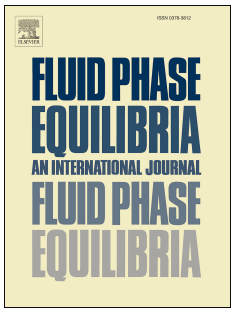
# Accepted Manuscript




Compressed liquid densities of binary mixtures of *n*-decane + *n*-dodecane at temperatures from 283 K to 363 K and pressures up to 100 MPa

Tao Jia, Shengshan Bi, Jiangtao Wu

PII: S0378-3812(17)30486-7

DOI: 10.1016/j.fluid.2017.12.010

Reference: FLUID 11683

To appear in: *Fluid Phase Equilibria*

Received Date: 28 September 2017

Revised Date: 23 November 2017

Accepted Date: 6 December 2017

Please cite this article as: T. Jia, S. Bi, J. Wu, Compressed liquid densities of binary mixtures of *n*-decane + *n*-dodecane at temperatures from 283 K to 363 K and pressures up to 100 MPa, *Fluid Phase Equilibria* (2018), doi: 10.1016/j.fluid.2017.12.010.

# Compressed liquid densities of binary mixtures of *n*-decane + *n*-dodecane at temperatures from 283 K to 363 K and pressures up to 100 MPa

Tao Jia, Shengshan Bi, Jiangtao Wu

*Key Laboratory of Thermo-Fluid Science and Engineering, Ministry of Education, School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an, 710049, P.R. China*

**Corresponding Author. Tel: +86-29-82668143 Fax: +86-29-82663737 E-mail address: bss@mail.xjtu.edu.cn*

**ABSTRACT**

Compressed liquid densities of *n*-decane + *n*-dodecane binary mixtures were measured with a vibrating-tube densimeter at temperatures from (283 to 363) K and pressures from (0.1 to 100) MPa over the whole range of composition. The binary mixtures *n*-decane (1) + *n*-dodecane (2) were prepared at mole fractions of ($x_1$ = 0, 0.2297, 0.4436, 0.6433 0.7841, and 1.0), respectively. The experimental densities of binary mixtures were successfully correlated with the Tait-type equation, and the absolute average percentage deviations of the experimental and calculated values were 0.048%, 0.055%, 0.059%, 0.058%, 0.068%, and 0.052%, respectively. In addition, the excess molar volume was calculated for whole range of temperature, pressure and composition.

**Keywords:** *n*-Decane; *n*-Dodecane; Density; Excess molar volume; Vibrating-tube densimeter

## 1. Introduction

Crude oil is multi-component complex mixtures, mainly include *n*-alkanes, naphthenes and aromatic hydrocarbons mixtures. Due to the component complexity of crude oil, a single *n*-alkane or several *n*-alkane mixtures were typically used as alternatives of crude oil to research the