

## DEW POINT SCALE

DEGREES °F °C TO GRAINS PER POUND

| DEWPOINT   |            |               | DEWPOINT   |            |               | DEWPOINT   |            |               | DEWPOINT   |            |               | DEWPOINT   |            |               |
|------------|------------|---------------|------------|------------|---------------|------------|------------|---------------|------------|------------|---------------|------------|------------|---------------|
| DEGREES °F | DEGREES °C | GRAINS/ POUND | DEGREES °F | DEGREES °C | GRAINS/ POUND | DEGREES °F | DEGREES °C | GRAINS/ POUND | DEGREES °F | DEGREES °C | GRAINS/ POUND | DEGREES °F | DEGREES °C | GRAINS/ POUND |
| 120        | 48.89      | 570.4         | 72         | 22.22      | 118.8         | 24         | - 4.44     | 18.24         | - 24       | -31.11     | 1.461         | -72        | - 57.78    | .06383        |
| 119        | 48.33      | 552.8         | 71         | 21.67      | 114.7         | 23         | - 5.00     | 17.40         | - 25       | - 31.67    | 1.375         | - 73       | - 58.33    | .05934        |
| 118        | 47.78      | 535.6         | 70         | 21.11      | 110.7         | 22         | - 5.56     | 16.58         | - 26       | - 32.22    | 1.289         | - 74       | - 58.89    | .05486        |
| 117        | 47.22      | 519.0         | 69         | 20.56      | 107.0         | 21         | - 6.11     | 15.81         | - 27       | - 32.78    | 1.222         | - 75       | - 59.44    | .05037        |
| 116        | 46.67      | 503.0         | 68         | 20.00      | 103.2         | 20         | - 6.67     | 15.06         | - 28       | - 33.33    | 1.154         | - 76       | - 60.00    | .04721        |
| 115        | 46.11      | 487.3         | 67         | 19.44      | 99.68         | 19         | - 7.22     | 14.36         | - 29       | - 33.89    | 1.090         | - 77       | - 60.56    | .04404        |
| 114        | 45.55      | 472.2         | 66         | 18.89      | 96.18         | 18         | - 7.78     | 13.67         | - 30       | - 34.44    | 1.025         | - 78       | - 61.11    | .04086        |
| 113        | 45.00      | 457.5         | 65         | 18.33      | 92.82         | 17         | - 8.33     | 13.03         | - 31       | - 35.00    | .9668         | - 79       | - 61.67    | .03769        |
| 112        | 44.44      | 443.3         | 64         | 17.78      | 89.60         | 16         | - 8.89     | 12.40         | - 32       | - 35.56    | .9086         | - 80       | - 62.22    | .03451        |
| 111        | 43.89      | 429.4         | 63         | 17.22      | 86.45         | 15         | - 9.44     | 11.81         | - 33       | - 36.11    | .8564         | - 81       | - 62.77    | .03228        |
| 110        | 43.33      | 416.1         | 62         | 16.67      | 83.37         | 14         | - 10.00    | 11.24         | - 34       | - 36.67    | .8043         | - 82       | - 63.33    | .03006        |
| 109        | 42.78      | 403.1         | 61         | 16.11      | 80.43         | 13         | - 10.56    | 10.70         | - 35       | - 37.22    | .7578         | - 83       | - 63.89    | .02784        |
| 108        | 42.22      | 390.5         | 60         | 15.56      | 77.56         | 12         | - 11.11    | 10.18         | - 36       | - 37.78    | .7112         | - 84       | - 64.44    | .02562        |
| 107        | 41.66      | 378.3         | 59         | 15.00      | 74.83         | 11         | - 11.67    | 9.681         | - 37       | - 38.33    | .6699         | - 85       | - 65.00    | .02340        |
| 106        | 41.11      | 366.4         | 58         | 14.44      | 72.10         | 10         | - 12.22    | 9.205         | - 38       | - 38.89    | .6286         | - 86       | - 65.56    | .02186        |
| 105        | 40.56      | 354.9         | 57         | 13.89      | 69.54         | 9          | - 12.78    | 8.751         | - 39       | - 39.44    | .5917         | - 87       | - 66.11    | .02033        |
| 104        | 40.00      | 343.8         | 56         | 13.33      | 67.02         | 8          | - 13.33    | 8.323         | - 40       | - 40.00    | .5548         | - 88       | - 66.67    | .01877        |
| 103        | 39.44      | 332.9         | 55         | 12.78      | 64.60         | 7          | - 13.89    | 7.91          | - 41       | - 40.56    | .5219         | - 89       | - 67.22    | .01723        |
| 102        | 38.89      | 322.4         | 54         | 12.22      | 62.26         | 6          | - 14.44    | 7.518         | - 42       | - 41.11    | .4890         | - 90       | - 67.78    | .01569        |
| 101        | 38.33      | 312.2         | 53         | 11.67      | 59.98         | 5          | - 15.00    | 7.140         | - 43       | - 41.67    | .4597         | - 91       | - 68.33    | .01463        |
| 100        | 37.78      | 302.3         | 52         | 11.11      | 57.79         | 4          | - 15.56    | 6.784         | - 44       | - 42.22    | .4304         | - 92       | - 68.89    | .01358        |
| 99         | 37.22      | 292.7         | 51         | 10.56      | 55.66         | 3          | - 16.11    | 6.443         | - 45       | - 42.78    | .4043         | - 93       | - 69.44    | .01253        |
| 98         | 36.67      | 283.4         | 50         | 10.00      | 53.61         | 2          | - 16.67    | 6.117         | - 46       | - 43.33    | .3784         | - 94       | - 70.00    | .01147        |
| 97         | 36.11      | 274.4         | 49         | 9.44       | 51.62         | 1          | - 17.22    | 5.806         | - 47       | - 44.89    | .3554         | - 95       | - 70.56    | .01042        |
| 96         | 35.55      | 265.6         | 48         | 8.89       | 49.70         | 0          | - 17.78    | 5.510         | - 48       | - 44.44    | .3323         | - 96       | - 71.11    | .009704       |
| 95         | 35.00      | 257.1         | 47         | 8.33       | 47.84         | - 1        | - 18.33    | 5.228         | - 49       | - 45.00    | .3118         | - 97       | - 71.67    | .008988       |
| 94         | 34.44      | 248.9         | 46         | 7.78       | 46.05         | - 2        | - 18.89    | 4.960         | - 50       | - 45.56    | .2914         | - 98       | - 72.22    | .008272       |
| 93         | 33.89      | 240.9         | 45         | 7.22       | 44.32         | - 3        | - 19.44    | 4.704         | - 51       | - 46.11    | .2749         | - 99       | - 72.78    | .007556       |
| 92         | 33.33      | 233.1         | 44         | 6.67       | 42.64         | - 4        | - 20.00    | 4.460         | - 52       | - 46.67    | .2583         | - 100      | - 73.33    | .006840       |
| 91         | 32.78      | 225.6         | 43         | 6.11       | 41.02         | - 5        | - 20.56    | 4.228         | - 53       | - 47.22    | .2418         | - 101      | - 73.89    | .006360       |
| 90         | 32.22      | 218.3         | 42         | 5.55       | 39.47         | - 6        | - 21.11    | 4.007         | - 54       | - 47.78    | .2253         | - 102      | - 74.44    | .005879       |
| 89         | 31.67      | 211.2         | 41         | 5.00       | 37.95         | - 7        | - 21.67    | 3.796         | - 55       | - 48.33    | .2088         | - 103      | - 75.00    | .005399       |
| 88         | 31.11      | 204.3         | 40         | 4.44       | 36.49         | - 8        | - 22.22    | 3.596         | - 56       | - 48.89    | .1967         | - 104      | - 75.56    | .004918       |
| 87         | 30.55      | 197.7         | 39         | 3.89       | 35.08         | - 9        | - 22.78    | 3.406         | - 57       | - 49.44    | .1846         | - 105      | - 76.11    | .004438       |
| 86         | 30.00      | 191.2         | 38         | 3.33       | 33.73         | - 10       | - 23.33    | 3.224         | - 58       | - 50.00    | .1725         | - 106      | - 76.67    | .004119       |
| 85         | 29.44      | 184.9         | 37         | 2.78       | 32.42         | - 11       | - 23.89    | 3.051         | - 59       | - 50.56    | .1604         | - 107      | - 77.22    | .003800       |
| 84         | 28.89      | 178.8         | 36         | 2.22       | 31.15         | - 12       | - 24.44    | 2.888         | - 60       | - 51.11    | .1483         | - 108      | - 77.78    | .003482       |
| 83         | 28.33      | 173.0         | 35         | 1.67       | 29.93         | - 13       | - 25.00    | 2.732         | - 61       | - 51.67    | .1395         | - 109      | - 78.33    | .003163       |
| 82         | 27.78      | 167.2         | 34         | 1.11       | 28.75         | - 14       | - 25.55    | 2.584         | - 62       | - 52.22    | .1307         | - 110      | - 78.89    | .002844       |
| 81         | 27.22      | 161.7         | 33         | 0.56       | 27.61         | - 15       | - 26.17    | 2.444         | - 63       | - 52.78    | .1220         | - 111      | - 79.44    | .002635       |
| 80         | 26.67      | 156.3         | 32         | 0.00       | 26.52         | - 16       | - 26.67    | 2.311         | - 64       | - 53.33    | .1132         | - 112      | - 80.00    | .002426       |
| 79         | 26.11      | 151.1         | 31         | - 0.56     | 25.32         | - 17       | - 27.22    | 2.184         | - 65       | - 53.89    | .1044         | - 113      | - 80.56    | .002218       |
| 78         | 25.55      | 146.0         | 30         | - 1.11     | 24.19         | - 18       | - 27.78    | 2.064         | - 66       | - 54.44    | .09808        | - 114      | - 81.11    | .002009       |
| 77         | 25.00      | 141.1         | 29         | - 1.67     | 23.08         | - 19       | - 28.33    | 1.950         | - 67       | - 55.00    | .09176        | - 115      | - 81.67    | .001800       |
| 76         | 24.44      | 136.4         | 28         | - 2.22     | 22.03         | - 20       | - 28.89    | 1.841         | - 68       | - 55.56    | .08544        | - 116      | - 82.22    | .001665       |
| 75         | 23.89      | 131.7         | 27         | - 2.78     | 21.02         | - 21       | - 29.44    | 1.741         | - 69       | - 56.11    | .07912        | - 117      | - 82.78    | .001530       |
| 74         | 23.33      | 127.3         | 26         | - 3.33     | 20.06         | - 22       | - 30.00    | 1.641         | - 70       | - 56.67    | .07280        | - 118      | - 83.33    | .001394       |
| 73         | 22.78      | 123.0         | 25         | - 3.89     | 19.13         | - 23       | - 30.56    | 1.551         | - 71       | - 57.22    | .06831        | - 119      | - 83.89    | .001259       |

## FORMULAS AND CONVERSION FACTORS

### MOISTURE REMOVAL OR LATENT WORK

1050 BTU/H = 1 LB/HR

### WATER VAPOR

7000 GRAINS = 1 LB OF WATER

### WORK TO WATT

3.414 BTU/H = 1 WATT

### GAS

1 THERM = 100,000 BTU/H

### TONS

12,000 BTU'S = 1 TON

### SENSIBLE COOLING

1.08 X (SCFM) (TEMP 1 – TEMP 2) = BTU/H

### LATENT COOLING

[4.5 X (SCFM) X (GRAINS/LB 1 – GRAINS/LB 2)] / 7000 = LB/HR

[4.5 X (SCFM) X (GRAINS/LB 1 – GRAINS/LB 2) X 1050] / 7000 = BTU/H

### TOTAL COOLING

4.5 X (SCFM) X (ENTHALPY 1 – ENTHALPY 2) = BTU/H

### COEFFICIENT OF PERFORMANCE (COP)

WORK DONE (BTUH) / ENERGY REQUIRED (BTUH)

### BLENDING AIR STREAMS

[(CFM 1 X TEMP 1) + (CFM 2 X TEMP 2)] / (CFM 1 + CFM 2)

