Density and phase equilibrium of the binary system methane + n-decane under high temperatures and pressures

Densities of the binary system methane + n-decane have been determined through a vibrating tube densitometer from (278.15-463.15) K at pressures up to 140 MPa, and for methane mole fractions up to 0.8496. Negative excess volumes were found under the experimental conditions studied. Moreover isothermal compressibility values were obtained by differentiation from the Tammann-Tait correlation of the determined density values. Isobaric thermal expansion coefficients were also calculated based on differentiation from the isobaric fit of density data. We also measured the phase equilibrium of this binary system by using a variable volume cell with full visibility from (293.15-472.47) K for three mixtures with methane mole fractions of 0.4031, 0.6021 and 0.8496. Liquid fraction upon expansion below the saturation pressure has also been determined. Finally different equations of state were used to calculate the experimental density and excess volume data as well as the phase envelope data. No direct regression of the experimental data was involved in most of the calculation in order to provide a fair comparison of the performance of different models.

General information
State: Published
Organisations: CERE – Center for Energy Resources Engineering, Department of Chemistry, Department of Chemical and Biochemical Engineering
Contributors: Regueira Muñiz, T., Pantelide, G., Yan, W., Stenby, E. H.
Pages: 48-61
Publication date: 2016
Peer-reviewed: Yes

Publication information
Journal: Fluid Phase Equilibria
Volume: 428
ISSN (Print): 0378-3812
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 2.22 SJR 0.95 SNIP 1.033
Web of Science (2017): Impact factor 2.197
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.33 SJR 0.85 SNIP 1.187
Web of Science (2016): Impact factor 2.473
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 1.99 SJR 0.866 SNIP 0.998
Web of Science (2015): Impact factor 1.846
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 2.28 SJR 0.981 SNIP 1.232
Web of Science (2014): Impact factor 2.2
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 2.31 SJR 1.001 SNIP 1.277
Web of Science (2013): Impact factor 2.241
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 2.31 SJR 1.151 SNIP 1.279
Web of Science (2012): Impact factor 2.379
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 2.26 SJR 1.03 SNIP 1.235
Web of Science (2011): Impact factor 2.139
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.986 SNIP 1.308
Web of Science (2010): Impact factor 2.253
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.138 SNIP 1.153
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.229 SNIP 1.081
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.034 SNIP 1.153
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.022 SNIP 1.249
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.016 SNIP 1.289
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.984 SNIP 1.343
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.203 SNIP 1.294
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.64 SNIP 1.106
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.956 SNIP 1.287
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.994 SNIP 0.931
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.902 SNIP 0.887

Original language: English
Keywords: Density, Phase equilibrium, High pressure-high temperature, Methane, n-decane
Electronic versions:
Density_and_phase_equilibrium_methane_decane_post_print.pdf. Embargo ended: 06/08/2018
DOIs:
10.1016/j.fluid.2016.08.004
Source: FindIt
Source-ID: 2307139043
Research output: Research - peer-review › Journal article – Annual report year: 2016