

# EXTENTION OF THE DSC METHOD TO MEASURING VAPOR PRESSURES OF NARROW BOILING RANGE OIL CUTS

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The aim of the present study was to extend the application of the differential scanning calorimetry (DSC) based standard test method for determining vapor pressure curves of narrow boiling range oil fractions (about 10 K wide).

In the present study benzene and o-xylene were used as the reference chemicals to test the performance of DSC method. Comparative vapor pressure measurements of narrow boiling range cuts by a static method (ERAVAP vapor pressure tester, ASTM D 6378) and a DSC method (ASTM E 1782) indicated that the DSC based method can reliably be used for determining vapor pressure characteristics of narrow boiling range oil cuts (Fig.1). [1]

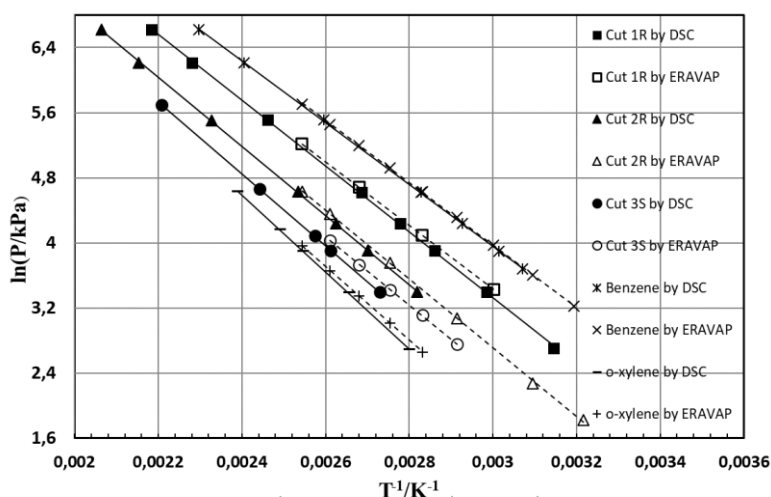


Fig.1 Experimental vapor pressure data by DSC and ERAVAP

In addition, the method was used to evaluate the ideality and non-ideality of shale oil fractions by looking at deviations from Raoult's law [2]. An ideal mixture behaviour was shown if the difference in average boiling point is about 50 K. But when the fractions have difference in average boiling point of about 100 K, the binary mixture shows substantial deviation from ideality.

## References

1. C. Siitsman, V. Oja, 2015, Extension of the DSC method to measuring vapor pressures of narrow boiling range oil cuts, *Thermochim. Acta*, 622, 31-37.
2. C. Siitsman, V. Oja, 2016, Application of a DSC based vapor pressure method for examining the extent of ideality in associating binary mixtures with narrow boiling range oil cuts as a mixture component, *Thermochim. Acta*, 637, 24-30.



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