Contrib Mineral Petrol (1986) 94:262

Contributions to Mineralogy and Petrology

Erratum

Heat capacity of minerals in the system $Na_2O-K_2O-CaO-MgO-FeO-Fe_2O_3-Al_2O_3-SiO_2-TiO_2-H_2O-CO_2$: representation, estimation, and high temperature extrapolation

Robert G. Berman and Thomas H. Brown

Berman and Brown, Contrib Mineral Petrol (1985) 89:168–183 present the following equation for calculation of the heat capacity contribution arising from a phase undergoing a lambda transition:

$$C_P = T(l_1 + l_2\,T)^2$$

where T (in Kelvins) is greater than a reference temperature, T_{ref}, and less than the lambda transition temperature, T_λ. The l_1 and l_2 coefficients of their Table 3 are in error due to incorrect conversion of these coefficients from calories to Joules. This mistake can be corrected by dividing all l_1 and l_2 coefficients in their Table 3 by 2.055 (the square root of 4.184). The correct coefficients are presented below (Table 1) along with other transition properties which are correct in the original table.

Table 1. Coefficients for calculation of transition properties

Phase	T_λ	T_{ref}	ΔH_t	$l_1(\times 10^2)$	$l_2(\times 10^5)$
Carnegieite	970	298	8,741	−5.609	17.059
Cristobalite	535	298	1,073	−14.216	44.142
Hematite	955	298	1,287	−7.403	27.921
Kaliophyllite	810	298	1,154	−7.096	21.682
Larnite ($\beta=\alpha'$)	970	298	1,748		
($\alpha'=\alpha$)	1,710	970	11,903	−22.815	23.196
Leucite	955	298	256	−9.731	33.730
Magnesium ferrite					
($\alpha=\beta$)	665	298	931	15.236	−53.571
($\beta=\gamma$)	1,230	665	836		
Magnetite	848	298	1,565	−19.502	61.037
Nepheline ($\alpha=\beta$)	467	298	241	−50.249	165.950
($\beta=\gamma$)	1,180	467	2,393		
Quartz	848	373	499	−9.187	24.607

T_λ, T_{ref} in Kelvins; l_1 in $(J/mol)^{0.5}/K$; l_2 in $(J/mol)^{0.5}/K^2$
ΔH_t = Additional heat of transition, modelled as first order (J/mol)