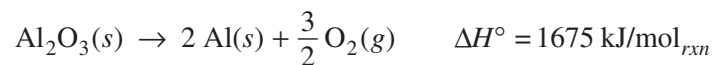


2015 AP[®] CHEMISTRY FREE-RESPONSE QUESTIONS

7. Aluminum metal can be recycled from scrap metal by melting the metal to evaporate impurities.
- (a) Calculate the amount of heat needed to purify 1.00 mole of Al originally at 298 K by melting it. The melting point of Al is 933 K. The molar heat capacity of Al is 24 J/(mol·K), and the heat of fusion of Al is 10.7 kJ/mol.
- (b) The equation for the overall process of extracting Al from Al₂O₃ is shown below. Which requires less energy, recycling existing Al or extracting Al from Al₂O₃ ? Justify your answer with a calculation.



STOP

END OF EXAM