

Answer on the Question #59484 – Chemistry / General Chemistry

A calorimeter consists of metal parts with a heat capacity of 925.0 J K^{-1} and 1100 g of oil with a specific heat of $2.814 \text{ J g}^{-1} \text{ K}^{-1}$. What is the heat capacity, in joules per degree, of the entire assembly?

- a. 4020 J K^{-1}
- b. 1915 J K^{-1}
- c. 3943 J K^{-1}
- d. 3252 J K^{-1}

Answer:

Total heat capacity is the sum of the mentioned earlier capacities:

$$C = C_{metal} + C_{oil} = C_{metal} + c_{oil} \times m_{oil} = 925 \frac{\text{J}}{\text{K}} + 2.814 \frac{\text{J}}{\text{g} \times \text{K}} \times 1100 \text{g} = 4020.4 \frac{\text{J}}{\text{K}}$$

a. 4020 J K^{-1}