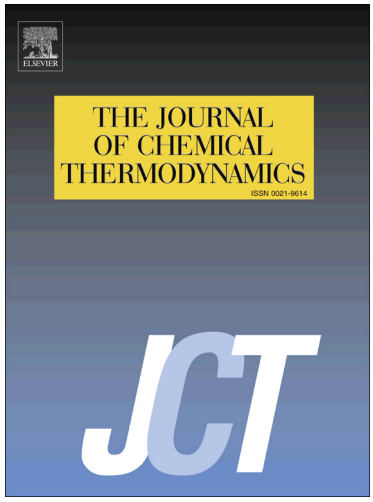

Volumetric and refractive properties of 1,3,5,7-tetravinyl-1,3,5,7-tetramethyl-cyclotetrasiloxane with methoxybenzene, chlorobenzene, tert-butylbenzene and nitrobenzene at T = (298.15 to 318.15) K

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ABSTRACT

In this work, the densities and refractive indices of 1,3,5,7-tetravinyl-1,3,5,7-tetramethylcyclotetrasiloxane with methoxybenzene, chlorobenzene, tert-butylbenzene and nitrobenzene at different temperatures T = (298.15, 303.15, 308.15, 313.15 and 318.15) K and atmospheric pressure using a DMA4500/RXA170 combined system were measured. Excess molar volumes, isobaric thermal expansion, molar refractions, and the deviations in refractive indices have been estimated. These parameters have been used to understand the interactions in the mixtures qualitatively. The values of excess molar volume were fitted to Redlich–Kister equation to check the accuracy of experimental data.

Keywords: organosilicon compound; aromatic compounds; density; refractive index; volumetric properties; the deviations in refractive index.

1. Introduction

1,3,5,7-tetravinyl-1,3,5,7-tetramethylcyclotetrasiloxane (D_4^{Vi}) is widely used in silicone industry as an important intermediate. It plays an important role in synthesizing vinyl -containing silicone oil, rubbers or silicone resins through copolymerization with octamethylcyclotetracyclosiloxane or other monomers conducted in bulk or in the solution. The vinyl groups along the siloxane polymer chain are crucial to the

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