

C) Paso 1 : Calcular $\eta_{TC, Cd^{2+}/H^+}$ con Tafel?

$$\eta_{TC, Cd^{2+}} = b \log(j) + a$$

$$\bullet b = \frac{-2,3RT}{\beta nF} = \frac{-(2,3)(8,314)(298)}{(0,22)(2)(96500)} = -0,134$$

$$\bullet a = -b \log(j_0) = -0,134 \log(4,94 \times 10^{-3}) = -0,31$$

$$\bullet j = nFV = (2)(96500)(1 \times 10^{-7}) = 0,0193$$

$$\eta_{TC, Cd^{2+}} = (-0,134) \log(0,0193) + (-0,31) = -0,08 \text{ V}$$

$$\eta_{TC, H^+} = b \log(j) + a$$

$$\bullet b = \frac{-2,3RT}{\beta nF} = \frac{-(2,3)(8,314)(298)}{(0,24)(2)(96500)} = -0,123$$

$$\bullet a = -b \log(j_0) = -(-0,123) \log(10^{-10,8}) = -1,328$$

$$\bullet j = nFV = (2)(96500)(1 \times 10^{-10}) = 1,93 \times 10^{-5}$$

$$\eta_{TC, H^+} = (-0,123) \log(1,93 \times 10^{-5}) + (-1,328) = -0,748 \text{ V}$$

Paso 2 : Calcular η_{TM} :

$$\eta_{TM} + \eta_{TC, Cd^{2+}} = \frac{1}{18} \eta_{TC, H^+}$$

$$\eta_{TM, Cd^{2+}} = \frac{1}{18} \eta_{TC, H^+} - \eta_{TC, Cd^{2+}}$$

$$\eta_{TM, Cd^{2+}} = \frac{1}{18} (-0,748) - (-0,08)$$

$$\eta_{TM, Cd^{2+}} = 0,0384 \text{ V}$$

Paso 3 Calcular j_{lim} a partir de $\eta_{TM, Cd^{2+}}$

$$\eta_{TM, Cd^{2+}} = \frac{2,3RT}{nF} \log(1 - j/j_{lim})$$

$$- = \frac{\eta_{TM, Cd^{2+}}}{0,0295} = 0,0295 \log(1 - j/j_{lim})$$

$$- = \left(\frac{0,0384}{0,0295} \right) = \log(1 - j/j_{lim})$$

$$10^{2,3} = 1 - j/j_{lim}$$

$$80,0 - = 19,9 - 1 = -j/j_{lim} \rightarrow 18,9 = -j/j_{lim}$$

$$j_{lim} = \frac{-j}{18,9} \rightarrow j_{lim} = \frac{-0,0193}{18,9} = \underline{\underline{-1 \times 10^{-3}}}$$