An Empirical Model for Dynamic Viscosities of Alkanes and Alcohols

Luis A. Galicia-Luna [C, S], Alfredo Pimentel-Rodas and José J. Castro-Arellano
Laboratorio de Termodinámica, S.E.P.I.-E.S.I.Q.I.E., Instituto Politécnico Nacional, Ciudad de Mexico, México
lagalicialuna@gmail.com

Dynamic viscosity is important from an experimental and theoretical point of view. Fluid viscosity has a particular importance for the design of process equipment, as it characterizes the fluids in question (in terms of flow resistance). This allows us to know dimensionless variables, such as Reynolds number, Grashof number, Prandtl number, etc., reducing overdesign factors. Then new models to represent accurate dynamic viscosities are required. In this paper, the liquid viscosity of alkanes and alcohols were successfully correlated using a simple empirical equation as a function of pressure and temperature for pure substances, called the Pimentel-Galicia equation, within 1 % of error.