# Tetracosane

**Other names:** n-Tetracosane
**Inchi:** InChI=1S/C24H50/c1-3-5-7-9-11-13-15-17-19-21-23-24-22-20-18-16-14-12-10-8-6-4-2/h3
**InchiKey:** POOSGDOYLQNASK-UHFFFAOYSA-N
**Formula:** C24H50
**SMILES:** CCCCCCCCCCCCCCCCCCCCCCCC
**Mol. weight [g/mol]:** 338.65
**CAS:** 646-31-1

# Physical Properties

| Property code | Value | Unit | Source |
|---|---|---|---|
| gf | 151.20 | kJ/mol | Joback Method |
| hf | -538.69 | kJ/mol | Joback Method |
| hfus | 57.92 | kJ/mol | Joback Method |
| hsub | 162.00 ± 12.00 | kJ/mol | NIST Webbook |
| hvap | 121.90 | kJ/mol | NIST Webbook |
| hvap | 126.20 ± 2.30 | kJ/mol | NIST Webbook |
| hvap | 125.70 ± 1.60 | kJ/mol | NIST Webbook |
| hvap | 126.80 ± 0.40 | kJ/mol | NIST Webbook |
| log10ws | -9.87 | | Crippen Method |
| logp | 9.608 | | Crippen Method |
| mcvol | 349.020 | ml/mol | McGowan Method |
| pc | 870.00 | kPa | KDB |
| pc | 866.00 ± 40.00 | kPa | NIST Webbook |
| pc | 900.00 ± 200.00 | kPa | NIST Webbook |
| rinpol | 366.00 | | NIST Webbook |
| rinpol | 402.60 | | NIST Webbook |
| rinpol | 402.50 | | NIST Webbook |
| rinpol | 389.39 | | NIST Webbook |
| rinpol | 382.35 | | NIST Webbook |
| ss | 651.00 | J/mol×K | NIST Webbook |
| tb | 664.50 | K | NIST Webbook |
| tb | 516.00 ± 6.00 | K | NIST Webbook |
| tb | 597.30 ± 4.00 | K | NIST Webbook |
| tc | 800.00 ± 8.00 | K | NIST Webbook |
| tc | 799.80 ± 3.00 | K | NIST Webbook |
| tc | 800.00 | K | KDB |

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|---|---|---|---|
| tc | 801.00 | K | Critical temperatures and pressures of C40, C44, and C60 normal alkanes measured by the pulse-heating technique |
| tf | 324.10 | K | Solid-liquid equilibria of indole binary systems |
| tf | 321.21 | K | Solid-liquid equilibria of eicosane, tetracosane or biphenyl + 1- octadecanol, or + 1-eicosanol mixtures |
| tt | 320.80 | K | Thermal conductivity of heavy, even-carbon number n-alkanes (C22 to C32) |
| tt | 321.40 | K | Solubilities of Some Long-Chain n-Alkanes in Dipropyl Ether, Dibutyl Ether, 1-Chlorobutane, and 1-Chlorooctane as Functions of Temperature |
| tt | 323.65 ± 1.00 | K | NIST Webbook |
| vc | 1.379 | m3/kmol | Joback Method |

# Temperature Dependent Properties

| Property code | Value | Unit | Temperature [K] | Source |
|---|---|---|---|---|
| cpg | 1110.30 | J/mol×K | 776.78 | Joback Method |
| cpg | 1209.76 | J/mol×K | 918.06 | Joback Method |
| cpg | 1191.69 | J/mol×K | 889.81 | Joback Method |
| cpg | 1172.75 | J/mol×K | 861.55 | Joback Method |
| cpg | 1152.90 | J/mol×K | 833.29 | Joback Method |
| cpg | 1132.09 | J/mol×K | 805.03 | Joback Method |
| cpg | 1087.48 | J/mol×K | 748.52 | Joback Method |
| cpl | 772.50 | J/mol×K | 330.63 | NIST Webbook |
| cpl | 805.00 | J/mol×K | 353.00 | NIST Webbook |
| cps | 730.90 | J/mol×K | 298.15 | NIST Webbook |
| cps | 601.00 | J/mol×K | 300.00 | NIST Webbook |
| dvisc | 0.0000799 | Pa×s | 683.81 | Joback Method |
| dvisc | 0.0001184 | Pa×s | 619.09 | Joback Method |
| dvisc | 0.0001923 | Pa×s | 554.38 | Joback Method |
| dvisc | 0.0003548 | Pa×s | 489.67 | Joback Method |
| dvisc | 0.0007891 | Pa×s | 424.95 | Joback Method |
| dvisc | 0.0023389 | Pa×s | 360.24 | Joback Method |
| dvisc | 0.0000578 | Pa×s | 748.52 | Joback Method |
| hfust | 31.30 | kJ/mol | 321.30 | NIST Webbook |
| hfust | 54.89 | kJ/mol | 324.10 | NIST Webbook |

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|---|---|---|---|---|
| hfust | 59.31 | kJ/mol | 324.10 | NIST Webbook |
| hfust | 54.89 | kJ/mol | 324.10 | NIST Webbook |
| hfust | 81.75 | kJ/mol | 322.00 | NIST Webbook |
| hfust | 53.80 | kJ/mol | 323.40 | NIST Webbook |
| hsubt | 164.90 ± 1.80 | kJ/mol | 315.50 | NIST Webbook |
| hvapt | 86.20 ± 4.60 | kJ/mol | 474.00 | NIST Webbook |
| hvapt | 111.20 | kJ/mol | 418.00 | NIST Webbook |
| hvapt | 105.10 ± 0.50 | kJ/mol | 353.00 | NIST Webbook |
| hvapt | 116.10 | kJ/mol | 298.00 | A Comparison of Results by Correlation Gas Chromatography with Another Gas Chromatographic Retention Time Technique. The Effects of Retention Time Coincidence on Vaporization Enthalpy and Vapor Pressure |
| hvapt | 126.00 ± 2.00 | kJ/mol | 405.50 | NIST Webbook |
| hvapt | 112.00 | kJ/mol | 393.00 | NIST Webbook |
| hvapt | 95.20 | kJ/mol | 452.50 | NIST Webbook |
| hvapt | 121.90 | kJ/mol | 298.15 | Vapor Pressures and Vaporization Enthalpies of the n-Alkanes from C21 to C30 at T = 298.15 K by Correlation Gas Chromatography |
| hvapt | 86.60 | kJ/mol | 535.50 | NIST Webbook |
| hvapt | 92.60 | kJ/mol | 520.50 | NIST Webbook |
| psub | 1.23e-06 | kPa | 322.94 | Vapor and Sublimation Pressures of Three Normal Alkanes: C20, C24, and C28 |
| pvap | 1.72e-03 | kPa | 393.20 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) |

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|---|---|---|---|---|---|
| pvap | 3.16e-04 | kPa | 373.61 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) | |
| pvap | 1.72e-03 | kPa | 393.20 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) | |
| pvap | 0.01 | kPa | 417.75 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) | |
| pvap | 3.07e-04 | kPa | 373.17 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) | |
| pvap | 4.50e-05 | kPa | 353.97 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) | |

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|---|---|---|---|---|
| pvap | 4.35e-05 | kPa | 353.43 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) |
| pvap | 4.30e-06 | kPa | 333.46 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) |
| pvap | 2.41e-03 | kPa | 397.55 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) |
| pvap | 5.24e-04 | kPa | 379.15 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) |
| pvap | 8.43e-03 | kPa | 414.68 | A Gas Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28) |
| sfust | 169.37 | J/mol×K | 324.10 | NIST Webbook |
| sfust | 253.90 | J/mol×K | 322.00 | NIST Webbook |
| sfust | 97.42 | J/mol×K | 321.30 | NIST Webbook |

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|---|---|---|---|---|
| srf | 0.03 | N/m | 343.15 | Surface tension of decane binary and ternary mixtures with eicosane, docosane and tetracosane |
| srf | 0.03 | N/m | 333.15 | Surface tension of decane binary and ternary mixtures with eicosane, docosane and tetracosane |

# Pressure Dependent Properties

| Property code | Value | Unit | Pressure [kPa] | Source |
|---|---|---|---|---|
| tbrp | 504.50 | K | 1.30 | NIST Webbook |

# Correlations

| Information | Value |
|---|---|
| Property code | pvap |
| Equation | ln(Pvp) = A + B/T + C*ln(T) + D*T^2 |
| Coeff. A | 3.17065e+02 |
| Coeff. B | -2.83729e+04 |
| Coeff. C | -4.24944e+01 |
| Coeff. D | 1.45601e-05 |
| Temperature range (K), min. | 448.15 |
| Temperature range (K), max. | 664.15 |

# Sources

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|---|---|
| **Excess Molar Volumes for Three and Four Component Mixtures Simulating the Binary Mixture (Cyclohexane + Hexadecane) pr biphenyl + 1-octadecanol, or + 1-eicosanol mixtures: even-carbon number n-alkanes (C22 to C32).** | https://www.doi.org/10.1021/acs.jced.5b00331 |
| **Solid-liquid equilibria of eicosane, tetracosane pr biphenyl + 1-octadecanol, or + 1-eicosanol mixtures:** | https://www.doi.org/10.1016/j.fluid.2017.03.012 |
| **Thermal conductivity of heavy n-Alkanes Saturation Apparatus for Very Low Vapor or Sublimation Pressure Measurements (10-3 Pa): Vapor-Liquid Equilibria of n-Alkanes (n-C10, n-C24, n-C28):** | https://www.doi.org/10.1016/j.fluid.2018.08.016 |
| | https://www.doi.org/10.1021/je7001122 |
| **NIST Webbook:** | http://webbook.nist.gov/cgi/cbook.cgi?ID=C646311&Units=SI |

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| **Solubilities of Some Long-Chain n-Alkanes in Dipropyl Ether, Dibutyl Ether, 1-Chlorobutane, and 1-Chlorooctane as Functions of Temperature:** | https://www.doi.org/10.1021/je030206q |
| **Critical temperatures and pressures of C40, C44, and C60 normal alkanes determined by the pulse-heating technique:** | https://www.doi.org/10.1016/j.fluid.2014.07.017 |
| **Experimental solubility data of various n-alkane waxes: effects of alkane chain length, alkane odd versus even carbon number structures, and solvent chemistry on solubility:** | https://www.doi.org/10.1016/j.fluid.2004.10.021 |
| **Surface tension of decane binary and ternary mixtures with eicosane, docosane, and tetracosane:** | https://www.doi.org/10.1021/je050024r |
| **Joback Method:** | https://en.wikipedia.org/wiki/Joback_method |
| **KDB:** | https://www.cheric.org/files/research/kdb/mol/mol24.mol |
| **Solid-liquid equilibria of indole binary systems:** | https://www.doi.org/10.1016/j.tca.2016.10.003 |
| **Vapor and Sublimation Pressures of Three Normal Alkanes: C20, C24, and C28:** | https://www.doi.org/10.1021/je800534x |
| **Vapor Pressures and Vaporization Enthalpies of the n-Alkanes from C21 to C30 at T = 298.15 K by Correlation Gas Chromatography:** | https://www.doi.org/10.1021/je0301747 |
| **KDB Vapor Pressure Data:** | https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=24 |
| **McGowan Method:** | http://link.springer.com/article/10.1007/BF02311772 |
| **Crippen Method:** | http://pubs.acs.org/doi/abs/10.1021/ci990307l |
| **Crippen Method:** | https://www.chemeo.com/doc/models/crippen_log10ws |
| **A Comparison of Results by Correlation Gas Chromatography with Another Gas Chromatographic Retention Time Technique. The Effects of Retention Time Coincidence on Vaporization Enthalpy and Vapor Pressure:** | https://www.doi.org/10.1021/acs.jced.5b00444 |
| **High pressure solid-solid and solid-liquid transition data for long-chain alkanes:** | https://www.doi.org/10.1016/j.jct.2008.07.017 |

# Legend

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|---|---|
| **cpg:** | Ideal gas heat capacity |
| **cpl:** | Liquid phase heat capacity |
| **cps:** | Solid phase 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 |
| **log10ws:** | Log10 of Water solubility in mol/l |
| **logp:** | Octanol/Water partition coefficient |
| **mcvol:** | McGowan's characteristic volume |
| **pc:** | Critical Pressure |
| **psub:** | Sublimation pressure |
| **pvap:** | Vapor pressure |
| **rinpol:** | Non-polar retention indices |
| **sfust:** | Entropy of fusion at a given temperature |
| **srf:** | Surface Tension |
| **ss:** | Solid phase 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 |
| **tt:** | Triple Point Temperature |
| **vc:** | Critical Volume |