REAÇÕES IRREVERSÍVEIS A VOLUME CONSTANTE

Estequiometria	Ordem	Equação de Velocidade	Concentrações Iniciais	Equação Matemática
A → prod.	1	$-r_A = kC_A$		$-\ln\frac{C_A}{C_{A_o}} = -\ln(1-X_A) = kt$
A + B → prod.	2	$-r_A = kC_AC_B$	$C_{Ao} = C_{Bo}$ (M=1)	$\frac{1}{C_A} - \frac{1}{C_{A_o}} = kt$ ou $\frac{1}{C_{A_o}}\left[\frac{X_A}{1-X_A}\right] = kt$
			$C_{Ao} \neq C_{Bo}$ (M≠1)	$\ln\frac{M-X_A}{M(1-X_A)} = C_{Ao}(M-1)kt$ ou $\ln\frac{C_BC_{A_o}}{C_{B_o}C_A} = (C_{Bo}-C_{Ao})kt$
	3	$-r_A = kC_AC_B^2$	$C_{Ao} = C_{Bo}$ (M=1)	$\frac{1}{C_A^2} - \frac{1}{C_{A_o}^2} = 2kt$
			$C_{Ao} \neq C_{Bo}$ (M≠1)	$\frac{(C_{A_o}-C_{B_o})(C_{B_o}-C_B)}{C_{B_o}C_B} + \ln\frac{C_{A_o}C_B}{C_{B_o}C_A} = (C_{A_o}-C_{B_o})^2kt$
A + 2B → prod.	2	$-r_A = kC_AC_B$	$C_{Bo} = 2C_{Ao}$ (M=2)	$\frac{1}{C_A} - \frac{1}{C_{A_o}} = \frac{1}{C_{A_o}}\left[\frac{X_A}{1-X_A}\right] = 2kt$
			$C_{Bo} \neq 2C_{Ao}$ (M≠2)	$\ln\frac{C_BC_{A_o}}{C_{B_o}C_A} = \ln\frac{M-2X_A}{M(1-X_A)} = C_{A_o}(M-2)kt$
	3	$-r_A = kC_AC_B^2$	$C_{Bo} = 2C_{Ao}$ (M=2)	$\frac{1}{C_A^2} - \frac{1}{C_{A_o}^2} = 8kt$
			$C_{Bo} \neq 2C_{Ao}$ (M≠2)	$\frac{(2C_{A_o}-C_{B_o})(C_{Bo}-C_B)}{C_{Bo}C_B} + \ln\frac{C_{A_o}C_B}{C_AC_{Bo}} = (2C_{A_o}-C_{B_o})^2kt$
A + B + D→ prod	3	$-r_A = kC_AC_BC_D$	$C_{Ao} \neq C_{Bo} \neq C_{Do}$	$\frac{1}{(C_{B_o}-C_{A_o})(C_{D_o}-C_{A_o})}\ln\frac{C_{A_o}}{C_A} + \frac{1}{(C_{A_o}-C_{B_o})(C_{D_o}-C_{B_o})}\ln\frac{C_{B_o}}{C_B} + \frac{1}{(C_{A_o}-C_{D_o})(C_{B_o}-C_{D_o})}\ln\frac{C_{D_o}}{C_D} = kt$

Observação : Em todas as equações onde existem dois reagentes $\Rightarrow$ $\boxed{M = \frac{C_{Bo}}{C_{Ao}}}$