

# DL-Methionine

|                      |   |
|----------------------|---|
| Other names:         | (.+-.)-methionine<br>(.+/-.)-Methionine<br>.alpha.-amino-.gamma.-methylmercaptobutyric acid<br>2-Amino-4-(methylmercapto)butyric acid<br>Amurex<br>Banthionine<br>DL-2-amino-4-(methylthio)butanoic acid<br>DL-2-amino-4-(methylthio)butyric acid<br>DL-CH <sub>3</sub> SCH <sub>2</sub> CH <sub>2</sub> CH(NH <sub>2</sub> )COOH<br>Dyprin<br>Lobamine<br>Mertionin<br>Methilonin<br>Methionine<br>Methionine dl-form<br>Metion<br>NSC 9241<br>Pedarath<br>Petameth<br>Racemethionine<br>Urimeth<br>acimethion<br>butanoic acid, 2-amino-4-(methylthio)-, DL-<br>cynaron<br>homocysteine, S-methyl-<br>methionine<br>methilanthionine<br>methionine, DL-<br>methionine<br>methionine<br>methionine<br>«alpha»-Amino-«gamma»-methylmercaptobutyric acid |
| Inchi:               | InChI=1S/C5H11NO2S/c1-9-3-2-4(6)5(7)8/h4H,2-3,6H2,1H3,(H,7,8)   |
| InchiKey:            | FFEARJCKVFRZRR-UHFFFAOYSA-N   |
| Formula:             | C <sub>5</sub> H <sub>11</sub> NO <sub>2</sub> S  |
| SMILES:              | CSCCC(N)C(=O)O  |
| Mol. weight [g/mol]: | 149.21  |
| CAS:                 | 59-51-8   |

# Physical Properties

| Property code | Value   | Unit    | Source         |
|---------------|---------|---------|----------------|
| gf            | -177.39 | kJ/mol  | Joback Method  |
| hf            | -340.96 | kJ/mol  | Joback Method  |
| hfus          | 20.20   | kJ/mol  | Joback Method  |
| hvap          | 67.22   | kJ/mol  | Joback Method  |
| log10ws       | -0.44   |         | Crippen Method |
| logp          | 0.151   |         | Crippen Method |
| mcvol         | 115.080 | ml/mol  | McGowan Method |
| pc            | 4684.89 | kPa     | Joback Method  |
| ss            | 231.46  | J/molxK | NIST Webbook   |
| tb            | 600.72  | K       | Joback Method  |
| tc            | 805.14  | K       | Joback Method  |
| tf            | 359.52  | K       | Joback Method  |
| vc            | 0.417   | m3/kmol | Joback Method  |

# Temperature Dependent Properties

| Property code | Value  | Unit    | Temperature [K] | Source   |
|---------------|--------|---------|-----------------|--|
| cpg           | 313.51 | J/molxK | 771.07          | Joback Method  |
| cpg           | 274.83 | J/molxK | 600.72          | Joback Method  |
| cpg           | 283.51 | J/molxK | 634.79          | Joback Method  |
| cpg           | 291.70 | J/molxK | 668.86          | Joback Method  |
| cpg           | 299.43 | J/molxK | 702.93          | Joback Method  |
| cpg           | 306.70 | J/molxK | 737.00          | Joback Method  |
| cpg           | 319.87 | J/molxK | 805.14          | Joback Method  |
| cps           | 290.03 | J/molxK | 298.15          | NIST Webbook   |
| hvapt         | 134.00 | kJ/mol  | 423.00          | Enthalpies of sublimation of L-methionine and DL-methionine: Knudsen's effusion mass spectrometric study |

# Sources

|   |   |
|---|---|
| NIST Webbook:   | <a href="http://webbook.nist.gov/cgi/cbook.cgi?ID=C59518&amp;Units=SI">http://webbook.nist.gov/cgi/cbook.cgi?ID=C59518&amp;Units=SI</a> |
| Crippen Method:   | <a href="http://pubs.acs.org/doi/abs/10.1021/ci990307l">http://pubs.acs.org/doi/abs/10.1021/ci990307l</a>                               |
| Crippen Method:   | <a href="https://www.chemeo.com/doc/models/crippen_log10ws">https://www.chemeo.com/doc/models/crippen_log10ws</a>                       |
| Enthalpies of sublimation of L-methionine and DL-methionine: Reliability and Metastable Zone Width of the Methionine Enantiomers and Their Mixtures in Water: | <a href="https://www.doi.org/10.1016/j.jct.2019.04.006">https://www.doi.org/10.1016/j.jct.2019.04.006</a>                               |
|   | <a href="https://www.doi.org/10.1021/je9001834">https://www.doi.org/10.1021/je9001834</a>   |
|   | <a href="https://en.wikipedia.org/wiki/Joback_method">https://en.wikipedia.org/wiki/Joback_method</a>                                   |
| McGowan Method:   | <a href="http://link.springer.com/article/10.1007/BF02311772">http://link.springer.com/article/10.1007/BF02311772</a>                   |

## Legend

|                 |  |
|-----------------|--|
| <b>cpg:</b>     | Ideal gas heat capacity                          |
| <b>cps:</b>     | Solid phase heat capacity                        |
| <b>gf:</b>      | Standard Gibbs free energy of formation          |
| <b>hf:</b>      | Enthalpy of formation at standard conditions     |
| <b>hfus:</b>    | Enthalpy of fusion at standard conditions        |
| <b>hvap:</b>    | Enthalpy of vaporization at standard conditions  |
| <b>hvapt:</b>   | Enthalpy of vaporization at a given temperature  |
| <b>log10ws:</b> | Log10 of Water solubility in mol/l               |
| <b>logp:</b>    | Octanol/Water partition coefficient              |
| <b>mcvol:</b>   | McGowan's characteristic volume                  |
| <b>pc:</b>      | Critical Pressure                                |
| <b>ss:</b>      | Solid phase molar entropy at standard conditions |
| <b>tb:</b>      | Normal Boiling Point Temperature                 |
| <b>tc:</b>      | Critical Temperature                             |
| <b>tf:</b>      | Normal melting (fusion) point                    |
| <b>vc:</b>      | Critical Volume                                  |

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