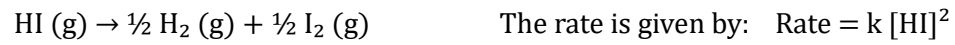


Using Integrated Rate Laws

Example One

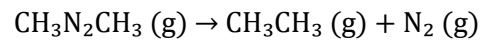
The decomposition of HI (g) is shown below



If $k=30. \text{ M}^{-1}\text{min}^{-1}$ at 443°C , how much time does it take for the concentration of HI to drop from 0.020 M to 0.010 M at 443°C ?

Example Two

When heated, gaseous azomethane ($\text{CH}_3\text{N}_2\text{CH}_3$) decomposes to ethane and nitrogen:



This is a first order reaction where $k = 3.6 \times 10^{-4} \text{ s}^{-1}$ (at 600 K).

- (a) What fraction of the initial sample of gaseous $\text{CH}_3\text{N}_2\text{CH}_3$ remains after 120 s at 600 K?
- (b) How long will it take for 98% of the sample to decompose?

Answer

Video & Written Solutions

Example Three

A chemical decomposes according to first order kinetics with a rate constant of $3.8 \times 10^{-2} \text{ s}^{-1}$ at 500°C . What fraction of the chemical will remain after 2.0 minutes?