

LAMPIRAN B PERHITUNGAN

1. Pembuatan Larutan Media Perendaman NaCl 3%

1.1 Pembuatan Larutan Media Perendaman NaCl 3%

$$\% \text{ w/v} = \frac{\text{zat terlarut (gram)}}{\text{volume larutan (ml)}} \times 100\%$$

$$3 \% = \frac{\text{zat terlarut (gram)}}{600 \text{ ml}} \times 100\%$$

$$x = \frac{1800}{100} = 18 \text{ gram}$$

1.2 Perhitungan Laju Korosi Tanpa Inhibitor

- Konsentrasi 0 gram (tanpa inhibitor) hari ke 3 pada medium NaCl 3%

a. Massa Plat Besi

Berat awal : 15,7270

Berat akhir : 15,6710

$$\begin{aligned} \text{Massa (w)} &= \text{Berat awal} - \text{Berat Akhir} \\ &= (15,7270 - 15,6710) \\ &= 0,0560 \text{ gram} \end{aligned}$$

b. Luas Permukaan Plat Besi (A)

Panjang = 5 cm

Lebar = 1,5 cm

Tebal = 0,17 cm

$$\begin{aligned} A &= 2 ((p \times l) + (l \times t) + (p \times t)) \\ &= 2 ((5 \text{ cm} \times 1,5 \text{ cm}) + (1,5 \text{ cm} \times 0,17 \text{ cm}) + (5 \text{ cm} \times \\ &\quad 0,17 \text{ cm})) \\ &= 17,21 \text{ cm}^2 \end{aligned}$$

c. Laju Korosi

$$\begin{aligned} \text{Laju Korosi} &= \frac{(\text{Berat Awal} - \text{Berat Akhir}) \text{ gram}}{\text{Luas Plat Besi (cm}^2) \times \text{Waktu Perendaman (hari)}} \\ &= \frac{0,0560 \text{ gram}}{17,21 \times 10^{-4} \text{ cm}^2 \times 3 \text{ hari}} \\ &= 10,8464 \text{ gr/m}^2\text{hari} \end{aligned}$$

$$\begin{aligned}\text{Konversi} &= 10,8464 \text{ gr/m}^2\text{hari} \times \frac{1 \text{ mm/y}}{21,6 \text{ gr/m}^2\text{.hari}} \\ &= 0,5021 \text{ mm/y}\end{aligned}$$

1.3 Perhitungan Laju Korosi Dengan Penambahan Inhibitor

- Konsentrasi 1 gram hari ke 3 pada medium NaCl 3%

a. Massa Plat Besi

Berat awal : 15,1903

Berat akhir : 15,1678

$$\begin{aligned}\text{Massa (w)} &= \text{Berat awal} - \text{Berat Akhir} \\ &= (15,1903 - 15,1678) \\ &= 0,0225 \text{ gram}\end{aligned}$$

b. Luas permukaan Plat Besi (A)

Panjang = 5 cm

Lebar = 1,5 cm

Tebal = 0,17 cm

$$\begin{aligned}A &= 2 ((p \times l) + (l \times t) + (p \times t)) \\ &= 2 ((5 \text{ cm} \times 1,5 \text{ cm}) + (1,5 \text{ cm} \times 0,17 \text{ cm}) + (5 \text{ cm} \times \\ &\quad 0,17 \text{ cm})) \\ &= 17,21 \text{ cm}^2\end{aligned}$$

c. Laju Korosi

$$\begin{aligned}\text{Laju Korosi} &= \frac{(\text{Berat Awal} - \text{Berat Akhir}) \text{ gram}}{\text{Luas Plat Besi (cm}^2) \times \text{Waktu Perendaman (hari)}} \\ &= \frac{0,0225 \text{ gram}}{17,21 \times 10^{-4} \text{ cm}^2 \times 3 \text{ hari}} \\ &= 4,3579 \text{ gr/m}^2\text{hari}\end{aligned}$$

$$\begin{aligned}\text{Konversi} &= 4,3579 \text{ gr/m}^2\text{hari} \times \frac{1 \text{ mm/y}}{21,6 \text{ gr/m}^2\text{.hari}} \\ &= 0,2017 \text{ mm/y}\end{aligned}$$

$$\begin{aligned}\text{d. Efisiensi inhibisi} &= \frac{X_a - X_b}{X_a} \times 100\% \\ &= \frac{0,5021 \text{ mm/y} - 0,2017 \text{ mm/y}}{0,5021 \text{ mm/y}} \times 100\% \\ &= 59,8214 \%\end{aligned}$$

Dimana: X_a = laju reaksi tanpa *inhibitor* (mm/y)
 X_b = laju reaksi dengan *inhibitor* (mm/y)