

Thermal Conductivity Measurements of Polyglycol Alkyl Ethers using a DSC Calorimeter from 303.15 K to 353.15 K

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Experimental values of the thermal conductivity of five polyglycol alkyl ethers (ethyleneglycol dimethyl ether, diethyleneglycol dimethyl ether, triethyleneglycol dimethyl ether, tetraethyleneglycol dimethyl ether, and dipropyleneglycol dimethyl ether) are reported for a temperature range from 303.15 K to 353.15 K. Measurements were made with a Setaram C80 II calorimeter device, equipped with a suitable vessel set-up and an auxiliary furnace designed to work at high temperatures. The steady-state coaxial cylinder method was used. Pure water, toluene, and methanol were the selected fluids to build the calibration curves at several temperatures, and benzene was used to validate the method. The liquids were pressurized at 1 MPa to avoid boiling at high temperature. The experimental values of the thermal conductivity for the polyglycol alkyl ethers were compared with data reported in the literature and they were also correlated using an empirical expression.