# Triphenylmethane

**Other names:** 1,1',1''-Methylidynetris[benzene]
1,1',1''-methylidynetrisbenzene
Benzene,1,1',1''-methylidynetris-
benzene, 1,1',1''-methylidynetris-
methane, triphenyl-
tritane
**Inchi:** InChI=1S/C19H16/c1-4-10-16(11-5-1)19(17-12-6-2-7-13-17)18-14-8-3-9-15-18/h1-15,19H
**InchiKey:** AAAQKTZKLRYKHR-UHFFFAOYSA-N
**Formula:** C19H16
**SMILES:** c1ccc(C(c2ccccc2)c2ccccc2)cc1
**Mol. weight [g/mol]:** 244.33
**CAS:** 519-73-3

# Physical Properties

| Property code | Value | Unit | Source |
|---|---|---|---|
| gf | 443.89 | kJ/mol | Joback Method |
| hf | 276.10 ± 5.00 | kJ/mol | NIST Webbook |
| hfus | 23.57 | kJ/mol | Joback Method |
| hsub | 109.10 ± 0.60 | kJ/mol | NIST Webbook |
| hsub | 100.70 | kJ/mol | NIST Webbook |
| hsub | 112.00 | kJ/mol | NIST Webbook |
| hsub | 108.40 ± 2.80 | kJ/mol | NIST Webbook |
| hsub | 105.00 ± 0.80 | kJ/mol | NIST Webbook |
| hvap | 93.20 ± 2.20 | kJ/mol | NIST Webbook |
| hvap | 94.60 | kJ/mol | NIST Webbook |
| hvap | 95.00 | kJ/mol | NIST Webbook |
| ie | 8.40 ± 0.05 | eV | NIST Webbook |
| ie | 8.34 ± 0.03 | eV | NIST Webbook |
| ie | 8.34 ± 0.04 | eV | NIST Webbook |
| log10ws | -5.25 | | Crippen Method |
| logp | 4.867 | | Crippen Method |
| mcvol | 207.290 | ml/mol | McGowan Method |
| pc | 2400.57 | kPa | Joback Method |
| rinpol | 327.80 | | NIST Webbook |
| rinpol | 1997.00 | | NIST Webbook |
| rinpol | 1982.00 | | NIST Webbook |
| rinpol | 327.80 | | NIST Webbook |

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|---|---|---|---|
| rinpol | 1982.00 | | NIST Webbook |
| rinpol | 1978.00 | | NIST Webbook |
| rinpol | 1997.00 | | NIST Webbook |
| sg | 541.00 | J/mol×K | NIST Webbook |
| tb | 632.00 ± 1.00 | K | NIST Webbook |
| tb | 632.00 ± 6.00 | K | NIST Webbook |
| tb | 449.00 ± 2.00 | K | NIST Webbook |
| tc | 982.16 | K | Joback Method |
| tf | 362.00 ± 7.00 | K | NIST Webbook |
| tf | 364.40 ± 3.00 | K | NIST Webbook |
| tf | 365.70 ± 3.00 | K | NIST Webbook |
| tf | 367.80 ± 3.00 | K | NIST Webbook |
| tf | 366.40 ± 1.00 | K | NIST Webbook |
| tf | 365.00 ± 6.00 | K | NIST Webbook |
| tf | 361.00 ± 6.00 | K | NIST Webbook |
| tf | 365.00 ± 0.10 | K | NIST Webbook |
| tf | 363.00 ± 4.00 | K | NIST Webbook |
| tf | 365.00 ± 4.00 | K | NIST Webbook |
| tf | 365.70 ± 1.50 | K | NIST Webbook |
| tf | 365.50 ± 1.00 | K | NIST Webbook |
| tf | 365.20 ± 1.00 | K | NIST Webbook |
| tf | 365.20 ± 0.50 | K | NIST Webbook |
| tf | 365.00 ± 3.00 | K | NIST Webbook |
| tf | 366.40 ± 1.50 | K | NIST Webbook |
| tf | 365.60 ± 0.20 | K | NIST Webbook |
| tf | 363.00 ± 2.00 | K | NIST Webbook |
| tf | 365.00 ± 4.00 | K | NIST Webbook |
| tf | 365.30 ± 0.20 | K | NIST Webbook |
| tf | 366.00 ± 2.00 | K | NIST Webbook |
| tf | 365.30 ± 1.00 | K | NIST Webbook |
| tf | 366.85 ± 0.30 | K | NIST Webbook |
| tf | 366.25 ± 0.20 | K | NIST Webbook |
| tf | 365.50 ± 0.60 | K | NIST Webbook |
| tf | 365.99 ± 0.50 | K | NIST Webbook |
| vc | 0.769 | m3/kmol | Joback Method |

# Temperature Dependent Properties

| Property code | Value | Unit | Temperature [K] | Source |
|---|---|---|---|---|
| cpg | 586.50 | J/mol×K | 803.20 | Joback Method |
| cpg | 550.53 | J/mol×K | 713.72 | Joback Method |

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|---|---|---|---|---|
| cpg | 569.41 | J/mol×K | 758.46 | Joback Method |
| cpg | 640.21 | J/mol×K | 982.16 | Joback Method |
| cpg | 601.97 | J/mol×K | 847.94 | Joback Method |
| cpg | 615.98 | J/mol×K | 892.68 | Joback Method |
| cpg | 628.67 | J/mol×K | 937.42 | Joback Method |
| dvisc | 0.0002819 | Pa×s | 540.94 | Joback Method |
| dvisc | 0.0004615 | Pa×s | 483.34 | Joback Method |
| dvisc | 0.0008632 | Pa×s | 425.75 | Joback Method |
| dvisc | 0.0001036 | Pa×s | 713.72 | Joback Method |
| dvisc | 0.0001364 | Pa×s | 656.12 | Joback Method |
| dvisc | 0.0001893 | Pa×s | 598.53 | Joback Method |
| dvisc | 0.0019643 | Pa×s | 368.15 | Joback Method |
| hfust | 21.97 | kJ/mol | 365.30 | NIST Webbook |
| hfust | 20.70 | kJ/mol | 367.20 | NIST Webbook |
| hfust | 21.97 | kJ/mol | 365.30 | NIST Webbook |
| hfust | 18.20 | kJ/mol | 365.50 | NIST Webbook |
| hfust | 21.98 | kJ/mol | 365.30 | NIST Webbook |
| hfust | 20.92 | kJ/mol | 365.60 | NIST Webbook |
| hsubt | 113.90 | kJ/mol | 353.00 | NIST Webbook |
| hsubt | 100.00 ± 0.40 | kJ/mol | 337.00 | NIST Webbook |
| hsubt | 106.70 ± 0.60 | kJ/mol | 338.00 | NIST Webbook |
| hsubt | 100.10 ± 0.59 | kJ/mol | 367.00 | NIST Webbook |
| hsubt | 106.80 | kJ/mol | 330.50 | NIST Webbook |
| hvapt | 82.00 | kJ/mol | 402.50 | NIST Webbook |
| hvapt | 58.60 | kJ/mol | 577.50 | NIST Webbook |
| pvap | 0.19 | kPa | 470.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 0.92 | kPa | 510.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 0.64 | kPa | 500.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |

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|---|---|---|---|---|
| pvap | 0.44 | kPa | 490.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 0.29 | kPa | 480.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 0.12 | kPa | 460.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 0.07 | kPa | 450.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 0.04 | kPa | 440.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 0.03 | kPa | 430.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 0.01 | kPa | 420.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |

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|---|---|---|---|---|
| pvap | 7.52e-03 | kPa | 410.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 3.87e-03 | kPa | 400.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 1.90e-03 | kPa | 390.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 8.85e-04 | kPa | 380.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 3.91e-04 | kPa | 370.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 1.63e-04 | kPa | 360.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 6.36e-05 | kPa | 350.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |

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|---|---|---|---|---|
| pvap | 2.31e-05 | kPa | 340.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 2.39e-06 | kPa | 320.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 6.70e-07 | kPa | 310.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 1.69e-07 | kPa | 300.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 1.30e-07 | kPa | 298.15 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| pvap | 7.76e-06 | kPa | 330.00 | Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons |
| sfust | 57.20 | J/mol×K | 365.60 | NIST Webbook |
| sfust | 49.80 | J/mol×K | 365.50 | NIST Webbook |
| sfust | 60.20 | J/mol×K | 365.30 | NIST Webbook |

# Pressure Dependent Properties

| Property code | Value | Unit | Pressure [kPa] | Source |
|---|---|---|---|---|
| tbrp | 631.70 | K | 101.00 | NIST Webbook |

# Sources

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|---|---|
| **McGowan Method:** | http://link.springer.com/article/10.1007/BF02311772 |
| **NIST Webbook:** | http://webbook.nist.gov/cgi/cbook.cgi?ID=C519733&Units=SI |
| **Crippen Method:** | http://pubs.acs.org/doi/abs/10.1021/ci990307l |
| **Crippen Method:** | https://www.chemeo.com/doc/models/crippen_log10ws |
| **Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons:** | https://www.doi.org/10.1021/je800300x |
| **Joback Method:** | https://en.wikipedia.org/wiki/Joback_method |

# Legend

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|---|---|
| **cpg:** | Ideal gas heat capacity |
| **dvisc:** | Dynamic viscosity |
| **gf:** | Standard Gibbs free energy of formation |
| **hf:** | Enthalpy of formation at standard conditions |
| **hfus:** | Enthalpy of fusion at standard conditions |
| **hfust:** | Enthalpy of fusion at a given temperature |
| **hsub:** | Enthalpy of sublimation at standard conditions |
| **hsubt:** | Enthalpy of sublimation at a given temperature |
| **hvap:** | Enthalpy of vaporization at standard conditions |
| **hvapt:** | Enthalpy of vaporization at a given temperature |
| **ie:** | Ionization energy |
| **log10ws:** | Log10 of Water solubility in mol/l |
| **logp:** | Octanol/Water partition coefficient |
| **mcvol:** | McGowan's characteristic volume |
| **pc:** | Critical Pressure |
| **pvap:** | Vapor pressure |
| **rinpol:** | Non-polar retention indices |
| **sfust:** | Entropy of fusion at a given temperature |
| **sg:** | Molar entropy at standard conditions |
| **tb:** | Normal Boiling Point Temperature |

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|---|---|
| **tbrp:** | Boiling point at reduced pressure |
| **tc:** | Critical Temperature |
| **tf:** | Normal melting (fusion) point |
| **vc:** | Critical Volume |