

Answer on Question #74200, Chemistry / General Chemistry :

Convert 200.0 horsepower into kiloWatts. 33,000 ft-lb/minute = 1 horsepower. 1 ft-lb/min = 0.023 Watts. 1000 Watts = 1 kiloWatt. Give four significant figures in your answer.

Solution.

$$P = 200.0 \text{horsepower}$$

$$P(kW) - ?$$

Convert horsepower into ft-lb/minute:

$$200 \text{horsepower} = 200 \cdot 33.000 = 6.6 \cdot 10^6 \text{ ft} - \text{lb} / \text{min}$$

Convert ft-lb/min into Watts:

$$6.6 \cdot 10^6 \text{ ft} - \text{lb} / \text{min} = 6.6 \cdot 10^6 \cdot 0,023 = 151800.0 \text{Watts}$$

Convert Watts into kW:

$$P = 151800.0 \text{Watts} \approx 151.8 \text{kW}$$

Answer: $P = 151.8 \text{kW}$.