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CONCEPCION, Chile

WMO#: **856820**

Lat: **36.77S** Long: **73.07W** Elev: **148** StdP: **99.56** Time Zone: **-4.00 (SAC)** Period: **86-10** WBAN: **99999**

Annual Heating and Humidification Design Conditions

	Coldest Month	Heating DB		Humidification DP/MCDB and HR						Coldest month WS/MCDB				MCWS/PCWD to 99.6% DB		
				99.6%			99%			0.4%		1%				
		99.6%	99%	DP	HR	MCDB	DP	HR	MCDB	WS	MCDB	WS	MCDB	MCWS	PCWD	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	
(1)	7	1.2	2.2	-2.2	3.2	6.6	-0.4	3.7	5.4	17.4	12.1	14.2	12.0	1.7	150	(1)

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	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	
(2)	1	11.1	24.4	17.2	23.2	16.6	22.3	16.2	18.3	22.7	17.6	21.8	17.0	21.1	7.4	230	(2)

	Dehumidification DP/MCDB and HR									Enthalpy/MCDB						Hours 8 to 4 & 12.8/20.6	
	0.4%			1%			2%			0.4%		1%		2%			
	DP	HR	MCDB	DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCDB	Enth	MCDB		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	
(3)	16.8	12.2	19.6	16.0	11.6	18.9	15.2	11.0	18.2	52.4	22.8	50.0	21.9	48.1	21.1	1909	(3)

Extreme Annual Design Conditions

	Extreme Annual WS			Extreme Max WB	Extreme Annual DB				n-Year Return Period Values of Extreme DB								
					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	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	
(4)	12.2	10.5	9.2	20.9	-1.0	28.5	0.9	1.9	-1.7	29.9	-2.3	31.0	-2.8	32.1	-3.5	33.5	(4)

Monthly Climatic Design Conditions

				Annual (d)	Jan (e)	Feb (f)	Mar (g)	Apr (h)	May (i)	Jun (j)	Jul (k)	Aug (l)	Sep (m)	Oct (n)	Nov (o)	Dec (p)	
(5)	Temperatures, Degree-Days and Degree-Hours	Tavg		12.9	16.7	16.5	15.4	13.1	11.3	10.1	9.3	9.8	10.7	12.2	13.9	15.7	(5)
(6)		Sd			1.48	1.57	1.85	2.04	2.17	2.26	2.25	2.10	1.84	1.65	1.69	1.71	(6)
(7)		HDD10.0		126	0	0	0	2	12	27	41	29	14	2	1	0	(7)
(8)		HDD18.3		2001	53	53	93	156	218	247	279	264	231	190	132	84	(8)
(9)		CDD10.0		1176	208	183	167	96	52	29	19	24	33	70	119	176	(9)
(10)		CDD18.3		8	3	3	1	0	0	0	0	0	0	0	0	1	(10)
(11)		CDH23.3		108	35	37	16	2	0	0	0	0	2	1	2	13	(11)
(12)		CDH26.7		6	2	2	1	0	0	0	0	0	0	0	0	1	(12)
(13)	Precipitation	PrecAvg		1110	21	15	25	56	178	218	222	153	88	65	41	28	(13)
(14)		PrecMax		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	(14)
(15)		PrecMin		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	(15)
(16)		PrecSD		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	(16)
(17)	Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB		25.9	26.2	25.2	22.8	19.2	16.2	16.2	17.9	20.0	21.1	23.0	24.8	(17)
(18)			MCWB		17.6	17.5	17.5	15.3	14.4	12.8	11.4	12.2	13.5	15.2	16.1	17.4	(18)
(19)		2%	DB		24.1	24.2	23.0	20.2	17.1	15.1	14.6	15.2	17.2	19.2	21.1	23.1	(19)
(20)			MCWB		17.3	17.1	16.6	14.6	13.5	12.6	11.8	11.7	12.3	14.1	15.4	16.6	(20)
(21)		5%	DB		23.1	23.1	21.8	19.0	16.0	14.2	13.9	14.1	16.0	17.9	20.0	22.0	(21)
(22)			MCWB		16.7	16.5	16.0	14.2	13.1	12.3	11.6	11.3	12.0	13.5	14.8	16.2	(22)
(23)		10%	DB		22.2	22.0	20.7	17.8	15.0	13.8	13.0	13.2	14.9	16.8	19.0	21.0	(23)
(24)			MCWB		16.2	15.9	15.5	13.8	12.9	12.1	11.2	11.1	11.5	12.8	14.2	15.7	(24)
(25)	Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB		19.4	19.0	18.9	17.4	15.9	14.5	13.7	13.8	14.7	16.1	17.1	18.5	(25)
(26)			MCDB		23.5	24.1	23.2	19.8	17.6	15.6	14.7	15.6	18.1	20.1	21.3	23.3	(26)
(27)		2%	WB		18.3	17.9	17.6	16.1	14.9	13.7	13.0	13.0	13.5	14.8	16.0	17.4	(27)
(28)			MCDB		22.6	22.7	21.4	18.3	16.1	14.5	13.9	14.3	15.9	18.1	19.7	21.8	(28)
(29)		5%	WB		17.5	17.2	16.7	15.4	14.2	13.1	12.4	12.4	12.8	14.0	15.3	16.7	(29)
(30)			MCDB		21.9	21.7	20.2	17.4	15.3	14.0	13.3	13.7	14.9	16.9	19.0	20.9	(30)
(31)		10%	WB		16.8	16.5	16.0	14.6	13.5	12.5	11.7	11.8	12.2	13.2	14.6	16.0	(31)
(32)			MCDB		21.1	20.6	19.3	16.7	14.7	13.5	12.7	13.1	14.2	15.8	18.1	20.0	(32)
(33)	Mean Daily Temperature Range		MDBR		11.1	10.9	10.5	9.5	7.8	6.9	7.3	7.6	8.8	9.1	9.9	10.4	(33)
(34)		5% DB	MCDBR		12.7	13.4	12.6	11.7	9.1	7.1	7.7	8.6	10.9	11.4	11.8	12.4	(34)
(35)			MCWBR		6.7	7.1	7.0	7.0	6.1	5.1	5.4	6.0	7.2	7.2	7.0	6.8	(35)
(36)		5% WB	MCDBR		11.6	11.7	10.8	9.2	6.8	5.1	5.3	6.5	9.0	9.9	10.6	11.1	(36)
(37)			MCWBR		6.6	6.5	6.5	6.1	5.1	4.2	4.4	5.0	6.4	6.6	6.6	6.4	(37)
(38)	Clear Sky Solar Irradiance	taub			0.342	0.334	0.311	0.310	0.297	0.287	0.283	0.290	0.300	0.329	0.330	0.341	(38)
(39)		taud			2.694	2.670	2.696	2.603	2.586	2.567	2.561	2.594	2.640	2.581	2.673	2.707	(39)
(40)		Ebn,noon			993	979	965	904	858	838	865	914	960	972	998	998	(40)
(41)		Edh,noon			93	92	83	80	70	66	70	78	86	99	95	93	(41)

Nomenclature: See separate page