4	14.2
		MCWBR	6.6	6.8	7.2	6.8	6.0	5.6	5.3	5.9	7.1	7.6	7.3	6.9
Clear Sky Solar Irradiance	taub		0.298	0.302	0.291	0.282	0.275	0.264	0.263	0.277	0.295	0.297	0.296	0.302
	taud		2.587	2.568	2.601	2.616	2.593	2.576	2.562	2.566	2.522	2.537	2.561	2.552
	Ebn at noon		1030	998	966	906	839	815	843	897	945	992	1025	1031
	Edn at noon		101	98	86	72	61	56	61	74	91	100	103	106
All-Sky Solar Radiation	RadAvg		7.64	6.62	4.82	3.13	1.84	1.35	1.59	2.36	3.74	5.24	6.79	7.60
	RadStd		0.39	0.39	0.32	0.26	0.21	0.16	0.15	0.23	0.33	0.39	0.40	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	+0.85	N/A	N/A	N/A	N/A	N/A	N/A			
Regional (0 neighbors)		N/A	N/A	N/A	+0.86	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