

CONCLUSIONS

The thermal conductivity cell of Kramer (13, 14) was modified to improve the sensitivity and accuracy of the measurements. The sensitivity of the cell was significantly improved, and the rate and ease with which data could be obtained were improved. The accuracy of the measurements was limited, however, by a drift in the calibration which was only partially eliminated by modification of the emitter supports.

The Enskog dense gas mixture equation was compared with the data, and found to give very poor predictions. It was felt that the deviations were due to the attractive forces between real molecules which the Enskog equation does not consider. When the conductivity was plotted versus mole fraction, there were large negative deviations from linearity in some pressure ranges. This was attributed to the interference with cluster formation of the molecules of one of the components by the molecules of the other component.

The equations of Lindsay and Bromley and a simple reciprocal interpolation relation were tested and it was found that the reciprocal relation gave better overall results, while the Lindsay-Bromley relation was superior at the highest and lowest pressures in some cases. The Lindsay-Bromley relation requires knowledge of pure dense gas viscosities and conductivities, while the simple reciprocal relation requires only dense gas conductivities. Therefore, it is recommended that the reciprocal relation be used for the prediction of dense gas mixture conductivities until a better method is developed.