

TABLE 1. Data

Material	K_0 , kb	K'_0
α -SiO ₂	371.25	6.33
Al ₂ O ₃	2504.1	4.00
Mg	344.04	4.07
K	33.8	3.98
Na	61.8	3.59
Pb	416.0	6.30

$a > 0$ and $A > 0$ (equation 3). For the case $(K'_0 - m) < 0$ the parameters a and A are of opposite sign, and q is clearly > 0 . We also need to know whether $2bx + c > (q)^{1/2}$. To answer this question, note that

$$q = (1 + A - am)^2 + 4amA$$

$$= (1 + A + am)^2 - 4am \quad (B3)$$

and

$$2bx + c = 2m(P + a) + (1 + A - am) \\ = (1 + A + am) + 2mP$$

Clearly, for $C < 0$, $(q)^{1/2} < (1 + A + am)$ therefore $2bx + c > (q)^{1/2}$ for all $P \geq 0$. In this case equation B2 is appropriately written in the logarithmic form

$$\frac{1}{(q)^{1/2}} \ln \left[\frac{(1 + A + am) + 2mP - (q)^{1/2}}{(1 + A + am) + 2mP + (q)^{1/2}} \right]$$

(B4)

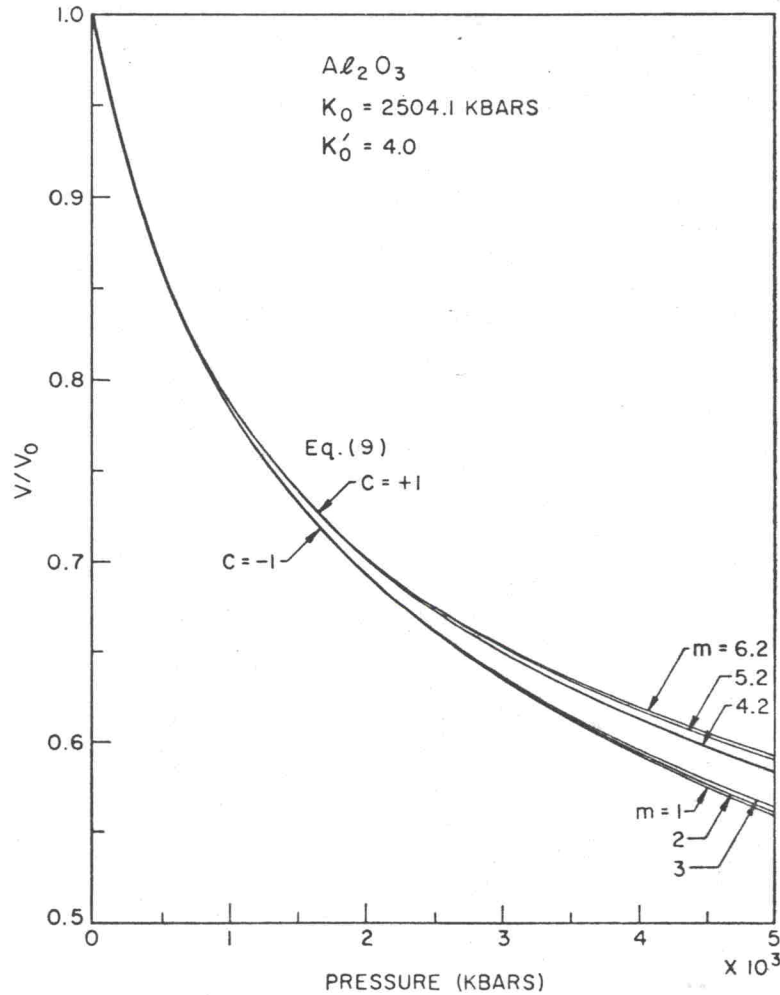


Fig. 8. Effect of varying m on extrapolated values of v/v_0 versus pressure for aluminum oxide.

To answer the question we write equation B3 as $(K'_0 - m)$, $a =$

$$= \left[1 - \frac{2(K'_0 - m)}{K_0} \right]$$

$$= \left[1 + \frac{2K'_0 - K_0}{K_0} \right]$$

We note that both the square root of the expression are positive $(q)^{1/2}$ for all $P \geq 0$. In logarithmic form (equation B2).

After having evaluated equation B1, for both cases $P = 0$ we then write equation 9).

As

As has been emphasized the success of Murnaghan's equation is particularly because the value of v/v_0 is determined by P/K_0 . Moreover, this parameter

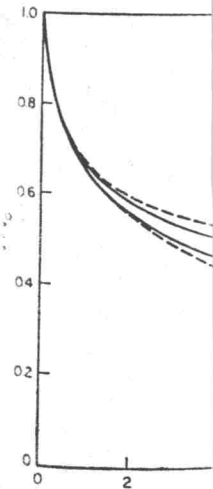


Fig. 9. Comparison of v/v_0 versus pressure for $C = \pm 1$.