

Discussion of Results

The data are plotted against composition with pressure as a parameter in Figures 3, 4 and 5 and against pressure with composition as a parameter in Figures 6, 7, and 8.

The results for nitrogen are compared with those of Johannin and Vodar (9) up to a pressure of 1000 atm., their maximum, in Figure 9. The agreement is good.

The results for ethane at 75°C are compared with those of Carmichael, Berry, and Sage (1) at 71.1°C in Figure 10. The comparison is not fully satisfactory, especially when one realizes that above about 100 atm., the temperature coefficient of thermal conductivity is negative. This difference in results cannot be explained in terms of convection or absorption of radiation. The purity of the ethane used by Carmichael was 99.93% compared to 99% used in this work. However, impurities in the ethane would most likely cause a lower apparent conductivity, which is not the case. A comparison is also made in this figure of the results for ethane by carbon dioxide calibration with the results using argon calibration.

In Figure 11 a comparison is made between the results for argon using two different carbon dioxide calibrations and Sengers' argon data. Since Sengers' argon data were obtained with the same cell as the carbon dioxide data used to make these calibrations, one would expect the argon data not to vary more