



# ProSim

Software & Services In Process Simulation

## ***Properties currently available in Simulis® Thermodynamics***

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## 1. Properties of mixtures

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|--|
| Calculation of the critical pressure   |
| Calculation of the critical pressure (with binary interaction parameters)      |
| Calculation of pseudo critical properties                                      |
| Calculation of pseudo critical properties (with binary interaction parameters) |
| Calculation of the critical temperature  |
| Calculation of the critical temperature (with binary interaction parameters)   |
| Calculation of the critical molar volume                                       |

## 2. Transport properties

|  |
|--|
| Calculation of the isobaric specific heat ( $C_p$ )                            |
| Calculation of the isobaric specific heat ( $C_p$ ) (liquid state)             |
| Calculation of the isobaric specific heat ( $C_p$ ) (vapor state)              |
| Calculation of the molar density   |
| Calculation of the molar density (liquid state)                                |
| Calculation of the molar density (vapor state)                                 |
| Calculation of the thermal conductivity  |
| Calculation of the thermal conductivity (liquid state)                         |
| Calculation of the thermal conductivity (vapor state)                          |
| Calculation of the dynamic viscosity   |
| Calculation of the dynamic viscosity (liquid state)                            |
| Calculation of the dynamic viscosity (vapor state)                             |
| Calculation of the density   |
| Calculation of the density (liquid state)                                      |
| Calculation of the density (liquid state) (with binary interaction parameters) |
| Calculation of the density (vapor state)                                       |
| Calculation of the density (vapor state) (with binary interaction parameters)  |



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|   |
|---|
| Calculation of the surface tension                |
| Calculation of the surface tension (liquid state) |
| Calculation of the molar volume                   |
| Calculation of the molar volume (liquid state)    |
| Calculation of the molar volume (vapor state)     |

### 3. Compressibility properties

|  |
|--|
| Calculation of Gamma ( $C_p/C_v$ ratio)                  |
| Calculation of Gamma ( $C_p/C_v$ ratio) (liquid state)   |
| Calculation of Gamma ( $C_p/C_v$ ratio) (vapor state)    |
| Calculation of the sound speed                           |
| Calculation of the sound speed (liquid state)            |
| Calculation of the sound speed (vapor state)             |
| Calculation of the compressibility factor                |
| Calculation of the compressibility factor (liquid state) |
| Calculation of the compressibility factor (vapor state)  |

### 4. Thermodynamic properties

|   |
|---|
| Calculation of the isochoric specific heat ( $C_v$ )                  |
| Calculation of the isochoric specific heat ( $C_v$ ) (liquid state)   |
| Calculation of the isochoric specific heat ( $C_v$ ) (vapor state)    |
| Calculation of the enthalpy   |
| Calculation of the enthalpy (liquid state)                            |
| Calculation of the enthalpy (vapor state)                             |
| Calculation of the enthalpy of vaporization (liquid-vapor transition) |
| Calculation of the entropy  |
| Calculation of the entropy (liquid state)                             |
| Calculation of the entropy (vapor state)                              |



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## 5. Non-ideal properties

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|--|
| Calculation of activity coefficients   |
| Calculation of activity coefficients (liquid state)                                      |
| Calculation of activity coefficients (liquid state) (with binary interaction parameters) |
| Calculation of fugacity coefficients   |
| Calculation of fugacity coefficients (liquid state)                                      |

## 6. Liquid-Vapor equilibria

|  |
|--|
| Calculation of the bubble pressure   |
| Calculation of the bubble pressure (with binary interaction parameters)    |
| Calculation of the bubble temperature                                      |
| Calculation of the bubble temperature (with binary interaction parameters) |
| Calculation of the dew pressure  |
| Calculation of the dew pressure (with binary interaction parameters)       |
| Calculation of the dew temperature   |
| Calculation of the dew temperature (with binary interaction parameters)    |
| Liquid-Vapor flash at given enthalpy and pressure                          |

## 7. Liquid-Liquid equilibria

|  |
|--|
| Liquid-Liquid flash at given temperature and pressure                                      |
| Liquid-Liquid flash at given temperature and pressure (with binary interaction parameters) |



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## 8. Liquid-Liquid-Vapor equilibria

|   |
|---|
| Liquid-Liquid-Vapor flash at given enthalpy and pressure                                      |
| Liquid-Liquid-Vapor flash at given enthalpy and pressure (with binary interaction parameters) |
| Liquid-Liquid-Vapor flash at given temperature and pressure                                   |

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