



SUBCOOLING

Procedure:

- Use gauges to determine the pressure at the condenser coil outlet, and a thermometer to get the actual temperature at the same point.
- Use the Bubble column to get the bubble temperature
- Subcooling = Bubble Temperature - Actual Temperature

Example: Find the amount of subcooling on a system using Genetron® R-422D when the liquid line temperature reads 90°F and the liquid

line pressure is 200 psig.

- ✓ 200 psig yields ~ 96°F (using Bubble temp)

✓ Degree of Subcooling = $96^{\circ}\text{F} - 90^{\circ}\text{F} = 6^{\circ}\text{F}$



SUPERHEAT

Procedure:

- Use gauges to determine the pressure at the evaporator coil outlet, and a thermometer to get the actual temperature at the same point.
- Get the Dew temperature from the "Dew" column
- Superheat = Actual Temperature - Dew Temperature

45.5°F

- ✓ 60 psig yields ~ 35.5°F (using dew point)

✓ Degree of Superheat = $45.5^{\circ}\text{F} - 35.5^{\circ}\text{F} = 10^{\circ}\text{F}$

Example: Find the superheat on a system which uses Genetron® R-422D when the pressure at the evaporator outlet reads 60 psig and your surface thermometer reads



Contact Honeywell

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G525-714 | August 2017
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PT CHART FOR GENETRON® 422D

New Pressure-based Charts
Make Calculating Glide Easier

| GENETRON® 422D (R-442D) | | | | | | | |
|-------------------------|-------------|--------|-------|-----------------|-------------|--------|-------|
| PRESSURE BASED PT CHART | | | | | | | |
| Pressure (psig) | Temperature | | | Pressure (psig) | Temperature | | |
| | °F | | | | °F | | |
| | Avg | Bubble | Dew | | Avg | Bubble | Dew |
| 0.0 | -41.4 | -45.8 | -37.0 | 215.0 | 103.1 | 100.9 | 105.3 |
| 5.0 | -30.0 | -34.2 | -25.9 | 220.0 | 104.7 | 102.5 | 106.8 |
| 10.0 | -20.8 | -24.8 | -16.7 | 225.0 | 106.2 | 104.1 | 108.4 |
| 15.0 | -12.9 | -16.8 | -8.9 | 230.0 | 107.7 | 105.6 | 109.8 |
| 20.0 | -5.9 | -9.7 | -2.1 | 235.0 | 109.2 | 107.1 | 111.3 |
| 25.0 | 0.3 | -3.4 | 4.0 | 240.0 | 110.7 | 108.6 | 112.8 |
| 30.0 | 5.9 | 2.3 | 9.6 | 245.0 | 112.1 | 110.1 | 114.2 |
| 35.0 | 11.1 | 7.6 | 14.7 | 250.0 | 113.6 | 111.5 | 115.6 |
| 40.0 | 15.9 | 12.4 | 19.4 | 255.0 | 115.0 | 113.0 | 117.0 |
| 45.0 | 20.4 | 17.0 | 23.8 | 260.0 | 116.3 | 114.4 | 118.3 |
| 50.0 | 24.6 | 21.2 | 27.9 | 265.0 | 117.7 | 115.8 | 119.7 |
| 55.0 | 28.5 | 25.2 | 31.8 | 270.0 | 119.1 | 117.1 | 121.0 |
| 60.0 | 32.3 | 29.0 | 35.5 | 275.0 | 120.4 | 118.5 | 122.3 |
| 65.0 | 35.9 | 32.7 | 39.1 | 280.0 | 121.7 | 119.8 | 123.6 |
| 70.0 | 39.3 | 36.1 | 42.4 | 285.0 | 123.0 | 121.2 | 124.9 |
| 75.0 | 42.5 | 39.4 | 45.6 | 290.0 | 124.3 | 122.5 | 126.1 |
| 80.0 | 45.6 | 42.6 | 48.7 | 295.0 | 125.6 | 123.7 | 127.4 |
| 85.0 | 48.6 | 45.6 | 51.6 | 300.0 | 126.8 | 125.0 | 128.6 |
| 90.0 | 51.5 | 48.5 | 54.5 | 305.0 | 128.0 | 126.3 | 129.8 |
| 95.0 | 54.3 | 51.4 | 57.2 | 310.0 | 129.3 | 127.5 | 131.0 |
| 100.0 | 57.0 | 54.1 | 59.9 | 315.0 | 130.5 | 128.7 | 132.2 |
| 105.0 | 59.6 | 56.7 | 62.4 | 320.0 | 131.7 | 130.0 | 133.4 |
| 110.0 | 62.1 | 59.3 | 64.9 | 325.0 | 132.8 | 131.1 | 134.5 |
| 115.0 | 64.6 | 61.8 | 67.4 | 330.0 | 134.0 | 132.3 | 135.6 |
| 120.0 | 67.0 | 64.2 | 69.7 | 335.0 | 135.1 | 133.5 | 136.8 |
| 125.0 | 69.3 | 66.6 | 72.0 | 340.0 | 136.3 | 134.7 | 137.9 |
| 130.0 | 71.5 | 68.9 | 74.2 | 345.0 | 137.4 | 135.8 | 139.0 |
| 135.0 | 73.7 | 71.1 | 76.4 | 350.0 | 138.5 | 137.0 | 140.1 |
| 140.0 | 75.9 | 73.3 | 78.5 | 355.0 | 139.6 | 138.1 | 141.2 |
| 145.0 | 78.0 | 75.4 | 80.5 | 360.0 | 140.7 | 139.2 | 142.2 |
| 150.0 | 80.0 | 77.5 | 82.6 | 365.0 | 141.8 | 140.3 | 143.3 |
| 155.0 | 82.0 | 79.5 | 84.5 | 370.0 | 142.8 | 141.4 | 144.3 |
| 160.0 | 84.0 | 81.5 | 86.5 | 375.0 | 143.9 | 142.5 | 145.4 |
| 165.0 | 85.9 | 83.4 | 88.3 | 380.0 | 145.0 | 143.5 | 146.4 |
| 170.0 | 87.7 | 85.3 | 90.2 | 385.0 | 146.0 | 144.6 | 147.4 |
| 175.0 | 89.6 | 87.2 | 92.0 | 390.0 | 147.0 | 145.6 | 148.4 |
| 180.0 | 91.4 | 89.0 | 93.8 | 395.0 | 148.0 | 146.7 | 149.4 |
| 185.0 | 93.2 | 90.8 | 95.5 | 400.0 | 149.0 | 147.7 | 150.4 |
| 190.0 | 94.9 | 92.6 | 97.2 | 405.0 | 150.0 | 148.7 | 151.3 |
| 195.0 | 96.6 | 94.3 | 98.9 | 410.0 | 151.0 | 149.7 | 152.3 |
| 200.0 | 98.3 | 96.0 | 100.5 | 415.0 | 152.0 | 150.7 | 153.2 |
| 205.0 | 99.9 | 97.7 | 102.1 | 420.0 | 152.9 | 151.7 | 154.2 |
| 210.0 | 101.5 | 99.3 | 103.7 | 425.0 | 153.9 | 152.7 | 155.1 |

Charge Calculation

| Product | ASHRAE Number | Refrigerant Type | Refrigerant Class | Lubricant Used* | Liquid Density (lbs/ft3)** at 80°F |
|---------------|---------------|------------------|-------------------|-----------------|------------------------------------|
| Genetron 422D | 422D | Blend | HFC/HC | POE/MO | 70.9 |
| Genetron® 22 | R-22 | Single Component | HCFC | MO | 73.9 |

* POE = polyol ester, MO = mineral oil, AB = Alkylbenzene ** Divide by 7.48 to convert to lbs/gal.

* U.S. production stopped Dec. 31, 1995.

When retrofitting a system with a new refrigerant, use this formula to determine amount needed:
Pounds of new refrigerant = $\frac{\text{Pounds of original refrigerant} \times \text{density of new refrigerant (at 80°F)}}{\text{density of original refrigerant (at 80°F)}}$

EXAMPLE

If you were using 1,000 pounds of R-22, you'll need about 959 pounds of 422D, as follows:

$$\text{Pounds of 422D} = \frac{1,000 \times 70.9}{73.9} = 959$$



Scan to learn more about our new PT Chart.



Scan to learn more about calculating Glide.