

What is the rate chain initiation reaction for initiator efficiency of 0.8, when concentration and decomposition rate constant of benzoyl peroxide are 4 mol/m^3 and $3.24 \times 10^{-6} \text{ m}^3/\text{mol}\cdot\text{s}^{-1}$, respectively?

The rate expression for chain initiation is given by

$$\begin{aligned} R_i &= 2fk_d[I] \\ &= 2 \times 0.8 \times 3.24 \times 10^{-6} \times 4 \\ &= 20.736 \times 10^{-6} \text{ s}^{-1} \end{aligned}$$