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CLEVELAND, OH, USA

WMO#: **725240**

Lat: **41.41N** Long: **81.85W** Elev: **245** StdP: **98.42** Time Zone: **-5.00 (NAE)** Period: **86-10** WBAN: **14820**

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)	1	-15.5	-12.4	-19.7	0.7	-14.6	-17.1	0.9	-11.6	12.5	0.4	11.5	0.3	4.9	230	(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)	7	9.6	32.0	23.2	30.5	22.5	29.0	21.7	24.6	29.7	23.7	28.3	22.9	27.3	5.0	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)	22.9	18.2	27.4	22.2	17.4	26.4	21.4	16.5	25.5	75.4	29.7	71.8	28.3	68.7	27.3	673	(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)	10.9	9.3	8.4	28.9	-18.9	34.2	3.7	1.8	-21.6	35.5	-23.7	36.5	-25.8	37.5	-28.5	38.8	(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	10.6	-2.0	-1.1	3.4	9.6	15.2	20.5	22.8	22.0	18.1	11.8	6.2	0.0	(5)
(6)			Sd		6.28	5.64	6.13	5.50	4.72	3.99	3.00	3.10	3.84	4.59	5.08	5.52	(6)
(7)			HDD10.0	1473	373	313	223	73	7	0	0	0	1	33	136	314	(7)
(8)			HDD18.3	3250	629	544	465	267	122	24	2	5	50	210	363	569	(8)
(9)			CDD10.0	1694	2	2	18	62	169	317	396	371	244	88	23	3	(9)
(10)			CDD18.3	430	0	0	1	6	26	90	140	118	43	6	0	0	(10)
(11)			CDH23.3	3434	0	0	6	57	247	747	1169	884	287	37	1	0	(11)
(12)			CDH26.7	1008	0	0	0	9	59	234	381	258	64	3	0	0	(12)
(13)	Precipitation		PrecAvg	937	57	56	75	82	92	89	88	87	89	66	81	76	(13)
(14)			PrecMax	1219	113	101	132	168	145	230	164	228	125	101	131	123	(14)
(15)			PrecMin	486	9	12	42	31	25	30	48	13	19	18	20	28	(15)
(16)			PrecSD	158.4	27.0	25.7	24.4	31.7	32.3	45.0	27.4	53.5	27.5	23.4	32.8	25.3	(16)
(17)	Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB		16.4	17.0	24.0	28.0	30.4	33.0	34.2	33.1	31.2	26.9	21.5	16.5	(17)
(18)			MCWB		13.2	12.3	16.0	17.8	21.1	22.2	24.3	24.5	21.6	19.4	15.3	13.9	(18)
(19)		2%	DB		13.0	12.8	20.0	24.9	28.4	31.2	32.2	31.3	28.5	23.9	18.6	13.0	(19)
(20)			MCWB		10.9	9.7	13.4	16.6	20.1	22.4	23.6	23.3	21.0	17.2	14.2	10.5	(20)
(21)		5%	DB		9.9	9.5	17.0	22.1	26.4	29.4	30.5	29.4	26.5	21.6	16.6	10.1	(21)
(22)			MCWB		7.5	6.4	11.9	15.0	19.0	21.7	22.7	22.4	20.0	16.3	12.9	7.6	(22)
(23)		10%	DB		6.5	6.7	13.5	19.0	23.8	27.6	28.7	27.8	24.6	19.3	14.2	7.5	(23)
(24)			MCWB		4.3	4.2	9.8	13.4	17.9	20.8	21.9	21.6	19.2	14.9	11.1	5.3	(24)
(25)	Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB		13.5	13.3	16.7	20.0	23.3	24.7	25.9	25.7	23.6	20.7	17.1	14.1	(25)
(26)			MCDB		15.7	16.0	22.2	25.0	28.0	30.1	31.6	31.5	27.7	25.3	19.6	16.1	(26)
(27)		2%	WB		11.1	10.1	14.4	17.7	21.6	23.6	24.8	24.4	22.3	18.7	15.0	10.9	(27)
(28)			MCDB		13.0	12.4	18.7	23.3	26.4	28.9	30.2	29.2	26.2	22.4	17.9	12.5	(28)
(29)		5%	WB		7.7	7.1	12.3	15.7	20.2	22.7	23.7	23.6	21.3	17.2	13.3	7.9	(29)
(30)			MCDB		9.3	9.2	16.2	20.9	24.7	27.7	28.4	27.7	24.8	20.4	16.1	9.6	(30)
(31)		10%	WB		4.4	4.2	9.9	13.9	18.6	21.7	22.9	22.6	20.3	15.6	11.4	5.3	(31)
(32)			MCDB		6.5	6.6	13.8	18.6	23.0	26.2	27.2	26.5	23.7	18.7	14.0	7.3	(32)
(33)	Mean Daily Temperature Range		MDBR		7.1	7.5	8.9	10.0	10.3	10.0	9.6	9.4	9.6	9.2	7.6	6.5	(33)
(34)		5% DB	MCDBR		9.9	11.4	14.3	14.0	13.3	11.8	11.5	11.1	11.9	12.1	10.6	9.9	(34)
(35)			MCWBR		8.5	9.2	9.3	8.6	7.1	5.4	5.0	5.2	6.1	7.1	7.8	8.6	(35)
(36)		5% WB	MCDBR		9.5	10.7	12.8	12.8	11.6	10.3	9.9	9.6	9.4	10.1	10.0	9.4	(36)
(37)			MCWBR		8.7	9.3	9.1	8.4	6.9	5.6	4.9	5.1	5.6	6.8	8.1	8.9	(37)
(38)	Clear Sky Solar Irradiance	taub			0.307	0.318	0.339	0.380	0.397	0.436	0.427	0.434	0.392	0.363	0.321	0.299	(38)
(39)		taud			2.476	2.442	2.430	2.302	2.231	2.118	2.182	2.192	2.344	2.437	2.573	2.513	(39)
(40)		Ebn,noon			848	893	911	890	879	842	845	828	841	827	829	829	(40)
(41)		Edh,noon			75	90	103	125	138	155	144	138	111	90	69	67	(41)

Nomenclature: See separate page