# trans-2-Pentenoic acid

**Other names:** (2E)-2-Pentenoic acid
(E)-2-Pentenoic acid
(E)-pent-2-en-1-oic acid
2-Pentenoic acid, (E)-
trans-Alpha,beta-penteneoic acid
**Inchi:** InChI=1S/C5H8O2/c1-2-3-4-5(6)7/h3-4H,2H2,1H3,(H,6,7)/b4-3+
**InchiKey:** YIYBQIKDCADOSF-ONEGZZNKSA-N
**Formula:** C5H8O2
**SMILES:** CCC=CC(=O)O
**Mol. weight [g/mol]:** 100.12
**CAS:** 13991-37-2

# Physical Properties

| Property code | Value | Unit | Source |
|---|---|---|---|
| affp | 823.60 | kJ/mol | NIST Webbook |
| basg | 792.60 | kJ/mol | NIST Webbook |
| chl | -4020.00 | kJ/mol | NIST Webbook |
| gf | -194.30 | kJ/mol | Joback Method |
| hf | -294.12 | kJ/mol | Joback Method |
| hfus | 14.59 | kJ/mol | Joback Method |
| hvap | 50.11 | kJ/mol | Joback Method |
| log10ws | -0.87 | | Crippen Method |
| logp | 1.037 | | Crippen Method |
| mcvol | 84.450 | ml/mol | McGowan Method |
| pc | 4350.56 ± 100.00 | kPa | NIST Webbook |
| tb | 464.01 | K | Joback Method |
| tc | 676.92 ± 3.00 | K | NIST Webbook |
| tf | 251.78 | K | Joback Method |
| vc | 0.321 | m3/kmol | Joback Method |

# Temperature Dependent Properties

| Property code | Value | Unit | Temperature [K] | Source |
|---|---|---|---|---|
| cpg | 166.69 | J/mol×K | 464.01 | Joback Method |

| | | | | |
|---|---|---|---|---|
| cpg | 173.98 | J/mol×K | 494.13 | Joback Method |
| cpg | 180.90 | J/mol×K | 524.25 | Joback Method |
| cpg | 187.47 | J/mol×K | 554.36 | Joback Method |
| cpg | 193.71 | J/mol×K | 584.48 | Joback Method |
| cpg | 199.64 | J/mol×K | 614.60 | Joback Method |
| cpg | 205.26 | J/mol×K | 644.72 | Joback Method |
| dvisc | 0.0276361 | Pa×s | 251.78 | Joback Method |
| dvisc | 0.0072921 | Pa×s | 287.15 | Joback Method |
| dvisc | 0.0025772 | Pa×s | 322.52 | Joback Method |
| dvisc | 0.0011187 | Pa×s | 357.89 | Joback Method |
| dvisc | 0.0005643 | Pa×s | 393.27 | Joback Method |
| dvisc | 0.0003187 | Pa×s | 428.64 | Joback Method |
| dvisc | 0.0001963 | Pa×s | 464.01 | Joback Method |

# Correlations

| Information | Value |
|---|---|
| Property code | pvap |
| Equation | ln(Pvp) = A + B/(T + C) |
| Coeff. A | 1.45186e+01 |
| Coeff. B | -3.48091e+03 |
| Coeff. C | -1.15948e+02 |
| Temperature range (K), min. | 360.55 |
| Temperature range (K), max. | 494.02 |

# Sources

**The Yaws Handbook of Vapor Pressure:** https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
**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
**NIST Webbook:** http://webbook.nist.gov/cgi/cbook.cgi?ID=C13991372&Units=SI

# Legend

| | |
|---|---|
| **affp:** | Proton affinity |
| **basg:** | Gas basicity |
| **chl:** | Standard liquid enthalpy of combustion |
| **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 |
| **pvap:** | Vapor pressure |
| **tb:** | Normal Boiling Point Temperature |
| **tc:** | Critical Temperature |
| **tf:** | Normal melting (fusion) point |
| **vc:** | Critical Volume |