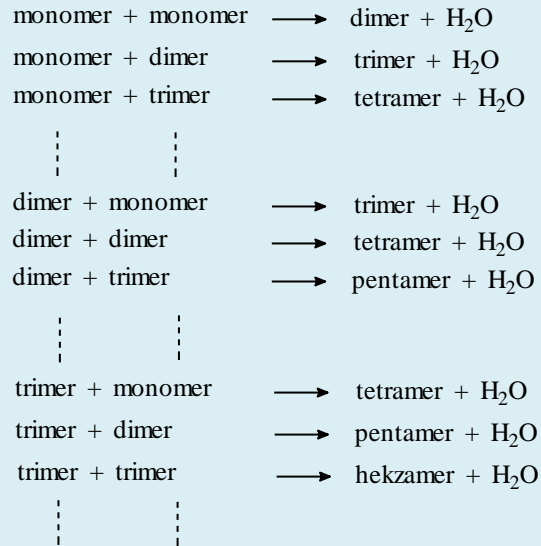
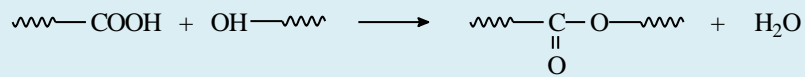
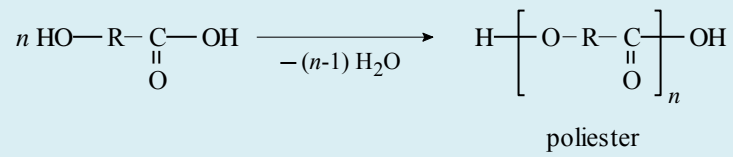
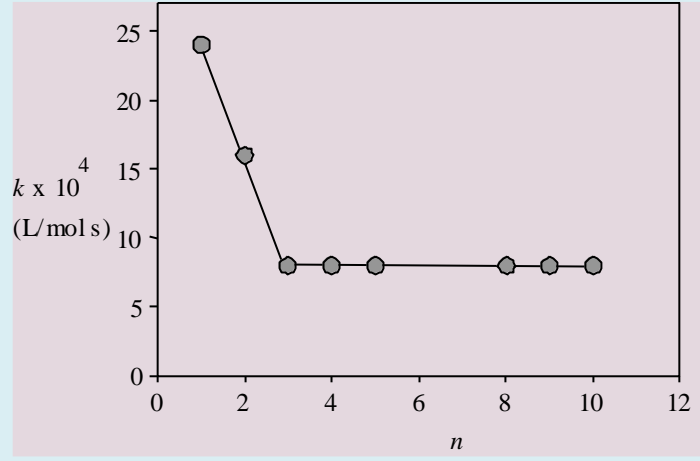


HAFTA-5

POLİESTERLEŞME KİNETİĞİ

Mekanizma





katalizlenmemiş poliesterleşme tepkimesi kinetiği

$$-\frac{d[\text{COOH}]}{dt} = k[\text{COOH}]^2[\text{OH}]$$

$$[\text{COOH}] = [\text{OH}]$$

$$-\frac{d[\text{COOH}]}{dt} = k[\text{COOH}]^3$$

$$\frac{1}{[\text{COOH}]^2} = \frac{1}{[\text{COOH}]_0^2} + 2kt$$

$$k = \frac{\text{eğim}}{2}$$

$$p = \frac{t \text{ anında tepkimeye girmiş olan COOH grubu sayısı}}{\text{başlangıçta alınan COOH grubu sayısı}}$$

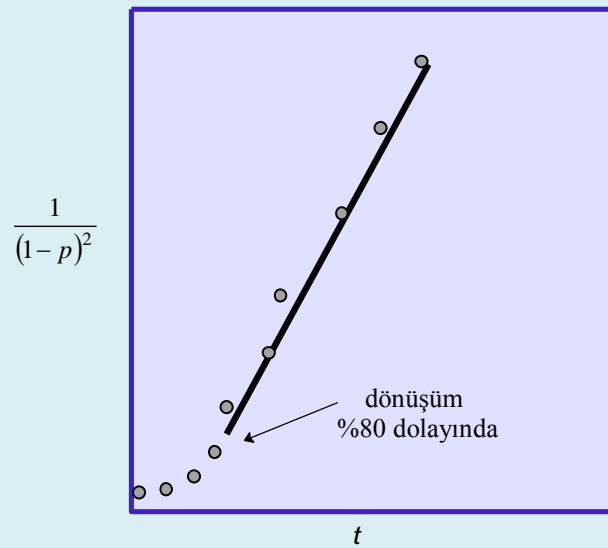
$$p = \frac{[\text{COOH}]_0 - [\text{COOH}]}{[\text{COOH}]_0} = 1 - \frac{[\text{COOH}]}{[\text{COOH}]_0}$$

$$[\text{COOH}] = [\text{COOH}]_0(1-p)$$

$$\frac{1}{(1-p)^2} = 1 + 2k[\text{COOH}]_0^2 t$$

$$k = \frac{\text{eğim}}{2[\text{COOH}]_0^2}$$

COOH gruplarının tepkimeye giren yüzdesi (% dönüşüm veya 100p)	p	1/(1-p) ²
0	0	1
10	0,10	1,24
20	0,20	1,56
40	0,40	2,78
60	0,60	6,30
80	0,80	25,0
85	0,85	44
90	0,90	100
94	0,94	278
96	0,96	625
98	0,98	2 500
99	0,99	10 000
100	1	□



katalizlenmiş polimerleşme kinetiği

$$-\frac{d[\text{COOH}]}{dt} = k'[\text{OH}][\text{COOH}]^2 + k_{kat}[\text{H}^+][\text{OH}][\text{COOH}]$$

$$k_{kat}[\text{H}^+] \gg k'[\text{COOH}]$$

$$-\frac{d[\text{COOH}]}{dt} = k_{kat}[\text{H}^+][\text{OH}][\text{COOH}]$$

$$-\frac{d[\text{COOH}]}{dt} = k_{kat}[\text{H}^+][\text{COOH}]^2$$

$$k = k_{kat}[\text{H}^+]$$

$$-\frac{d[\text{COOH}]}{dt} = k[\text{COOH}]^2$$

$$\frac{1}{[\text{COOH}]} = \frac{1}{[\text{COOH}]_0} + kt$$

$$\frac{1}{(1-p)} = 1 + k[\text{COOH}]_0 t$$

$$eğim = k[\text{COOH}]_0$$