Surface Tension of Pentafluoroethane (R125) +1,1-difluoroethane (R152) from (253 to 343) K

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Under the burden of the ozone layer depletion and global warming, developing an environmentally friendly refrigerant has been a worldwide issue. Mixture refrigerants have become an important direction, such as R410A, R407C. Pentafluoroethane (R125) and 1,1-difluoroethane (R152a) were favoured as mixture components. Binary mixtures R125 +R152a were believed to be a promising alternative refrigerant to R12. Surface tension is a basic thermophysical property which influences the heat transfer, flow and phase change, especially the surface tension of vapor bubbles on a surface. Surface tension data for refrigerant mixtures are needed for proper design of refrigerators. Hence, in this work, the surface tensions of the binary mixtures Pentafluoroethane (R125) +1,1-difluoroethane (R152a) were measured in the temperature range from (253 to 343) K using the differential capillary rise method under vapor-liquid equilibrium conditions. The uncertainties of measurements for the temperature and surface tension were estimated to be within ±10 mK and ±0.2mN·m^{-1}, respectively. The results of the binary mixtures were correlated as a function of the mass fraction using the correlations for pure refrigerants.