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ADDENDUM

Physico-Chemical Properties of Sulfur

I Pressure Effects on Viscosity of Liquid Sulfur

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The author reported the following equation for the viscosities of the liquid sulfur (cf equation (4) of the original paper[1]).

$$\log\eta = a + b/T + 4/3\log P + 2\log\phi \qquad (1)$$

However, an empirical equation was found later as the alternative more adequate one,

$$\log\eta = -4.01 + 4.06\times10^5/T^2 + 1.23\log P + 1.52\log\phi \qquad (2)$$

The constants of equation (2) were determined by viscosity data at the temperatures of 440, 450, 470 and 510°K.

Fig. 5 of the original paper is now corrected by Fig. 1 as the result of using equation (2). The slight change of the result, of course, does not affect the previous conclusion. But it is worth pointing out that 1.23, the constant of the third term of the right-hand side of equation (2), is considerably smaller than 3.4 which is well known as the useful exponent for both molten liquids and condensed solutions of nearly every polymer. It might be thought that the interwoven arrangement of high molecules of liquid sulfur above 160°C is fairly loose.

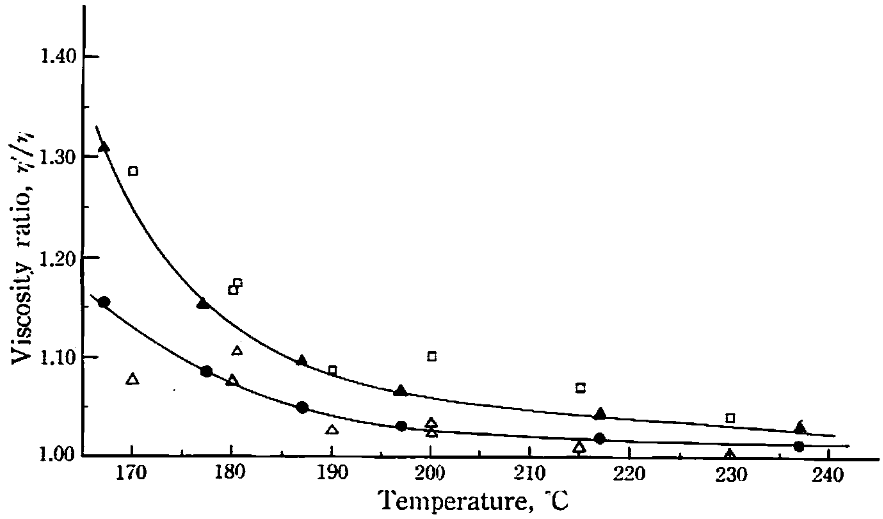

Fig. 1 The viscosity ratio (η'/η) at high pressures to the standard atmospheric pressure

△: 50 atm., □: 100 atm. } Observed values

●—●: 50 atm., ▲—▲: 100 atm. } Calculated values

($-\Delta V_1=0,\ -\Delta V_3=0.0154$ cc/g)

1) T. Doi, *This Journal*, 33, 41 (1963)