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It is known that the use of nontraditional super lightweight completion fluid (SLWCF) during well completion improves well performances. A field test showed about an additional thousand barrels of oil was produced in a single day after the well was perforated with the nontraditional SLWCF (Badrul et al., 2009). SLWCF is attractive as it provides flexibility in having wide range of low fluid density. By perforating a well underbalance, it is possible to create a clean and undamaged perforation tunnel (Bartusiak et al., 1997). It is also reported that the use of nontraditional SLWCF to maintain the wellbore pressure lower than the formation pressure, results in a negative skin value and generating a minimum underbalance pressure difference of 0.84 MPa (122 psi; Khalil et al., 2010). However, data of physical and chemical properties (e.g., rheological and thermodynamical properties) of SLWCF are scarce.

Viscosity is one of the most critical parameters in selecting an appropriate completion fluid. Viscosity profile as a function of temperature and pressure is very crucial. This study investigated viscosity profile of the nontraditional SLWCF at pressure and temperature ranges of 0.1–4.48 MPa and 25–100°C, respectively. These data were then fitted to the modification of Mehrotra and Svrcek (1987) equation to determine the viscosity profile as a function of pressure and temperature. The equation used to correlate the data can be expressed as follows:

\[ \ln \]

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