

**LAMPIRAN I**  
**DATA PENGAMATAN**

**A. DATA PENGAMATAN**

**1. Hasil Analisa Dengan Menggunakan AAS**

**1.1 Analisa Penyerapan Logam Mangan (Mn) Menggunakan Membran Silika  
*Bottom Ash***

Tabel 9. Hasil analisis AAS Penyerapan Logam Mn

<b>Kode Sampel</b>	<b>Volume Permeat</b>	<b>Hasil Analisa (mg/L)</b>
Waktu 0 menit	-	2,41
Waktu 30 menit	135	0,45
Waktu 60 menit	118	0,24
Waktu 90 menit	103	0,37
Waktu 120 menit	96	0,36
Waktu 150 menit	81	0,39

*Sumber: Hasil Analisa BTKLPP, Juli 2017*

## LAMPIRAN II PERHITUNGAN

### I. Menghitung Fluks Membran

Diketahui :

Diameter membran = 9 cm

Jari-jari membran = 4,5 cm = 0,045 m

$$\begin{aligned}A &= \pi r^2 \\ &= 3,14 \times 0,045 \text{ m} \times 0,045 \text{ m} \\ &= 0,00636 \text{ m}^2\end{aligned}$$

· t = 30 menit, volume *permeat* = 135 mL = 0,135 L

$$\begin{aligned}J &= \frac{V}{Axt} \\ &= \frac{0,135 \text{ L}}{0,00636 \text{ m}^2 \times 0,5 \text{ jam}} \\ &= 42,4528 \text{ L/m}^2 \cdot \text{jam}\end{aligned}$$

· t = 60 menit, volume *permeat* = 118 mL = 0,118 L

$$\begin{aligned}J &= \frac{V}{Axt} \\ &= \frac{0,118 \text{ L}}{0,00636 \text{ m}^2 \times 1 \text{ jam}} \\ &= 18,5535 \text{ L/m}^2 \cdot \text{jam}\end{aligned}$$

· t = 90 menit, volume *permeat* = 103 mL = 0,103 L

$$\begin{aligned}J &= \frac{V}{Axt} \\ &= \frac{0,103 \text{ L}}{0,00636 \text{ m}^2 \times 1,5 \text{ jam}} \\ &= 10,7966 \text{ L/m}^2 \cdot \text{jam}\end{aligned}$$

· t = 120 menit, volume *permeat* = 96 mL = 0,096 L

$$J = \frac{V}{Axt}$$

$$= \frac{0,135 \text{ L}}{0,00636 \text{ m}^2 \times 2 \text{ jam}}$$

$$= 7,5472 \text{ L/m}^2 \cdot \text{jam}$$

· t = 150 menit, volume permeat = 81 mL = 0,081 L

$$J = \frac{V}{Axt}$$

$$= \frac{0,135 \text{ L}}{0,00636 \text{ m}^2 \times 2,5 \text{ jam}}$$

$$= 5,0943 \text{ L/m}^2 \cdot \text{jam}$$

## II. Menghitung Persen Penyisihan Logam Mangan (Mn)

· Sampel 1 (30 menit)

$$C_p = 0,45 \text{ mg/L}$$

$$C_f = 2,41 \text{ mg/L}$$

$$R = \left( 1 - \frac{C_p}{C_f} \right) \times 100\%$$

$$= \left( 1 - \frac{0,45 \text{ mg/L}}{2,41 \text{ mg/L}} \right) \times 100\%$$

$$= 81,3278\%$$

· Sampel 2 (60 menit)

$$C_p = 0,24 \text{ mg/L}$$

$$C_f = 2,41 \text{ mg/L}$$

$$R = \left( 1 - \frac{C_p}{C_f} \right) \times 100\%$$

$$= \left( 1 - \frac{0,24 \text{ mg/L}}{2,41 \text{ mg/L}} \right) \times 100\%$$

$$= 90,0415\%$$

· Sampel 3 (90 menit)

$$C_p = 0,37 \text{ mg/L}$$

$$C_f = 2,41 \text{ mg/L}$$

$$R = \left( 1 - \frac{C_p}{C_f} \right) \times 100\%$$

$$= \left( 1 - \frac{0,37 \text{ mg/L}}{2,41 \text{ mg/L}} \right) \times 100\%$$

$$= 84,6473\%$$

· Sampel 4 (120 menit)

$$C_p = 0,36 \text{ mg/L}$$

$$C_f = 2,41 \text{ mg/L}$$

$$R = \left( 1 - \frac{C_p}{C_f} \right) \times 100\%$$

$$= \left( 1 - \frac{0,36 \text{ mg/L}}{2,41 \text{ mg/L}} \right) \times 100\%$$

$$= 85,0622\%$$

· Sampel 5 (150 menit)

$$C_p = 0,39 \text{ mg/L}$$

$$C_f = 2,41 \text{ mg/L}$$

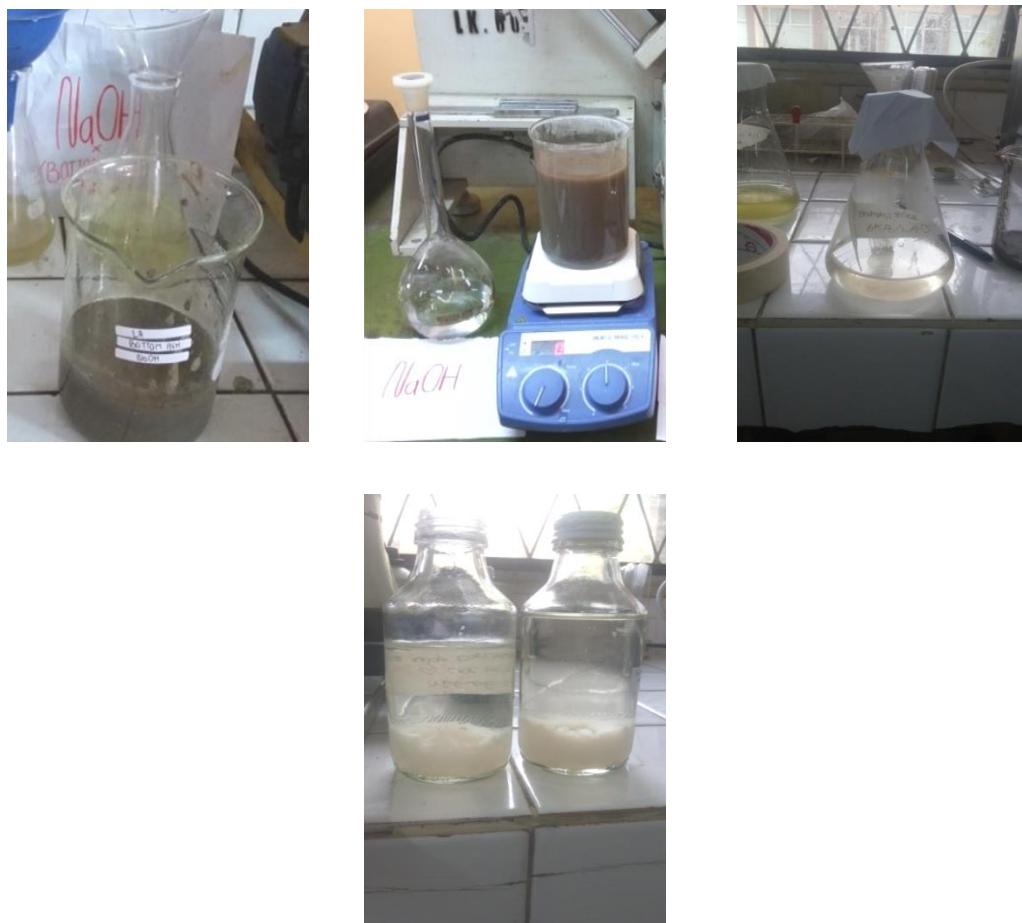
$$R = \left( 1 - \frac{C_p}{C_f} \right) \times 100\%$$

$$= \left( 1 - \frac{0,39 \text{ mg/L}}{2,41 \text{ mg/L}} \right) \times 100\% = 83,8174\%$$

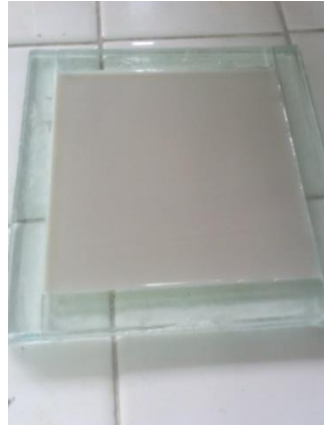
**LAMPIRAN III**  
**DOKUMENTASI PENELITIAN**



Gambar 13. Proses Preparasi *Bottom Ash*



Gambar 14. Proses Ekstraksi Silika *Bottom Ash*



Gambar 15. Proses Pembuatan dan Pencetakan Membran



Gambar 16. Membran Silika *Bottom Ash*



Gambar 17. Sampel yang telah melewati Membran