



SOLVAY

asking more from chemistry[®]

SOLKANE[®]



SOLKATHERM[®] SES36

High Temperature Working Fluid

Product-Description

- Thermodynamic fluid
- Azeotropic mixture
- Liquid at ambient temperature
- Working fluid for thermodynamic cycles
- Favourable physiological / toxicological properties
- Chemically and thermally stable
- Non-flammable
- Excellent dielectric properties
- Excellent material compatibility

Applications

- Direct contact cooling
- Heat pipes
- ORC-cycles
- Heat transfer fluid
- High temperature heat pumps

Material Compatibility

SOLKATHERM[®] SES36 has a wide compatibility range with many common materials. It is generally compatible with all non-fluorinated plastics and rubbers, if we exclude as notable exceptions PMMA and natural rubber.

Due to the relative chemical similarity, the compatibility of SOLKATHERM[®] SES36 with fluorinated plastics and rubbers is not as wide as it could be expected from the superior chemical resistance that normally those materials are able to assure. As an example, some fluorinated rubbers o-rings (Viton[®] types) are not suitable in systems filled with SOLKATHERM[®] SES36. As a positive exception, PTFE has proven to be compatible.

| Thermoplastics | Substance | Compatibility |
|----------------------|----------------------------|---------------|
| PVC | Polyvinylchloride | + |
| PE-HD | High-density polyethylene | + |
| PMMA | Polymethyl methacrylate | - |
| PC | Polycarbonate | + |
| PP | Polypropylene | + |
| Nylon 66 | | + |
| PS | Polystyrene | + |
| PETG | Polyethylene terephthalate | + |
| PTFE | Polytetrafluoroethylene | + |
| Elastomers | | |
| Neoprene | | + |
| Viton [®] A | | - |
| EPDM rubber | | + |
| Natural rubber | | - |
| Nitril rubber | | + |
| Silicone | | o |

Table 1: + compatible / o border line / - not compatible

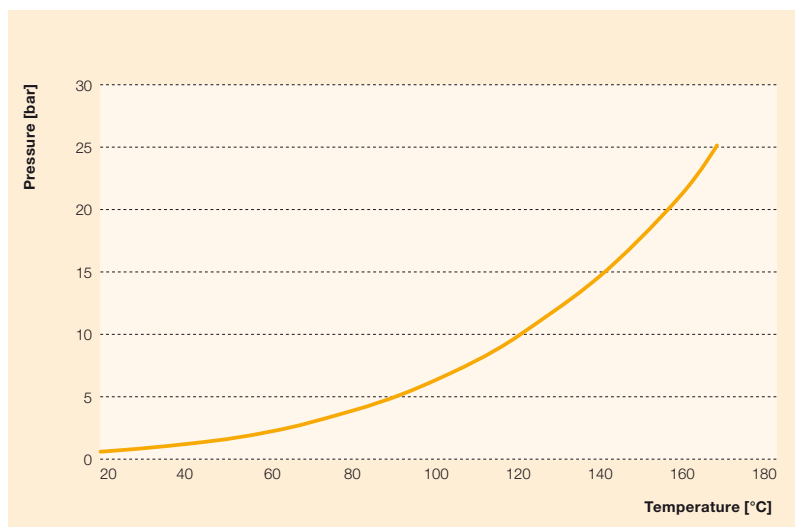
All compatibility tests have been carried out at normal conditions of temperature and pressure. In case of peculiar requirements, please refer to our technical staff in order to verify if it is possible to carry out tests under special conditions.

Physical Properties

| | | |
|--|-------------------|-------------------|
| Average Molecular Weight | kg/Kmol | 184.5 |
| Glide | °C | 0 |
| Boiling Point at 1.013 bar | °C | 35.6 |
| Critical Temperature | °C | 177.6 |
| Critical Pressure | bar | 28.5 |
| Density Liquid (saturated) ¹⁾ | kg/m ³ | 1,365.4 |
| Density Vapour (saturated) ¹⁾ | kg/m ³ | 5.3 |
| Heat of Vaporisation ¹⁾ | kJ/kg | 129.2 |
| Specific Heat Capacity (Liquid) ¹⁾ | kJ/kg K | 1.21 |
| Volume Resistivity ¹⁾ | Ω cm | 5 10 ⁸ |
| Dielectric Constant ¹⁾ | | 6.9 |

¹⁾ at 25°C

Vapour Pressure



Thermodynamic Properties

| T °C | p bar | rho' kg/dm ³ | rho'' kg/m ³ | v' dm ³ /kg | v'' dm ³ /kg | h' kJ/kg | h'' kJ/kg | r kJ/kg | s' kJ/(kgK) | s'' kJ/(kgK) | |
|------------------|----------|----------------------------|----------------------------|---------------------------|----------------------------|-------------|--------------|------------|----------------|-----------------|--------|
| 20.00 | 0.58 | 1.377 | 4.55 | 0.726 | 219.77 | 220.28 | 353.34 | 133.06 | 1.0705 | 1.5244 | |
| 25.00 | 0.70 | 1.365 | 5.41 | 0.732 | 184.97 | 225.47 | 357.37 | 131.90 | 1.0877 | 1.5301 | |
| 30.00 | 0.83 | 1.353 | 6.39 | 0.739 | 156.38 | 230.72 | 361.43 | 130.71 | 1.1047 | 1.5358 | |
| 35.00 | 0.99 | 1.341 | 7.53 | 0.746 | 132.76 | 236.03 | 365.50 | 129.47 | 1.1216 | 1.5417 | |
| 40.00 | 1.17 | 1.328 | 8.84 | 0.753 | 113.17 | 241.41 | 369.60 | 128.18 | 1.1384 | 1.5477 | |
| 45.00 | 1.38 | 1.315 | 10.33 | 0.760 | 96.85 | 246.86 | 373.71 | 126.84 | 1.1551 | 1.5538 | |
| 50.00 | 1.62 | 1.302 | 12.02 | 0.768 | 83.20 | 252.38 | 377.83 | 125.44 | 1.1718 | 1.5600 | |
| 55.00 | 1.89 | 1.289 | 13.94 | 0.776 | 71.73 | 257.97 | 381.95 | 123.98 | 1.1884 | 1.5662 | |
| 60.00 | 2.20 | 1.275 | 16.11 | 0.784 | 62.06 | 263.62 | 386.08 | 122.46 | 1.2049 | 1.5725 | |
| 65.00 | 2.55 | 1.261 | 18.56 | 0.793 | 53.87 | 269.34 | 390.21 | 120.86 | 1.2215 | 1.5789 | |
| 70.00 | 2.93 | 1.247 | 21.32 | 0.802 | 46.91 | 275.14 | 394.33 | 119.20 | 1.2379 | 1.5853 | |
| 75.00 | 3.36 | 1.232 | 24.41 | 0.811 | 40.97 | 281.00 | 398.45 | 117.45 | 1.2543 | 1.5917 | |
| 80.00 | 3.84 | 1.218 | 27.86 | 0.821 | 35.89 | 286.93 | 402.55 | 115.62 | 1.2708 | 1.5982 | |
| 85.00 | 4.38 | 1.203 | 31.73 | 0.832 | 31.52 | 292.94 | 406.64 | 113.71 | 1.2872 | 1.6046 | |
| 90.00 | 4.96 | 1.187 | 36.03 | 0.842 | 27.75 | 299.02 | 410.72 | 111.69 | 1.3035 | 1.6111 | |
| 95.00 | 5.61 | 1.172 | 40.83 | 0.853 | 24.49 | 305.19 | 414.77 | 109.58 | 1.3200 | 1.6176 | |
| 100.00 | 6.32 | 1.156 | 46.18 | 0.865 | 21.65 | 311.44 | 418.79 | 107.34 | 1.3364 | 1.6241 | |
| 105.00 | 7.09 | 1.140 | 52.13 | 0.877 | 19.18 | 317.79 | 422.78 | 104.98 | 1.3529 | 1.6305 | |
| 110.00 | 7.93 | 1.123 | 58.75 | 0.890 | 17.02 | 324.25 | 426.73 | 102.48 | 1.3694 | 1.6369 | |
| 115.00 | 8.84 | 1.107 | 66.13 | 0.904 | 15.12 | 330.82 | 430.64 | 99.82 | 1.3861 | 1.6432 | |
| 120.00 | 9.83 | 1.089 | 74.37 | 0.918 | 13.45 | 337.53 | 434.49 | 96.97 | 1.4028 | 1.6495 | |
| 125.00 | 10.90 | 1.072 | 83.60 | 0.933 | 11.96 | 344.38 | 438.28 | 93.91 | 1.4198 | 1.6556 | |
| 130.00 | 12.05 | 1.054 | 93.97 | 0.948 | 10.64 | 351.39 | 441.99 | 90.60 | 1.4369 | 1.6616 | |
| 135.00 | 13.30 | 1.036 | 105.69 | 0.965 | 9.46 | 358.59 | 445.60 | 87.01 | 1.4543 | 1.6675 | |
| 140.00 | 14.64 | 1.018 | 119.04 | 0.983 | 8.40 | 366.00 | 449.08 | 83.08 | 1.4719 | 1.6730 | |
| 145.00 | 16.08 | 0.998 | 134.43 | 1.002 | 7.44 | 373.64 | 452.39 | 78.75 | 1.4899 | 1.6783 | |
| 150.00 | 17.62 | 0.979 | 152.42 | 1.022 | 6.56 | 381.56 | 455.48 | 73.93 | 1.5083 | 1.6830 | |
| 155.00 | 19.28 | 0.958 | 173.91 | 1.044 | 5.75 | 389.77 | 458.26 | 68.49 | 1.5272 | 1.6872 | |
| 160.00 | 21.07 | 0.935 | 200.39 | 1.070 | 4.99 | 398.32 | 460.56 | 62.25 | 1.5466 | 1.6903 | |
| 165.00 | 23.00 | 0.909 | 234.57 | 1.101 | 4.26 | 407.25 | 462.15 | 54.90 | 1.5666 | 1.6919 | |
| Range wet vapour | 170.00 | 25.07 | 0.875 | 280.90 | 1.143 | 3.56 | 416.60 | 462.66 | 46.06 | 1.5873 | 1.6912 |



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