



COOLING UNIT TABLES  
CORRECTION FACTOR DATA

PRODUCT SPECIFICATIONS

Bulletin No. 210086  
December 2010  
Supersedes June 2006

To determine Sensible Capacity, Leaving Wet Bulb and Dry Bulb temperature not shown in rating tables, use the following methods:

**LEAVING WET BULB (Imperial Units)**

1.  $\text{cfm} \times 4.5 = \text{lbs. of air per hour}$
2.  $\frac{\text{Btuh cooling capacity}}{\text{lbs. of air per hour}} = \text{Btu's per lb. of air}$
3. Refer to enthalpy table below for entering Wet Bulb to determine Btu per lb. of air.
4. Subtract the result of #2 from #3 for Btu per lb. of air.
5. Match result of #4 on the Enthalpy Table to obtain leaving Wet Bulb required.

**Example:**

1.  $4500 \text{ cfm} \times 4.5 = 20,250 \text{ lbs. of air per hour}$
2.  $\frac{120,000 \text{ Btuh cooling capacity}}{20,250 \text{ lbs. of air per hour}} = 5.93 \text{ Btu's per lb. of air}$
3. Entering Wet Bulb of  $67^\circ\text{F} = 31.62 \text{ Btu per lb.}$
4. Subtract 5.93 from 31.62 = 25.69 Btu per lb.
5. From enthalpy table determine that 25.69 Btu per lb. = 58.8 Leaving Wet Bulb.

**LEAVING DRY BULB (Imperial Units)**

Leaving Dry Bulb = Entering Dry Bulb -  $\frac{\text{Sensible Heat Capacity (Btuh)}}{1.08 \times \text{cfm}}$

Sensible Capacity = S/T x Total Capacity

To determine sensible capacity at Dry Bulb temperatures not shown in cooling capacity tables apply the following correction factor:

Dry Bulb temperatures higher than table figure:

Add 900 Btu per 1000 cfm/ $^\circ\text{F}$ .

Dry Bulb temperatures lower than table figure:

Subtract 900 Btu per 1000 cfm/ $^\circ\text{F}$ .

**Example:**

From rating table, these conditions: 4500 cfm,  $80^\circ\text{F}$  Dry Bulb,  $67^\circ\text{F}$  Wet Bulb, .75 S/T ratio, 120,000 Btuh Total Cooling Capacity.

What is sensible capacity and leaving dry bulb for  $78^\circ\text{F}$  dry bulb at  $67^\circ\text{F}$  wet bulb?

Sensible capacity at  $80^\circ\text{F}$  Dry Bulb,  $67^\circ\text{F}$  Wet Bulb =  
 $.75 \text{ S/T} \times 120,000 \text{ Btuh} = 90,000 \text{ Btuh}$

Sensible capacity at  $78^\circ\text{F}$  Dry Bulb,  $67^\circ\text{F}$  Wet Bulb =  
 $90,000 \text{ Btuh} - \frac{900 \text{ Btuh} \times 4500 \text{ cfm} \times 2^\circ\text{F}}{1000 \text{ cfm}}$

=  $90,000 \text{ Btuh} - 8100 \text{ Btuh} = 81,900 \text{ Btuh}$

Leaving Dry Bulb =  $78^\circ\text{F} - \frac{900 \text{ Btuh} \times 4500 \text{ cfm} \times 2^\circ\text{F}}{1000 \text{ cfm}}$

=  $78^\circ\text{F} - 16.85^\circ\text{F} = 61.5^\circ\text{F}$

**ENTHALPY TABLE (IMPERIAL UNITS) — 1 BTU OF MOIST AIR AT SATURATION PER POUND OF DRY AIR (HS)**

Wet Bulb (°F)	Tenths of Degrees (°F)									
	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
45	17.65	17.70	17.75	17.80	17.85	17.91	17.96	18.01	18.06	18.11
46	18.16	18.21	18.26	18.32	18.37	18.42	18.47	18.52	18.58	18.63
47	18.68	18.73	18.79	18.84	18.89	18.95	19.00	19.05	19.10	19.16
48	19.21	19.26	19.32	19.37	19.43	19.48	19.53	19.59	19.64	19.70
49	19.75	19.81	19.86	19.92	19.97	20.03	20.08	20.14	20.19	20.25
50	20.30	20.36	20.41	20.47	20.52	20.58	20.64	20.69	20.75	20.80
51	20.86	20.92	20.97	21.03	21.09	21.15	21.20	21.26	21.32	21.38
52	21.44	21.49	21.55	21.61	21.67	21.73	21.78	21.84	21.90	21.96
53	22.02	22.08	22.14	22.20	22.26	22.32	22.38	22.44	22.50	22.56
54	22.62	22.68	22.74	22.80	22.86	22.92	22.98	23.04	23.10	23.16
55	23.22	23.28	23.34	23.41	23.47	23.53	23.59	23.65	23.72	23.78
56	23.84	23.90	23.94	24.03	24.10	24.16	24.22	24.29	24.36	24.42
57	24.48	24.54	24.61	24.67	24.74	24.80	24.86	24.93	24.99	25.06
58	25.12	25.19	25.25	25.32	25.39	25.45	25.52	25.58	25.65	25.71
59	25.78	25.85	25.92	25.98	26.05	26.12	26.19	26.26	26.32	26.39
60	26.46	26.53	26.60	26.67	26.74	26.81	26.87	26.94	27.01	27.08
61	27.15	27.22	27.29	27.36	27.41	27.50	27.57	27.64	27.70	27.78
62	27.85	27.92	27.99	28.07	28.14	28.21	28.28	28.35	28.43	28.50
63	28.57	28.64	28.72	28.79	28.87	28.94	29.01	29.09	29.16	29.24
64	29.31	29.39	29.46	29.54	29.61	29.69	29.76	29.84	29.91	29.99
65	30.06	30.14	30.21	30.29	30.37	30.45	30.52	30.60	30.68	30.75
66	30.83	30.91	30.99	31.07	31.15	31.23	31.30	31.38	31.46	31.54
67	31.62	31.70	31.78	31.86	31.94	32.02	32.10	32.18	32.26	32.34
68	32.42	32.50	32.59	32.67	32.75	32.84	32.92	33.00	33.08	33.17
69	33.25	33.33	33.42	33.50	33.59	33.67	33.75	33.84	33.92	34.01
70	34.09	34.18	34.26	34.35	34.43	34.52	34.61	34.69	34.78	34.88
71	34.95	35.04	35.13	35.21	35.30	35.39	35.48	35.57	35.65	35.74
72	35.83	35.92	36.01	36.10	36.19	36.29	36.38	36.47	36.56	36.65
73	36.74	36.83	36.92	37.02	37.11	37.20	37.29	37.38	37.48	37.57
74	37.66	37.76	37.85	37.95	38.04	38.14	38.23	38.33	38.42	38.52
75	38.61	38.71	38.80	38.90	38.99	39.09	39.19	39.28	39.38	39.47
76	39.57	39.67	39.77	39.87	39.97	40.07	40.17	40.27	40.37	40.47
77	40.57	40.67	40.88	40.87	40.97	41.08	41.18	41.28	41.38	41.48
78	41.58	41.68	41.79	41.89	42.00	42.10	42.20	42.31	42.41	42.52
79	42.62	42.73	42.83	42.94	43.05	43.16	43.26	43.37	43.48	43.58

<sup>1</sup> Specify enthalpy of dry air assigned a value of zero at  $0^\circ\text{F}$ .

**METRIC MEASURE**

To determine Sensible Capacity, Leaving Wet Bulb and Dry Bulb temperature not shown in rating tables, use the following methods:

**LEAVING WET BULB (Metric Units)**

1. Cooling capacity kW x 3600 = kJ/hr.
2. L/s x 4.68 = kg/hr.
3. Enthalpy (hs) = kJ/hr ÷ kg/hr = kJ/kg of dry air.
4. Refer to enthalpy table below for Entering Wet Bulb to determine kJ/kg of air.
5. Subtract result of #3 from #4 for kJ/kg of air.
6. Match result of #5 on enthalpy table to obtain Leaving Wet Bulb required.

**Example:**

Cooling unit capacity 35.16 kW, 2124 L/s at 19.4°C Entering Wet Bulb

1. Cooling capacity 35.16 kW x 3600 = 126,600 kJ/hr
2. 2124 L/s x 4.68 = 9940 kg/hr of air
3. hs = 126,600 kJ/hr ÷ 9940 kg/hr = 12.74 kJ/kg of air
4. Entering Wet Bulb of 19.4°C = 55.54 kJ/kg (from enthalpy table)
5. Subtract 12.74 from 55.54 = 42.80 kJ/kg
6. From enthalpy table 42.80 kJ/kg = 15.2°C Leaving Wet Bulb.

**LEAVING DRY BULB (Metric Units)**

$$\text{Leaving Dry Bulb} = \text{Entering Dry Bulb} - \frac{\text{Sensible Heat Capacity (Watts)}}{1.21 \times \text{L/s}}$$

$$\text{Sensible Capacity} = \text{S/T} \times \text{Total Capacity}$$

To determine sensible capacity at Dry Bulb temperatures not shown in cooling capacity tables apply the following correction factor:

Dry Bulb temperatures higher than table figure:

Add 1.0 kW per 1000 L/s per °C.

Dry Bulb temperatures lower than table figure:

Subtract 1.0 kW per 1000 L/s per °C.

**Example:**

From rating table, these conditions: 2124 L/s, 25.6°C dry bulb and 19.4 wet bulb, 0.75 S/T ratio, 35.16 kW total cooling capacity

What is sensible capacity and leaving dry bulb for 26.7°C dry bulb at 19.4°C wet bulb?

$$\text{Sensible capacity at 26.7°C dry bulb, 19.4°C wet bulb} = .75 \text{ S/T} \times 35.16 \text{ kW} = 26.37 \text{ kW}$$

$$\text{Sensible capacity at 25.6°C dry bulb, 19.4°C wet bulb} = 26.37 \text{ kW} - \frac{1.0 \text{ kW} \times 2124 \text{ L/s} \times (26.7 - 25.6^\circ\text{C})}{1000 \text{ L/s}}$$

$$= 26.37 \text{ kW} - 2.34 \text{ kW} = 24.03 \text{ kW} = 24,030 \text{ W}$$

$$\begin{aligned} \text{Leaving Dry Bulb} &= 25.6^\circ\text{C} - \frac{24,030 \text{ W}}{1.21 \times 2124 \text{ L/s}} \\ &= 25.6^\circ\text{C} - 9.35^\circ\text{C} = 16.25^\circ\text{C} \end{aligned}$$

**ENTHALPY TABLE (METRIC UNITS) – <sup>1</sup> KJ OF MOIST AIR AT SATURATION PER KG OF DRY AIR (HS)**

Wet Bulb (°C)	Tenths of Degrees (°C)									
	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	18.64	18.84	19.04	19.24	19.44	19.64	19.84	20.04	20.24	20.44
6	20.64	20.85	21.05	21.26	21.47	21.68	21.88	22.09	22.30	22.50
7	22.71	22.93	23.14	23.35	23.57	23.78	23.99	24.21	24.42	24.64
8	24.85	25.07	25.29	25.51	25.74	25.96	26.18	26.40	26.62	26.84
9	27.06	27.29	27.52	27.74	27.97	28.20	28.43	28.66	28.88	29.11
10	29.34	29.58	29.81	30.05	30.29	30.53	30.76	31.00	31.24	31.47
11	31.71	31.96	32.20	32.45	32.70	32.95	33.19	33.44	33.69	33.93
12	34.18	34.43	34.69	34.94	35.20	35.45	35.70	35.96	36.21	36.47
13	36.71	36.98	37.24	37.51	37.77	38.04	38.30	38.57	38.83	39.10
14	39.37	39.64	39.91	40.19	40.46	40.73	41.00	41.27	41.55	41.82
15	42.09	42.38	42.66	42.95	43.23	43.53	43.81	44.09	44.39	44.66
16	44.95	45.25	45.54	45.84	46.13	46.43	46.72	47.02	47.31	47.61
17	47.90	48.21	48.52	48.83	49.14	49.45	49.75	50.06	50.37	50.68
18	51.00	51.32	51.64	51.96	52.28	52.61	52.93	53.25	53.57	53.89
19	54.21	54.54	54.88	55.21	55.54	55.88	56.21	56.54	56.87	57.21
20	57.53	57.88	58.23	58.58	58.93	59.28	59.62	59.97	60.32	60.67
21	61.02	61.38	61.75	62.11	62.47	62.84	63.20	63.56	63.92	64.29
22	64.65	65.03	65.41	65.79	66.17	66.55	66.92	67.30	67.68	68.06
23	68.44	68.83	69.23	69.62	70.01	70.41	70.80	71.19	71.58	71.98
24	72.37	72.78	73.19	73.61	74.02	74.43	74.84	75.25	75.67	76.08
25	76.49	76.92	77.35	77.77	78.21	78.63	79.06	79.49	79.91	80.34
26	80.77	81.22	81.67	82.11	82.56	83.01	83.46	83.91	84.35	84.80
27	85.24	85.71	86.17	86.64	87.10	87.57	88.04	88.50	88.97	89.43
28	89.90	90.38	90.87	91.35	91.84	92.32	92.80	93.29	93.77	94.26
29	94.74	95.26	95.78	96.30	96.82	97.34	97.85	98.37	98.89	99.41

<sup>1</sup> Specify enthalpy of dry air assigned a value of zero at 0°C.



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