

## PERHITUNGAN

### 1. Pembuatan larutan HCl 0,5 M

Data yang diketahui

$$\text{Densitas HCl } (\rho) = 1,18 \text{ gr/mL}$$

$$\% \text{ HCl} = 37 \%$$

$$\text{BM} = 36,5 \text{ gr/mol}$$

Sehingga konsentrasi awal (pekat) HCl induk adalah

$$\begin{aligned} M_1 &= \frac{\rho \times \% \times 1000 \text{ mL}}{\text{BM}} \\ &= \frac{1,18 \frac{\text{gr}}{\text{mL}} \times 0,37 \times 1000}{36,5 \text{ gr/mol}} \end{aligned}$$

$$M_1 = 11,96 \text{ mol/ml}$$

$$M_1 V_1 = M_2 V_2$$

$$V_1 = \frac{500 \text{ mL} \times 0,5 \text{ M}}{11,96 \text{ M}}$$

$$V_1 = 20,9 \text{ mL}$$

### 2. Perhitungan kandungan tannin

Diketahui :

Massa kristal asam oksalat : 630 mg = 0,63 gr

Volume titran  $\text{KMnO}_4$  (standarisasi) : 24,867 mL

BM asam oksalat : 126 g/mol

A (Volume titrasi titran  $\text{KMnO}_4$ ) : 14,7666 mL = 0,0147 L

B (Volume titrasi blanko) : 14,3 mL = 0,0143 L

Massa sampel : 1,5 gram

Penyelesaian :

$$\begin{aligned} N \text{ KMnO}_4 &= \frac{\frac{w}{\text{BM}} \times 2 \times \frac{25}{100}}{\text{Volume titran}} \\ &= \frac{\frac{630 \text{ mg}}{126 \text{ mg/mol}} \times 2 \times \frac{25}{100}}{24,867 \text{ ml}} = 0,100 \text{ N} \end{aligned}$$

Kadar *tannin* pada ekstrak buah mahkota dewa

$$\begin{aligned} \% \text{ tannin} &= \frac{10 (A-B) \times N \times 0,00416}{\text{massa sampel (gr)}} \times 100\% \\ &= \frac{10 (23,1667 \text{ mL} - 7,1 \text{ mL}) \times 0,100 \times 0,00416}{5 \text{ gram}} \times 100\% \\ &= 1,3367 \% \end{aligned}$$

### 3. Menhitung laju korosi

Laju korosi pada sampel A1 +

$$\text{Konstanta (K)} = 3,45 \times 10^6 \text{ mpy}$$

$$\text{Selisih Massa (w)} = 11,2597 \text{ gr} - 10,7745 \text{ gr} = 0,4852 \text{ gr}$$

$$A = 14,88 \text{ cm}^2$$

$$\text{Densitas (D)} = 7,86 \frac{\text{gr}}{\text{cm}^2}$$

$$\text{Waktu (T)} = 7 \text{ hari} \times 24 \text{ jam/hari} = 168 \text{ jam}$$

$$\begin{aligned} \text{Laju korosi} &= \frac{K \times w}{A \times T \times D} \\ &= \frac{3,45 \times 10^6 \text{ mpy} \times 0,4852 \text{ gr}}{14,88 \text{ cm}^2 \times 168 \text{ jam} \times 7,86 \frac{\text{gr}}{\text{cm}^2}} \\ &= 85,193 \text{ mpy} \end{aligned}$$