# n-Butyl methacrylate

**Other names:**      2-Methyl-2-propenoic acid butyl ester
2-Methyl-butylacrylaat
2-Methyl-butylacrylat
2-Methyl-butylacrylate
2-Methylacrylic acid, butyl ester
2-Propenoic acid, 2-methyl-, butyl ester
Butil metacrilato
Butyl 2-methacrylate
Butyl 2-methyl-2-propenate
Butyl 2-methyl-2-propenoate
Butyl ester of methacrylic acid
Butyl methacrylate
Butylester kyseliny methakrylove
Butylmethacrylaat
Methacrylate de butyle
Methacrylic acid n-butyl ester
Methacrylic acid, butyl ester
Methacrylsaeurebutylester
NSC 20956
butyl 2-methylpropenoate

**Inchi:**      InChI=1S/C8H14O2/c1-4-5-6-10-8(9)7(2)3/h2,4-6H2,1,3H3
**InchiKey:**      SOGAXMICEFXMKE-UHFFFAOYSA-N
**Formula:**      C8H14O2
**SMILES:**      C=C(C)C(=O)OCCCC
**Mol. weight [g/mol]:**      142.20
**CAS:**      97-88-1

# Physical Properties

| Property code | Value | Unit | Source |
|:---:|:---:|:---:|:---:|
| gf | -138.15 | kJ/mol | Joback Method |
| hf | -337.61 | kJ/mol | Joback Method |
| hfl | -413.10 ± 3.30 | kJ/mol | NIST Webbook |
| hfus | 16.67 | kJ/mol | Joback Method |
| hvap | 41.97 | kJ/mol | Joback Method |
| log10ws | -1.89 | | Crippen Method |
| logp | 1.906 | | Crippen Method |
| mcvol | 126.720 | ml/mol | McGowan Method |

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|---|---|---|---|
| pc | 2790.61 | kPa | Joback Method |
| rinpol | 962.00 | | NIST Webbook |
| rinpol | 967.00 | | NIST Webbook |
| rinpol | 989.00 | | NIST Webbook |
| rinpol | 967.00 | | NIST Webbook |
| rinpol | 964.00 | | NIST Webbook |
| rinpol | 967.00 | | NIST Webbook |
| rinpol | 960.00 | | NIST Webbook |
| rinpol | 962.00 | | NIST Webbook |
| rinpol | 962.00 | | NIST Webbook |
| rinpol | 989.00 | | NIST Webbook |
| ripol | 1190.00 | | NIST Webbook |
| ripol | 1190.00 | | NIST Webbook |
| ripol | 1220.00 | | NIST Webbook |
| ripol | 1232.00 | | NIST Webbook |
| tb | 434.70 | K | NIST Webbook |
| tc | 637.18 | K | Joback Method |
| tf | 196.80 | K | NIST Webbook |
| tf | 196.80 ± 0.20 | K | NIST Webbook |
| tt | 197.78 ± 0.01 | K | NIST Webbook |
| vc | 0.489 | m3/kmol | Joback Method |

# Temperature Dependent Properties

| Property code | Value | Unit | Temperature [K] | Source |
|---|---|---|---|---|
| cpg | 327.16 | J/mol×K | 637.18 | Joback Method |
| cpg | 317.57 | J/mol×K | 606.87 | Joback Method |
| cpg | 307.54 | J/mol×K | 576.55 | Joback Method |
| cpg | 297.08 | J/mol×K | 546.24 | Joback Method |
| cpg | 286.17 | J/mol×K | 515.92 | Joback Method |
| cpg | 274.81 | J/mol×K | 485.61 | Joback Method |
| cpg | 262.99 | J/mol×K | 455.29 | Joback Method |
| cpl | 273.80 | J/mol×K | 298.15 | NIST Webbook |
| hfust | 15.55 | kJ/mol | 197.80 | NIST Webbook |
| hvapt | 45.10 | kJ/mol | 390.50 | NIST Webbook |
| hvapt | 47.40 | kJ/mol | 358.00 | NIST Webbook |

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|---|---|---|---|---|---|
| rhol | 876.19 | kg/m3 | 313.15 | Density, excess volume, and excess coefficient of thermal expansion of the binary systems of dimethyl carbonate with butyl methacrylate, allyl methacrylate, styrene, and vinyl acetate at T = (293.15, 303.15, and 313.15) K | |
| rhol | 885.99 | kg/m3 | 303.15 | Density, excess volume, and excess coefficient of thermal expansion of the binary systems of dimethyl carbonate with butyl methacrylate, allyl methacrylate, styrene, and vinyl acetate at T = (293.15, 303.15, and 313.15) K | |
| rhol | 876.35 | kg/m3 | 313.15 | Densities, ultrasonic speeds, excess and partial molar properties of binary mixtures of acetonitrile with some alkyl methacrylates at temperatures from 293.15 K to 318.15 K | |
| rhol | 871.64 | kg/m3 | 318.15 | Densities, ultrasonic speeds, excess and partial molar properties of binary mixtures of acetonitrile with some alkyl methacrylates at temperatures from 293.15 K to 318.15 K | |

| | | | | |
|---|---|---|---|---|
| rhol | 890.44 | kg/m3 | 298.15 | Densities, isobaric thermal compressibilities and derived thermodynamic properties of the binary systems of cyclohexane with allyl methacrylate, butyl methacrylate, methacrylic acid, and vinyl acetate at t = (298.15 and 308.15)K |
| rhol | 880.86 | kg/m3 | 308.15 | Densities, isobaric thermal compressibilities and derived thermodynamic properties of the binary systems of cyclohexane with allyl methacrylate, butyl methacrylate, methacrylic acid, and vinyl acetate at t = (298.15 and 308.15)K |
| rhol | 895.23 | kg/m3 | 293.15 | Density, excess volume, and excess coefficient of thermal expansion of the binary systems of dimethyl carbonate with butyl methacrylate, allyl methacrylate, styrene, and vinyl acetate at T = (293.15, 303.15, and 313.15) K |
| rhol | 880.86 | kg/m3 | 308.15 | Densities and derived thermodynamic properties of the binary systems of 1,1-dimethylethyl methyl ether with allyl methacrylate, butyl methacrylate, methacrylic acid, and vinyl acetate at T = (298.15 and 308.15) K |

| rhol | 890.44 | kg/m3 | 298.15 | Densities and derived thermodynamic properties of the binary systems of 1,1-dimethylethyl methyl ether with allyl methacrylate, butyl methacrylate, methacrylic acid, and vinyl acetate at T = (298.15 and 308.15) K |
|------|--------|-------|--------|--------|
| rhol | 885.78 | kg/m3 | 303.15 | Densities, ultrasonic speeds, excess and partial molar properties of binary mixtures of acetonitrile with some alkyl methacrylates at temperatures from 293.15 K to 318.15 K |
| rhol | 890.48 | kg/m3 | 298.15 | Densities, ultrasonic speeds, excess and partial molar properties of binary mixtures of acetonitrile with some alkyl methacrylates at temperatures from 293.15 K to 318.15 K |
| rhol | 895.19 | kg/m3 | 293.15 | Densities, ultrasonic speeds, excess and partial molar properties of binary mixtures of acetonitrile with some alkyl methacrylates at temperatures from 293.15 K to 318.15 K |
| rhol | 881.07 | kg/m3 | 308.15 | Densities, ultrasonic speeds, excess and partial molar properties of binary mixtures of acetonitrile with some alkyl methacrylates at temperatures from 293.15 K to 318.15 K |

# Correlations

| Information | Value |
| --- | --- |
| Property code | pvap |
| Equation | ln(Pvp) = A + B/(T + C) |
| Coeff. A | 1.46216e+01 |
| Coeff. B | -3.73997e+03 |
| Coeff. C | -6.08250e+01 |
| Temperature range (K), min. | 321.74 |
| Temperature range (K), max. | 462.54 |

| Information | Value |
| --- | --- |
| Property code | pvap |
| Equation | ln(Pvp) = A + B/T + C*ln(T) + D*T^2 |
| Coeff. A | 7.91517e+01 |
| Coeff. B | -8.47577e+03 |
| Coeff. C | -9.18304e+00 |
| Coeff. D | 3.81406e-06 |
| Temperature range (K), min. | 223.00 |
| Temperature range (K), max. | 616.00 |

# Sources

**Liquid liquid equilibria for the ternary systems water + 1-propanol + methyl Methacrylate, +butyl methacrylate, and +isobutyl methacrylate:**    https://www.doi.org/10.1016/j.fluid.2007.05.018

**McGowan Method:**    http://link.springer.com/article/10.1007/BF02311772

**Crippen Method:**    https://www.chemeo.com/doc/models/crippen_log10ws

**NIST Webbook:**    http://webbook.nist.gov/cgi/cbook.cgi?ID=C97881&Units=SI

**Densities, isobaric thermal compressibilities and derived thermodynamic properties of the binary liquid mixtures of water + 1-butanol + methyl methacrylate or butyl methacrylate or isobutyl methacrylate:**    https://www.doi.org/10.1016/j.tca.2005.06.007

**liquid-liquid equilibria of Water + methanol at (298.2, Methacrylate, or methyl methacrylate) at t (298.15 and 308.15) K:**    https://www.doi.org/10.1016/j.fluid.2007.07.011

**(isobutyl Methacrylate) at (288.2 and 318.2) K:**    https://www.doi.org/10.1021/je7002572

**The Yaws handbook of (isobutyl Methacrylate):**    https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure

**Densities, ultrasonic speeds, excess and partial molar properties of binary mixtures of acetonitrile with some alkyl methacrylates at temperatures from 293.15 K to 318.15 K:**    https://www.doi.org/10.1016/j.jct.2018.03.013

**Joback Method:**    https://en.wikipedia.org/wiki/Joback_method

**Densities, speeds of sound and excess properties of (benzonitrile + methyl methacrylate, or ethyl methacrylate,**    https://www.doi.org/10.1016/j.jct.2018.12.031

**Density, excess volume, and excess coefficient of thermal expansion of the binary mixtures of...:**    https://www.doi.org/10.1016/j.jct.2008.06.017

**Liquid-Liquid Equilibria for the Ternary Systems Water + 1-Propanol + Methyl Methacrylate, +Butyl Methacrylate, and +Isobutyl Methacrylate at (298.15, 305.15, and 313.15) K:**    https://www.doi.org/10.1021/je700118q

# Legend

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|---|---|
| **cpg:** | Ideal gas heat capacity |
| **cpl:** | Liquid phase heat capacity |
| **gf:** | Standard Gibbs free energy of formation |
| **hf:** | Enthalpy of formation at standard conditions |
| **hfl:** | Liquid phase enthalpy of formation at standard conditions |
| **hfus:** | Enthalpy of fusion at standard conditions |
| **hfust:** | Enthalpy of fusion 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 |
| **pvap:** | Vapor pressure |
| **rhol:** | Liquid Density |
| **rinpol:** | Non-polar retention indices |
| **ripol:** | Polar retention indices |
| **tb:** | Normal Boiling Point Temperature |
| **tc:** | Critical Temperature |
| **tf:** | Normal melting (fusion) point |
| **tt:** | Triple Point Temperature |
| **vc:** | Critical Volume |