

# Update: Reference Correlation for the Viscosity of Ethane [J. Phys. Chem. Ref. Data 44, 043101 (2015)]

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An update of the reference correlation for the viscosity of ethane [E. Vogel *et al.*, J. Phys. Chem. Ref. Data **44**, 043101 (2015)] was developed because recently a new zero-density viscosity correlation based on theoretically calculated values of the dilute-gas viscosity became available. The original zero-density contribution was replaced, and the generation of the complete viscosity correlation was repeated using the residual viscosity concept and a state-of-the-art linear optimization algorithm. A term representing the critical enhancement was again included, so that a total of 18 coefficients resulted for the final formulation. The viscosity in the limit of zero density is now described with an expanded uncertainty of 0.3% (coverage factor  $k = 2$ ) in the temperature range  $250 \leq T/K \leq 700$  and of 1.0% at temperatures  $90 \leq T/K < 250$  and  $700 < T/K \leq 1200$ . The updated complete viscosity correlation is valid in the fluid region from the melting line to 675 K and 100 MPa. The uncertainty of the correlation amounts to 1.5% at temperatures  $290 \leq T/K \leq 430$  and at pressures up to 30 MPa based on very reliable data. The uncertainty of the correlated values is increased to 4.0% in the range  $95 \leq T/K \leq 500$  at pressures up to 55 MPa, for which further primary data exist. In the region where no experimental data are available, but the reference equation of state of Bücker and Wagner is valid, the uncertainty is estimated to be 6.0%. The uncertainty in the near-critical region rises with decreasing temperature up to 3.0% when taking into account the available data. *Published by AIP Publishing on behalf of the National Institute of Standards and Technology.* <https://doi.org/10.1063/1.5037239>

Key words: correlation; critical enhancement; ethane; viscosity.

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