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Authors: Elham Torabian, Mohammad Amin Sobati

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New models for predicting the flash point of mixtures containing different alcohols

Elham Torabian, Mohammad Amin Sobati*

School of Chemical Engineering, Iran University of Science and Technology (IUST), Tehran, Iran

Corresponding author: Phone: +98 (21) 77240496, Fax: +98 (21) 77240495
, E-mail: sobati@iust.ac.ir

Highlights:

- New models have been proposed for predicting the flash point of the mixtures.
- An experimental data set on the flash point of 62 binary mixtures were collected.
- The model inputs are the flash point of pure components and the molar composition.
- The proposed models are simple and accurate.

Abstract

In the present study, new empirical models have been proposed to predict the flash point of mixtures containing different alcohols. The models predict the flash point of mixtures as a function of molar composition and the flash point of pure compounds composing the mixture. The models have been developed by the generalization of the available correlations for the prediction of the flash point of petroleum blends using the Levenberg-Marquart algorithm. 642 experimental data on the flash points of 62 different binary mixtures containing alcohols along with different compounds such as alkanes, alcohols, ketones and esters was used for the model development. The average absolute relative deviation (AARD) of the optimized models over all binary experimental