



R-422B and R-422D

R-422B R-422D

Composition:

R-422B: (R-125 / 134a / 600a) • (55 / 42 / 3 wt%)

R-422D: (R-125 / 134a / 600a) • (65.1 / 31.5 / 3.4 wt%)

Replaces: R-22

Application:

R-422B: Medium temperature commercial and industrial refrigeration and air conditioning

R-422D: Medium and low temperature commercial and industrial refrigeration and air conditioning

Performance:

- **R-422B:** Best match at warmer evaporator temps / AC
- **R-422D:** Best match at medium temp evaporator / refrigeration
- Lower discharge temperature
- Possible undersized TXV or distributor nozzle based on pressure drop
- Up to 10% lower capacity at lower evaporator temperatures

Lubricant:

Polyolester lubricant; a hydrocarbon additive is designed to circulate mineral oil or alkylbenzene, but addition of POE may be required if there is a problem with circulation.

Retrofitting:

- Consult the comments on Pages 9 and 10
- See Section II, pages 92-96 for detailed discussion

[PRESSURE-TEMP CHART]

| R422B | | | R422D | |
|---------------|--------------|------------|---------------|--------------|
| Liquid (psig) | Vapor (psig) | TEMP. (°F) | Liquid (psig) | Vapor (psig) |
| 0.9 | 2.7" | -40 | 2.4 | 2.3" |
| 3.0 | 0.9" | -35 | 4.6 | 0.8 |
| 5.4 | 1.1 | -30 | 7.1 | 3.0 |
| 7.9 | 3.2 | -25 | 9.9 | 5.4 |
| 10.7 | 5.7 | -20 | 12.9 | 8.1 |
| 13.8 | 8.3 | -15 | 16.2 | 11.0 |
| 17.1 | 11.3 | -10 | 19.8 | 14.3 |
| 20.7 | 14.5 | -5 | 23.7 | 17.8 |
| 24.7 | 18.0 | 0 | 27.9 | 21.7 |
| 29.0 | 21.9 | 5 | 32.5 | 25.8 |
| 33.6 | 26.1 | 10 | 37.5 | 30.4 |
| 38.6 | 30.6 | 15 | 42.8 | 35.3 |
| 43.9 | 35.5 | 20 | 48.5 | 40.7 |
| 49.7 | 40.8 | 25 | 54.7 | 46.4 |
| 55.9 | 46.6 | 30 | 61.3 | 52.6 |
| 62.5 | 52.7 | 35 | 68.4 | 59.3 |
| 69.6 | 59.4 | 40 | 75.9 | 66.4 |
| 77.2 | 66.5 | 45 | 84.0 | 74.0 |
| 85.3 | 74.1 | 50 | 92.6 | 82.2 |
| 94 | 82.2 | 55 | 102 | 90.9 |
| 103 | 90.9 | 60 | 111 | 100 |
| 113 | 100 | 65 | 122 | 110 |
| 123 | 110 | 70 | 133 | 121 |
| 134 | 120 | 75 | 144 | 132 |
| 145 | 132 | 80 | 156 | 144 |
| 158 | 143 | 85 | 169 | 156 |
| 170 | 156 | 90 | 183 | 170 |
| 184 | 169 | 95 | 197 | 184 |
| 198 | 183 | 100 | 212 | 198 |
| 213 | 198 | 105 | 228 | 214 |
| 229 | 213 | 110 | 245 | 231 |
| 246 | 230 | 115 | 262 | 248 |
| 263 | 247 | 120 | 281 | 266 |
| 281 | 265 | 125 | 300 | 286 |
| 301 | 284 | 130 | 320 | 306 |
| 321 | 304 | 135 | 341 | 327 |
| 342 | 326 | 140 | 364 | 350 |

| [PHYSICAL PROPERTIES OF REFRIGERANTS] | National R-422B | National R-422D |
|---|-----------------|-----------------|
| Environmental Classification | HFC | HFC |
| Molecular Weight | 108.5 | 109.9 |
| Boiling Point (1atm, °F) | -42.4 | -45.8 |
| Critical Pressure (psia) | 574.1 | 566.2 |
| Critical Temperature (°F) | 181.8 | 175.2 |
| Critical Density (lb./ft ³) | 32.9 | 33.0 |
| Liquid Density (70 °F, lb./ft ³) | 73.05 | 70.9 |
| Vapor Density (bp, lb./ft ³) | 0.363 | 0.372 |
| Heat of Vaporization (bp, BTU/lb.) | 84.2 | 81.8 |
| Specific Heat Liquid (70 °F, BTU/lb. °F) | 0.3385 | 0.339 |
| Specific Heat Vapor (1atm, 70 °F, BTU/lb. °F) | 0.201 | 0.20 |
| Ozone Depletion Potential (CFC 11 = 1.0) | 0 | 0 |
| Global Warming Potential (CO2 = 1.0) | 2525 | 2730 |
| ASHRAE Standard 34 Safety Rating | A1 | A1 |
| Temperature Glide (°F) (see section 2) | 5 | 5 |

[AVAILABLE IN SIZES]

| REFRIGERANT | Type | Size |
|-------------|----------|---------|
| R-422B | Cylinder | 25 lb. |
| | | 110 lb. |
| R-422D | Cylinder | 25 lb. |
| | | 110 lb. |



Thermodynamic Properties of R-422D

| TEMP. (°F) | Pressure Liquid (psia) | Pressure Vapor (psia) | Density Liquid (lb/ft ³) | Density Vapor (lb/ft ³) | Enthalpy Liquid (Btu/lb) | Enthalpy Vapor (Btu/lb) | Entropy Liquid (Btu/R-lb) | Entropy Vapor (Btu/R-lb) |
|------------|------------------------|-----------------------|--------------------------------------|-------------------------------------|--------------------------|-------------------------|---------------------------|--------------------------|
| -60 | 10.0 | 7.5 | 89.08 | 0.20 | -5.756 | 76.71 | -0.01402 | 0.1951 |
| -55 | 11.5 | 8.8 | 88.53 | 0.23 | -4.326 | 77.45 | -0.01047 | 0.1943 |
| -50 | 13.1 | 10.2 | 87.98 | 0.26 | -2.890 | 78.19 | -0.00695 | 0.1935 |
| -45 | 15.0 | 11.8 | 87.42 | 0.30 | -1.448 | 78.92 | -0.00346 | 0.1928 |
| -40 | 17.1 | 13.5 | 86.86 | 0.34 | 0.000 | 79.65 | 0.00000 | 0.1921 |
| -35 | 19.3 | 15.5 | 86.30 | 0.39 | 1.455 | 80.39 | 0.00343 | 0.1915 |
| -30 | 21.8 | 17.7 | 85.73 | 0.44 | 2.916 | 81.11 | 0.00684 | 0.1909 |
| -25 | 24.6 | 20.1 | 85.15 | 0.50 | 4.384 | 81.84 | 0.01023 | 0.1904 |
| -20 | 27.6 | 22.8 | 84.57 | 0.56 | 5.860 | 82.56 | 0.01359 | 0.1899 |
| -15 | 30.9 | 25.7 | 83.98 | 0.63 | 7.343 | 83.27 | 0.01693 | 0.1894 |
| -10 | 34.5 | 29.0 | 83.39 | 0.71 | 8.835 | 83.98 | 0.02024 | 0.1890 |
| -5 | 38.4 | 32.5 | 82.79 | 0.79 | 10.34 | 84.69 | 0.02354 | 0.1886 |
| 0 | 42.6 | 36.3 | 82.18 | 0.88 | 11.84 | 85.39 | 0.02682 | 0.1883 |
| 5 | 47.2 | 40.5 | 81.56 | 0.98 | 13.36 | 86.08 | 0.03008 | 0.1880 |
| 10 | 52.2 | 45.1 | 80.93 | 1.08 | 14.89 | 86.77 | 0.03332 | 0.1877 |
| 15 | 57.5 | 50.0 | 80.30 | 1.20 | 16.42 | 87.45 | 0.03655 | 0.1874 |
| 20 | 63.2 | 55.4 | 79.66 | 1.32 | 17.97 | 88.12 | 0.03977 | 0.1872 |
| 25 | 69.4 | 61.1 | 79.00 | 1.46 | 19.53 | 88.78 | 0.04297 | 0.1870 |
| 30 | 76.0 | 67.3 | 78.34 | 1.60 | 21.10 | 89.43 | 0.04615 | 0.1868 |
| 35 | 83.1 | 74.0 | 77.66 | 1.76 | 22.68 | 90.08 | 0.04933 | 0.1866 |
| 40 | 90.6 | 81.1 | 76.97 | 1.93 | 24.27 | 90.71 | 0.05250 | 0.1864 |
| 45 | 98.7 | 88.7 | 76.27 | 2.11 | 25.87 | 91.33 | 0.05565 | 0.1863 |
| 50 | 107 | 96.9 | 75.55 | 2.30 | 27.49 | 91.93 | 0.05880 | 0.1861 |
| 55 | 116 | 106 | 74.82 | 2.52 | 29.12 | 92.53 | 0.06194 | 0.1860 |
| 60 | 126 | 115 | 74.07 | 2.74 | 30.77 | 93.10 | 0.06508 | 0.1858 |
| 65 | 136 | 125 | 73.30 | 2.99 | 32.43 | 93.66 | 0.06822 | 0.1857 |
| 70 | 147 | 135 | 72.52 | 3.25 | 34.11 | 94.21 | 0.07135 | 0.1855 |
| 75 | 159 | 147 | 71.71 | 3.54 | 35.81 | 94.73 | 0.07448 | 0.1853 |
| 80 | 171 | 158 | 70.88 | 3.84 | 37.53 | 95.23 | 0.07762 | 0.1852 |
| 85 | 184 | 171 | 70.03 | 4.18 | 39.26 | 95.70 | 0.08076 | 0.1850 |
| 90 | 197 | 184 | 69.15 | 4.53 | 41.02 | 96.16 | 0.08391 | 0.1848 |
| 95 | 212 | 198 | 68.23 | 4.92 | 42.80 | 96.58 | 0.08706 | 0.1845 |
| 100 | 227 | 213 | 67.29 | 5.34 | 44.61 | 96.97 | 0.09023 | 0.1843 |
| 105 | 243 | 229 | 66.31 | 5.80 | 46.44 | 97.32 | 0.09342 | 0.1840 |
| 110 | 259 | 245 | 65.28 | 6.30 | 48.31 | 97.64 | 0.09662 | 0.1836 |
| 115 | 277 | 263 | 64.21 | 6.84 | 50.21 | 97.91 | 0.09986 | 0.1832 |
| 120 | 295 | 281 | 63.08 | 7.44 | 52.15 | 98.14 | 0.1031 | 0.1828 |
| 125 | 315 | 300 | 61.89 | 8.09 | 54.13 | 98.30 | 0.1064 | 0.1823 |
| 130 | 335 | 321 | 60.63 | 8.82 | 56.16 | 98.40 | 0.1098 | 0.1817 |
| 135 | 356 | 342 | 59.28 | 9.63 | 58.25 | 98.42 | 0.1132 | 0.1810 |
| 140 | 378 | 364 | 57.82 | 10.55 | 60.41 | 98.35 | 0.1167 | 0.1802 |