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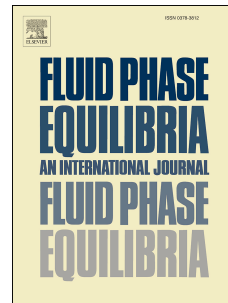
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## Critical point measurements of four pyridines

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### Abstract

The critical temperatures and pressures of 2-, 3-, 4-ethylpyridines, and 2-methyl-5-ethylpyridine have been measured. The critical properties of 3- and 4-ethylpyridines are very close while those of 2-ethylpyridine noticeably differ from them, which correlates with the normal boiling points of these compounds. The experimental critical constants of the pyridines investigated have also been compared with those calculated using the group (bond) contribution methods of Wilson and Jasperson, Marrero and Gani, Hukkerikar and co-workers, Marrero-Marejón and Pordillo-Fontdevila. The acentric factors of the pyridines have been calculated.

*Keywords:* Critical properties; Ethylpyridines; 2-Methyl-5-ethylpyridine; Thermally unstable compounds; Pulse-heating method

### 1. Introduction

Pyridine and its derivatives are widely used as precursors to some herbicides and drugs; they are also important reagents and solvents. The critical properties of pyridine, methyl- and dimethylpyridines have been measured by several researchers [1]. In this paper, we present the critical temperatures and pressures of 2-ethylpyridine (CASRN 100-71-0), 3-ethylpyridine (CASRN 536-78-7), 4-ethylpyridine (CASRN 536-75-4), and 2-methyl-5-ethylpyridine (CASRN 104-90-5) the critical constants of which have probably never been measured before. Pyridine and its homologues are unstable enough at their critical points. Ambrose and Grant [2] report that samples of pyridine, 2-, 3-, and 4-methylpyridines, and 2,4- and 2,6-dimethylpyridines discolored quite rapidly at near-critical temperatures although the discoloration was not always accompanied by a corresponding change in the critical temperature. The decomposition of 2-methylpyridine was so rapid that they could obtain no value of the critical

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