



TECHNICAL DATA SHEET

R-513A

Components

| Chemical Name | Chemical Formula | %By weight | CAS No | EC No |
|---------------------------------------|--|------------|----------|-----------|
| 2,3,3,3-Tetrafluoropropene (R-1234yf) | CH ₂ =CF ₂ CF ₃ | %56 | 754-12-1 | 468-710-7 |
| 1,1,1,2-Tetrafluoroethane (R-134a) | CH ₂ FCF ₃ | %44 | 811-97-2 | 212-377-0 |

Physical and chemical properties

At normal temperature and pressure, R-513A is a colourless gas.

| | |
|---|--------------------------|
| Physical state..... | Gas |
| Form..... | Compressed liquefied gas |
| Molecular Weight (g/mol)..... | 108.4 |
| Boiling Point at 1 atm, (°C)..... | -29.2 |
| Vapour pressure 25°C, (bar)..... | 7.06 |
| Liquid Density at 25°C, (kg/m ³)..... | 1134 |
| Flammability..... | No |
| Critical Temperature, °C..... | 96.5 |
| Critical Pressure, bar..... | 37.67 |
| Critical Density, (kg/m ³)..... | 516.75 |
| ODP..... | 0 |
| GWP..... | 631* |

Commercial Specifications (ISO9002)

| | |
|--------------------------------------|------|
| Purity, %, min..... | 99.5 |
| Moisture content, ppm by weight..... | 10 |
| Acid Value, ppm by weight..... | 0.1 |
| Residue, mg.kg..... | 100 |

*The regulation on fluorinated greenhouse gases of EU 517-2014 has been taken considered.



Thermodynamic Properties

| TEMP. (°C) | ABSOLUTE PRESSURE (bar) | | DENSITY (Kg/m ³) | | ENTHALPY (kJ/Kg) | | ENTROPY (kJ/Kg.K) | |
|---------------|----------------------------|--------|---------------------------------|--------|---------------------|--------|----------------------|--------|
| | LIQUID | VAPOUR | LIQUID | VAPOUR | LIQUID | VAPOUR | LIQUID | VAPOUR |
| -50 | 0,359 | 0,355 | 1411,1 | 2,117 | 137,9 | 345,3 | 0,750 | 1,680 |
| -45 | 0,471 | 0,465 | 1397,0 | 2,730 | 143,9 | 348,6 | 0,777 | 1,674 |
| -40 | 0,608 | 0,603 | 1382,8 | 3,477 | 149,8 | 351,8 | 0,802 | 1,669 |
| -35 | 0,776 | 0,770 | 1368,3 | 4,378 | 155,9 | 355,1 | 0,828 | 1,665 |
| -30 | 0,978 | 0,973 | 1353,7 | 5,453 | 161,9 | 358,4 | 0,853 | 1,661 |
| -25 | 1,221 | 1,216 | 1338,8 | 6,725 | 168,1 | 361,6 | 0,878 | 1,658 |
| -20 | 1,508 | 1,503 | 1323,6 | 8,220 | 174,3 | 364,9 | 0,903 | 1,656 |
| -15 | 1,846 | 1,842 | 1308,2 | 9,965 | 180,6 | 368,1 | 0,928 | 1,654 |
| -10 | 2,239 | 2,236 | 1292,5 | 11,990 | 187,0 | 371,2 | 0,952 | 1,652 |
| -5 | 2,695 | 2,692 | 1276,4 | 14,326 | 193,5 | 374,4 | 0,976 | 1,651 |
| 0 | 3,219 | 3,217 | 1260,0 | 17,011 | 200,0 | 377,5 | 1,000 | 1,650 |
| 5 | 3,818 | 3,816 | 1243,2 | 20,082 | 206,6 | 380,6 | 1,024 | 1,649 |
| 10 | 4,498 | 4,497 | 1225,9 | 23,586 | 213,3 | 383,6 | 1,047 | 1,649 |
| 15 | 5,266 | 5,265 | 1208,2 | 27,571 | 220,1 | 386,5 | 1,071 | 1,649 |
| 20 | 6,129 | 6,129 | 1189,9 | 32,095 | 227,0 | 389,4 | 1,094 | 1,648 |
| 25 | 7,095 | 7,095 | 1170,9 | 37,225 | 234,0 | 392,1 | 1,118 | 1,648 |
| 30 | 8,171 | 8,171 | 1151,3 | 43,038 | 241,1 | 394,8 | 1,141 | 1,648 |
| 35 | 9,366 | 9,365 | 1131,0 | 49,624 | 248,3 | 397,4 | 1,164 | 1,648 |
| 40 | 10,686 | 10,685 | 1109,7 | 57,095 | 255,6 | 399,8 | 1,188 | 1,648 |
| 45 | 12,142 | 12,139 | 1087,5 | 65,586 | 263,1 | 402,1 | 1,211 | 1,648 |
| 50 | 13,741 | 13,738 | 1064,1 | 75,266 | 270,7 | 404,2 | 1,234 | 1,647 |



Mollier Diagram

