# 1,1'-Biphenyl, 3,3',4,4'-tetramethyl-

**Other names:** Biphenyl, 3,3',4,4'-tetramethyl-
3,3',4,4'-Tetramethylbiphenyl
3,3',4,4'-Tetramethyldiphenyl
3,4,3',4'-Tetramethylbiphenyl
**Inchi:** InChI=1S/C16H18/c1-11-5-7-15(9-13(11)3)16-8-6-12(2)14(4)10-16/h5-10H,1-4H3
**InchiKey:** YXBIAYXZUDJVEB-UHFFFAOYSA-N
**Formula:** C16H18
**SMILES:** Cc1ccc(-c2ccc(C)c(C)c2)cc1C
**Mol. weight [g/mol]:** 210.31
**CAS:** 4920-95-0

## Physical Properties

| Property code | Value | Unit | Source |
|---|---|---|---|
| gf | 270.14 | kJ/mol | Joback Method |
| hf | 53.61 | kJ/mol | Joback Method |
| hfus | 23.72 | kJ/mol | Joback Method |
| hvap | 58.41 | kJ/mol | Joback Method |
| log10ws | -5.98 | | Crippen Method |
| logp | 4.587 | | Crippen Method |
| mcvol | 188.780 | ml/mol | McGowan Method |
| pc | 2159.31 | kPa | Joback Method |
| tb | 638.76 | K | Joback Method |
| tc | 872.54 | K | Joback Method |
| tf | 349.00 ± 4.00 | K | NIST Webbook |
| tf | 349.00 ± 4.00 | K | NIST Webbook |
| tf | 350.00 ± 4.00 | K | NIST Webbook |
| tf | 350.00 ± 3.00 | K | NIST Webbook |
| vc | 0.716 | m3/kmol | Joback Method |

## Temperature Dependent Properties

| Property code | Value | Unit | Temperature [K] | Source |
|---|---|---|---|---|
| cpg | 470.87 | J/mol×K | 638.76 | Joback Method |
| cpg | 548.43 | J/mol×K | 833.58 | Joback Method |

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|---|---|---|---|---|
| cpg | 535.01 | J/mol×K | 794.62 | Joback Method |
| cpg | 520.59 | J/mol×K | 755.65 | Joback Method |
| cpg | 505.13 | J/mol×K | 716.69 | Joback Method |
| cpg | 488.57 | J/mol×K | 677.72 | Joback Method |
| cpg | 560.89 | J/mol×K | 872.54 | Joback Method |
| dvisc | 0.0001447 | Pa×s | 638.76 | Joback Method |
| dvisc | 0.0001759 | Pa×s | 594.47 | Joback Method |
| dvisc | 0.0002209 | Pa×s | 550.17 | Joback Method |
| dvisc | 0.0002885 | Pa×s | 505.88 | Joback Method |
| dvisc | 0.0003967 | Pa×s | 461.59 | Joback Method |
| dvisc | 0.0005836 | Pa×s | 417.29 | Joback Method |
| dvisc | 0.0009410 | Pa×s | 373.00 | Joback Method |

# Sources

| | |
|---|---|
| **NIST Webbook:** | http://webbook.nist.gov/cgi/cbook.cgi?ID=C4920950&Units=SI |
| **Crippen Method:** | http://pubs.acs.org/doi/abs/10.1021/ci990307l |
| **Crippen Method:** | https://www.chemeo.com/doc/models/crippen_log10ws |
| **Joback Method:** | https://en.wikipedia.org/wiki/Joback_method |
| **McGowan Method:** | http://link.springer.com/article/10.1007/BF02311772 |

# Legend

| | |
|---|---|
| **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 |
| **hvap:** | Enthalpy of vaporization at standard conditions |
| **log10ws:** | Log10 of Water solubility in mol/l |
| **logp:** | Octanol/Water partition coefficient |
| **mcvol:** | McGowan's characteristic volume |
| **pc:** | Critical Pressure |
| **tb:** | Normal Boiling Point Temperature |
| **tc:** | Critical Temperature |
| **tf:** | Normal melting (fusion) point |
| **vc:** | Critical Volume |