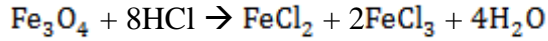


LAMPIRAN III

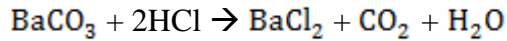
Perhitungan Stoikiometrik Sintesis Larutan Prekursor

Persamaan Reaksi :

1. Sintesis Prekursor Fe



2. Sintesis Prekursor Ba



BaFe₁₂O₁₉ = 1 gram

$$\text{Ba} = \frac{4.2915625}{34.7353125} \times 1 \text{ gram} = 0.1236 \text{ gr}$$

$$\text{Fe} = \frac{20.94375}{34.7353125} \times 1 \text{ gram} = 0.6030 \text{ gr}$$

$$\text{O} = \frac{9.5}{34.7353125} \times 1 \text{ gram} = 0.2735 \text{ gr}$$

$$\text{Ba} = \frac{1}{32} \times \text{Ar.Ba} = 4.29$$

$$\text{Fe} = \frac{12}{32} \times \text{Ar.Fe} = 20.94$$

$$\text{O} = \frac{19}{32} \times \text{Ar.O} = 9.5 \quad +$$

$$= 34.7353125$$

BaCO₃

$$\text{Ba} = \frac{1}{5} \times \text{Ar.Ba} = 27.466$$

$$\text{C} = \frac{1}{5} \times \text{Ar.C} = 2.4022$$

$$\text{O} = \frac{3}{5} \times \text{Ar.O} = 9.6 \quad +$$

$$= 39.4682$$

Fe₃O₄ = 0.01 gr

$$\text{Fe} = \frac{3}{7} \times \text{Ar.Fe} = 23.93$$

$$\text{O} = \frac{4}{7} \times \text{Ar.O} = 9.14$$

$$\text{Fe} = \frac{23.93}{33.07} = 0.723 \times 0.01$$

$$= 0.00723$$

Massa Fe₃O₄ yang diperlukan = 0.00723 gr

Massa BaCO_3 yang diperlukan

$$\begin{aligned}\text{Ba} &= 0.6029 \times 0.1199 \\ &= 0.0722\end{aligned}$$

$$\text{BaCO}_3 = m$$

$$= \frac{27.466}{39.4682} \times m = 0.0722$$

$$m = 0.0104 \text{ gram}$$

Massa BaCO_3 yang diperlukan = 0.0104 gram

Volume HCl pada Prekursor Ba

$$\text{Mol BaCO}_3 = \frac{0.0104}{197.34 \text{ gr/mol}} = 5.27 \text{ e-5}$$

$$2\text{HCl} = 5.27 \text{ e-5}$$

$$\text{HCl} = 2.63 \text{ e-5} \times \text{Berat Molekul HCl}$$

$$\begin{aligned}m\text{HCl} &= 2.63 \text{ e-5} \times 36.46 \\ &= 0.000958 \text{ gr}\end{aligned}$$

$$\text{Volume} = \frac{m}{\rho} = \frac{0.000958}{1.49}$$

$$\text{Volume} = 0.0064 \text{ L}$$

$$= 6.4 \text{ mL}$$

Volume HCl pada Prekursor Fe

$$\text{Mol Fe}_3\text{O}_4 = \frac{0.834}{231.55 \text{ gr/mol}} = 3.59 \text{ e-3}$$

$$8\text{HCl} = 3.59 \text{ e-3}$$

$$\text{HCl} = 4.48 \text{ e-3}$$

$$m\text{HCl} = 4.48 \text{ e-4} \times \text{Berat Molekul HCl}$$

$$m\text{HCl} = 0.00448 \text{ gr}$$

$$\text{Volume} = \frac{m}{\rho} = \frac{0.00448}{1.49}$$

$$\text{Volume} = 0.0030 \text{ L}$$

$$= 3.2 \text{ mL}$$

