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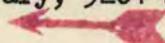
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From: W. D. Powers and G. C. Blalock

Subject: ENTHALPY AND HEAT CAPACITY OF LITHIUM
CHLORIDE, POTASSIUM CHLORIDE EUTECTIC

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ENTHALPY AND HEAT CAPACITY OF LITHIUM
CHLORIDE, POTASSIUM CHLORIDE EUTECTIC

The enthalpy and heat capacity of the eutectic mixture of lithium chloride and potassium chloride (59 mole % lithium chloride) was determined for Brookhaven National Laboratory over the temperature range of 100° to 840°C. The measurements were made by dropping the sample contained in a welded stainless steel capsule from a furnace into a Bunsen ice-calorimeter. In this method the difference in enthalpy of the sample between the furnace temperature and 0°C is measured directly by the volume change caused by the melting of the ice in the calorimeter. Corrections are made for enthalpy of the capsule. The relationship between the enthalpy and temperature is determined by least squares. The heat capacity is the derivative of the enthalpy with respect to temperature.

The enthalpy of the liquid (97 determinations) and solid (10 determinations) were found to be:

$$351^{\circ} - 840^{\circ}\text{C}$$

$$H_T(\text{liquid}) - H_{00\text{C}}(\text{solid}) = 30 + 0.32(5)T$$

$$C_p = 0.32(5) \pm 0.02$$

$$97^{\circ} - 351^{\circ}\text{C}$$

$$H_T(\text{solid}) - H_{00\text{C}}(\text{solid}) = -4 + 0.23(6)T$$

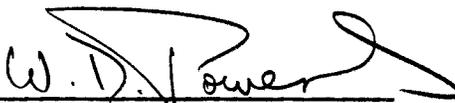
$$C_p = 0.23(6) \pm 0.03$$

where H is the enthalpy in cal./g.

C_p is the heat capacity in cal./g. °C

T is the temperature in °C

The heat of fusion is about 64 cal./g.


W. D. Powers


G. C. Blalock

TEMPERATURE ENTHALPY RELATIONSHIP
LiCl - KCl EUTECTIC

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