HAFTA-1O

RADİKALİK KATILMA POLİMERİZASYONU KİNETİĞİ-II

hız sabiti

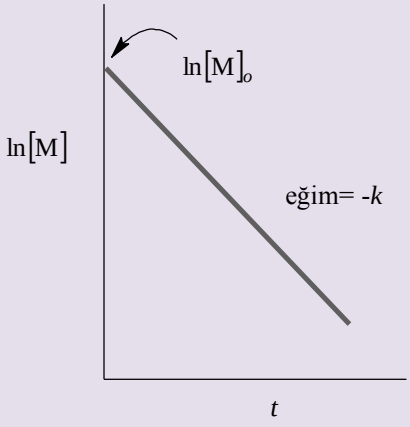
$$k = k_p \left(\frac{f\, k_d [\mathrm{I}]_o}{k_t} \right)^{1/2}$$

$$\frac{k_p}{k_t^{1/2}}$$

$$-\frac{d[\mathrm{M}]}{dt} = k[\mathrm{M}]$$

$$\ln[\mathrm{M}] = \ln[\mathrm{M}]_o - kt$$

$$[\mathrm{M}] = [\mathrm{M}]_o e^{-kt}$$



sıcaklığın polimerizasyon hızı üzerine etkisi

$$k = Ae^{-E_a/RT}$$

$$k \approx k_p \left(\frac{k_d}{k_t} \right)^{1/2}$$

$$k_d = A_d\, e^{-E_d/RT}$$

$$k_p = A_p\, e^{-E_p/RT}$$

$$k_t = A_t\, e^{-E_t/RT}$$

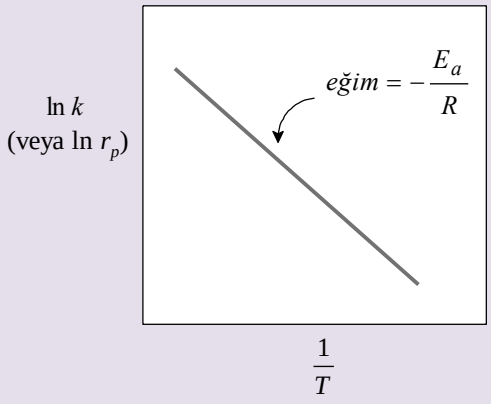
$$k_p\left(\frac{k_d}{k_t}\right)^{1/2} = A_p\left(\frac{A_d}{A_t}\right)^{1/2} e^{-\left(E_p+\frac{E_d}{2}-\frac{E_t}{2}\right)/RT}$$

$$E_a = E_p + \frac{E_d}{2} - \frac{E_t}{2}$$

aktivasyon enerjisi

$$\ln k = \ln A - \frac{E_a}{RT}$$

$$\ln\frac{k_2}{k_1} = \frac{E_a}{R}\left(\frac{T_2 - T_1}{T_2 T_1}\right)$$



DEPOLİMERİZASYON

$$M_{n-1}^{\cdot} + M \xrightarrow{k_p} M_n^{\cdot} \qquad \text{polimerizasyon}$$

$$M_n^{\cdot} \xrightarrow{k_{dp}} M_{n-1}^{\cdot} + M \qquad \text{depolimerizasyon}$$

$$\frac{d[\mathrm{M}]}{dt} = k_{dp}\left[\mathrm{O}^{\cdot}\right] - k_p[\mathrm{M}]\left[\mathrm{O}^{\cdot}\right]$$

$$\frac{d[\mathrm{M}]}{dt} = 0$$

$$k_p[\mathrm{M}]_c = k_{dp}$$

$$A_p e^{-E_p/RT_c}[\mathrm{M}]_c = A_{dp} e^{-E_{dp}/RT_c}$$

$$\frac{A_p}{A_{dp}}[\mathrm{M}]_c = e^{\left(E_p - E_{dp}\right)/RT_c}$$

$$\ln\frac{A_p}{A_{dp}} + \ln[\mathrm{M}]_c = \frac{\left(E_p - E_{dp}\right)}{RT_c}$$

$$T_c = \frac{\left(E_p - E_{dp}\right)}{R\left(\ln\frac{A_p}{A_{dp}} + \ln[\mathrm{M}]_c\right)}$$