

## LAMPIRAN – LAMPIRAN

### 1. Perhitungan randemen

Pada perhitungan randemen adalah sebagai berikut :

- Limbah bambu  
Berat awal = 1.500 gram  
Arang bambu = 500 gram  
Randemen(%) =  $\frac{M1}{M2} \times 100$   
=  $\frac{500}{1.500} \times 100$   
= 33 %
- Berat awal = 1.500 gram  
Arang bambu = 500 gram  
Randemen(%) =  $\frac{M1}{M2} \times 100$   
=  $\frac{175}{500} \times 100$   
= 35%

### 2. Perhitungan kadar abu

Pengujian Kadar Abu

a = Massa abu

b = Massa arang

$$\text{kadar sampel (\%)} = \frac{a}{b} \times 100$$

Pengujian 1

Sampel A1

$$\begin{array}{l} \text{Arang bambu} \quad : \quad \text{Arang pelepah pisang} \\ 100\% \quad \quad : \quad \quad \quad 0\% \\ \text{Massa abu} \quad = 0,01 \text{ gram} \\ \text{Massa arang} \quad = 2,09 \text{ gram} \\ \text{Kadar abu (\%)} = \frac{a}{b} \times 100 \end{array}$$

$$= \frac{0,01}{2,09} \times 100$$

$$= 0,48 \%$$

## Pengujian 2

### Sampel A1

Arang bambu : Arang pelepah pisang  
100% : 0%

Massa abu = 0,22 gram

Massa arang = 2 gram

$$\text{Kadar abu (\%)} = \frac{a}{b} \times 100$$

$$= \frac{0,22}{2} \times 100$$

$$= 11 \%$$

## Pengujian 1

### Sampel B1

Arang bambu : Arang pelepah pisang  
75% : 25%

Massa abu = 0,04 gram

Massa arang = 2,15 gram

$$\text{Kadar abu (\%)} = \frac{a}{b} \times 100$$

$$= \frac{0,04}{2,15} \times 100$$

$$= 1,86 \%$$

## Pengujian 2

### Sampel B1

Arang bambu : Arang pelepah pisang  
75% : 25%

Massa abu = 0,21 gram

Massa arang = 2 gram

$$\begin{aligned} \text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,21}{2} \times 100 \\ &= 10,5 \% \end{aligned}$$

#### Pengujian 1

##### Sampel C1

Arang bambu	:	Arang pelepah pisang
50%	:	50%

Massa abu = 0,08 gram

Massa arang = 2,01 gram

$$\begin{aligned} \text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,08}{2,01} \times 100 \\ &= 3,98 \% \end{aligned}$$

#### Pengujian 2

##### Sampel C1

Arang bambu	:	Arang pelepah pisang
50%	:	50%

Massa abu = 0,21 gram

Massa arang = 2 gram

$$\begin{aligned} \text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,21}{2} \times 100 \\ &= 10,5 \% \end{aligned}$$

#### Pengujian 1

##### Sampel D1

Arang bambu	:	Arang pelepah pisang
25%	:	75%

Massa abu = 0,09 gram

Massa arang = 2 gram

$$\begin{aligned}\text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,09}{2} \times 100 \\ &= 4,5 \%\end{aligned}$$

## Pengujian 2

### Sampel D1

Arang bambu : Arang pelepah pisang  
25% : 75%  
Massa abu = 0,23 gram

Massa arang = 2 gram

$$\begin{aligned}\text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,23}{2} \times 100 \\ &= 11,5 \%\end{aligned}$$

## Pengujian 1

### Sampel E1

Arang bambu : Arang pelepah pisang  
0% : 100%  
Massa abu = 0,14 gram

Massa arang = 2 gram

$$\begin{aligned}\text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,14}{2} \times 100 \\ &= 7 \%\end{aligned}$$

## Pengujian 2

### Sampel E1

Arang bambu : Arang pelepah pisang  
0% : 100%

$$\text{Massa abu} = 0,39 \text{ gram}$$

$$\text{Massa arang} = 2 \text{ gram}$$

$$\begin{aligned}\text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,39}{2} \times 100 \\ &= 19,5 \%\end{aligned}$$

### Pengujian 1

#### Sampel 2

$$\begin{array}{lcl} \text{Arang bambu} & : & \text{Arang pelepah pisang} \\ 50\% & : & 50\% \\ \text{Massa abu} & = & 0,09 \text{ gram} \end{array}$$

$$\text{Massa arang} = 2 \text{ gram}$$

$$\begin{aligned}\text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,09}{2} \times 100 \\ &= 4,5 \%\end{aligned}$$

### Pengujian 2

#### Sampel 2

$$\begin{array}{lcl} \text{Arang bambu} & : & \text{Arang pelepah pisang} \\ 50\% & : & 50\% \\ \text{Massa abu} & = & 0,23 \text{ gram} \end{array}$$

$$\text{Massa arang} = 2 \text{ gram}$$

$$\begin{aligned}\text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,23}{2} \times 100 \\ &= 11,5 \%\end{aligned}$$

### Pengujian 1

#### Sampel 3

$$\text{Arang bambu} : \text{Arang pelepah pisang}$$

$$\begin{array}{l} 50\% \quad : \quad 50\% \\ \text{Massa abu} = 0,12 \text{ gram} \end{array}$$

$$\text{Massa arang} = 2 \text{ gram}$$

$$\begin{aligned} \text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,12}{2} \times 100 \\ &= 6\% \end{aligned}$$

### Pengujian 2

#### Sampel 3

$$\begin{array}{l} \text{Arang bambu} \quad : \quad \text{Arang pelepah pisang} \\ 50\% \quad : \quad 50\% \\ \text{Massa abu} = 0,27 \text{ gram} \end{array}$$

$$\text{Massa arang} = 2 \text{ gram}$$

$$\begin{aligned} \text{Kadar abu (\%)} &= \frac{a}{b} \times 100 \\ &= \frac{0,27}{2} \times 100 \\ &= 13,5\% \end{aligned}$$

### 3. Pengujian laju pembakaran

a = Massa briket (gram)

b = Waktu pembakaran (menit)

$$\text{Laju pembakaran (gram/menit)} = \frac{a}{b}$$

### Pengujian 1

#### Sampel A1

$$\begin{array}{l} \text{Arang bambu} \quad : \quad \text{Arang pelepah pisang} \\ 100\% \quad : \quad 0\% \\ \text{Massa briket} \quad \quad \quad = 14,24 \text{ gram} \end{array}$$

$$\text{Waktu pembakaran} = 124 \text{ menit}$$

$$\text{Laju pembakaran (gram/menit)} = \frac{a}{b}$$

$$= \frac{14,24}{124}$$

$$= 0,11 \text{ gram/menit}$$

## Pengujian 2

### Sampel A1

Arang bambu	:	Arang pelepah pisang	
100%	:	0%	
Massa briket			= 13,17 gram
Waktu pembakaran			= 115 menit
Laju pembakaran (gram/menit)			= $\frac{a}{b}$
			= $\frac{13,17}{115}$
			= 0,11 gram/menit

## Pengujian 1

### Sampel B1

Arang bambu	:	Arang pelepah pisang	
75%	:	25%	
Massa briket			= 14,45gram
Waktu pembakaran			= 92 menit
Laju pembakaran (gram/menit)			= $\frac{a}{b}$
			= $\frac{14,45}{92}$
			= 0,16 gram/menit

## Pengujian 2

### Sampel B1

Arang bambu	:	Arang pelepah pisang	
75%	:	25%	
Massa briket			= 13,62 gram
Waktu pembakaran			= 89 menit

$$\begin{aligned} \text{Laju pembakaran (gram/menit)} &= \frac{a}{b} \\ &= \frac{13,62}{89} \\ &= 0,15 \text{ gram/menit} \end{aligned}$$

### Pengujian 1

#### Sampel C1

$$\begin{aligned} \text{Arang bambu} &: \text{ Arang pelepah pisang} \\ 50\% &: 50\% \\ \text{Massa briket} &= 17,29 \text{ gram} \end{aligned}$$

$$\text{Waktu pembakaran} = 143 \text{ menit}$$

$$\begin{aligned} \text{Laju pembakaran (gram/menit)} &= \frac{a}{b} \\ &= \frac{17,29}{143} \\ &= 0,12 \text{ gram/menit} \end{aligned}$$

### Pengujian 2

#### Sampel C1

$$\begin{aligned} \text{Arang bambu} &: \text{ Arang pelepah pisang} \\ 50\% &: 50\% \\ \text{Massa briket} &= 15,65 \text{ gram} \end{aligned}$$

$$\text{Waktu pembakaran} = 133 \text{ menit}$$

$$\begin{aligned} \text{Laju pembakaran (gram/menit)} &= \frac{a}{b} \\ &= \frac{15,65}{133} \\ &= 0,12 \text{ gram/menit} \end{aligned}$$

### Pengujian 1

#### Sampel D1

$$\begin{aligned} \text{Arang bambu} &: \text{ Arang pelepah pisang} \\ 25\% &: 75\% \\ \text{Massa briket} &= 12,77 \text{ gram} \end{aligned}$$



$$\begin{aligned}
\text{Waktu pembakaran} &= 89 \text{ menit} \\
\text{Laju pembakaran (gram/menit)} &= \frac{a}{b} \\
&= \frac{12,77}{89} \\
&= 0,14 \text{ gram/menit}
\end{aligned}$$

## Pengujian 2

### Sampel D1

$$\begin{aligned}
\text{Arang bambu} &: \text{ Arang pelepah pisang} \\
25\% &: 75\% \\
\text{Massa briket} &= 12,49 \text{ gram} \\
\text{Waktu pembakaran} &= 88 \text{ menit} \\
\text{Laju pembakaran (gram/menit)} &= \frac{a}{b} \\
&= \frac{12,49}{88} \\
&= 0,14 \text{ gram/menit}
\end{aligned}$$

## Pengujian 1

### Sampel E1

$$\begin{aligned}
\text{Arang bambu} &: \text{ Arang pelepah pisang} \\
0\% &: 100\% \\
\text{Massa briket} &= 12,70 \text{ gram} \\
\text{Waktu pembakaran} &= 40 \text{ menit} \\
\text{Laju pembakaran (gram/menit)} &= \frac{a}{b} \\
&= \frac{12,70}{40} \\
&= 0,32 \text{ gram/menit}
\end{aligned}$$

## Pengujian 2

### Sampel E1

$$\begin{aligned}
\text{Arang bambu} &: \text{ Arang pelepah pisang} \\
0\% &: 100\%
\end{aligned}$$

$$\begin{aligned}
\text{Massa abu} &= 13,29 \text{ gram} \\
\text{Waktu pembakaran} &= 58 \text{ menit} \\
\text{Laju pembakaran (gram/menit)} &= \frac{a}{b} \\
&= \frac{13,29}{58} \\
&= 0,23 \text{ gram/menit}
\end{aligned}$$

### Pengujian 1

#### Sampel 2

$$\begin{aligned}
\text{Arang bambu} &: \text{ Arang pelepah pisang} \\
50\% &: 50\% \\
\text{Massa briket} &= 13,64 \text{ gram} \\
\text{Waktu pembakaran} &= 54 \text{ menit} \\
\text{Laju pembakaran (gram/menit)} &= \frac{a}{b} \\
&= \frac{13,64}{54} \\
&= 0,25 \text{ gram/menit}
\end{aligned}$$

### Pengujian 2

#### Sampel 2

$$\begin{aligned}
\text{Arang bambu} &: \text{ Arang pelepah pisang} \\
50\% &: 50\% \\
\text{Massa briket} &= 12,69 \text{ gram} \\
\text{Waktu pembakaran} &= 66 \text{ menit} \\
\text{Laju pembakaran (gram/menit)} &= \frac{a}{b} \\
&= \frac{12,69}{66} \\
&= 0,19 \text{ gram/menit}
\end{aligned}$$

### Pengujian 1

#### Sampel 3

$$\text{Arang bambu} : \text{ Arang pelepah pisang}$$

$$\begin{array}{l}
 50\% \quad : \quad 50\% \\
 \text{Massa briket} \quad = 11,85 \text{ gram} \\
 \\
 \text{Waktu pembakaran} \quad = 85 \text{ menit} \\
 \\
 \text{Laju pembakaran (gram/menit)} \quad = \frac{a}{b} \\
 \quad = \frac{11,85}{85} \\
 \quad = 0,14 \text{ gram/menit}
 \end{array}$$

#### Pengujian 2

##### Sampel 3

$$\begin{array}{l}
 \text{Arang bambu} \quad : \quad \text{Arang pelepah pisang} \\
 50\% \quad : \quad 50\% \\
 \text{Massa briket} \quad = 11,89 \text{ gram} \\
 \\
 \text{Waktu pembakaran} \quad = 74 \text{ menit} \\
 \\
 \text{Laju pembakaran (gram/menit)} \quad = \frac{a}{b} \\
 \quad = \frac{11,89}{74} \\
 \quad = 0,16 \text{ gram/menit}
 \end{array}$$

#### 4. Pengujian kerapatan

M = Massa briket (gram)

p = Panjang (cm)

l = Lebar (cm)

t = Tinggi (cm)

$$\text{Kerapatan (gram/cm}^3\text{)} = \frac{M}{V}$$

#### Pengujian 1

##### Sampel A

$$\begin{array}{l}
 \text{Arang bambu} \quad : \quad \text{Arang pelepah pisang} \\
 100\% \quad : \quad 0\% \\
 \text{Massa briket} \quad = 15,97 \text{ gram}
 \end{array}$$

$$p = 2,84 \text{ (cm)}$$

$$l = 2,71 \text{ (cm)}$$

$$t = 3,31 \text{ (cm)}$$

$$\begin{aligned} \text{kerapatan (gram/cm}^3\text{)} &= \frac{M}{V} \\ &= \frac{15,97}{2,84 \times 2,71 \times 3,31} \\ &= 0,62 \text{ gram/cm}^3 \end{aligned}$$

#### Sampel B

$$\begin{array}{ll} \text{Arang bambu} & : \quad \text{Arang pelepah pisang} \\ 75\% & : \quad 25\% \\ \text{Massa briket} & = 18,39 \text{ gram} \end{array}$$

$$p = 2,77 \text{ (cm)}$$

$$l = 2,78 \text{ (cm)}$$

$$t = 3,18 \text{ (cm)}$$

$$\begin{aligned} \text{kerapatan (gram/cm}^3\text{)} &= \frac{M}{V} \\ &= \frac{18,39}{2,77 \times 2,78 \times 3,18} \\ &= 0,75 \text{ gram/cm}^3 \end{aligned}$$

#### Sampel C dan 1

$$\begin{array}{ll} \text{Arang bambu} & : \quad \text{Arang pelepah pisang} \\ 50\% & : \quad 50\% \\ \text{Massa briket} & = 17,85 \text{ gram} \end{array}$$

$$p = 2,74 \text{ (cm)}$$

$$l = 2,71 \text{ (cm)}$$

$$t = 3,27 \text{ (cm)}$$

$$\begin{aligned} \text{kerapatan (gram/cm}^3\text{)} &= \frac{M}{V} \\ &= \frac{17,85}{2,74 \times 2,71 \times 3,27} \end{aligned}$$

$$= 0,73 \text{ gram/cm}^3$$

#### Sampel D

Arang bambu : Arang pelepah pisang  
25% : 75%  
Massa briket = 12,4 gram

$$p = 2,85 \text{ (cm)}$$

$$l = 2,73 \text{ (cm)}$$

$$t = 3,10 \text{ (cm)}$$

$$\begin{aligned} \text{kerapatan (gram/cm}^3\text{)} &= \frac{M}{V} \\ &= \frac{12,4}{2,85 \times 2,73 \times 3,10} \\ &= 0,514 \text{ gram/cm}^3 \end{aligned}$$

#### Sampel E

Arang bambu : Arang pelepah pisang  
0% : 100%  
Massa briket = 12,58 gram

$$p = 2,78 \text{ (cm)}$$

$$l = 2,73 \text{ (cm)}$$

$$t = 3,17 \text{ (cm)}$$

$$\begin{aligned} \text{kerapatan (gram/cm}^3\text{)} &= \frac{M}{V} \\ &= \frac{12,58}{2,78 \times 2,73 \times 3,17} \\ &= 0,52 \text{ gram/cm}^3 \end{aligned}$$

#### Sampel 2

Arang bambu : Arang pelepah pisang  
50% : 50%  
Massa briket = 14,32 gram

$$p = 2,83 \text{ (cm)}$$

$$l = 2,73 \text{ (cm)}$$

$$t = 3,14 \text{ (cm)}$$

$$\begin{aligned} \text{kerapatan (gram/cm}^3) &= \frac{M}{V} \\ &= \frac{14,32}{2,83 \times 2,73 \times 3,14} \\ &= 0,59 \text{ gram/cm}^3 \end{aligned}$$

Sampel 3

Arang bambu : Arang pelepah pisang  
50% : 50%  
Massa briket = 12,43 gram

$$p = 2,85 \text{ (cm)}$$

$$l = 2,78 \text{ (cm)}$$

$$t = 3 \text{ (cm)}$$

$$\begin{aligned} \text{kerapatan (gram/cm}^3) &= \frac{M}{V} \\ &= \frac{12,43}{2,85 \times 2,78 \times 3} \\ &= 0,52 \text{ gram/cm}^3 \end{aligned}$$

### 3. Pengujian kadar air

$M_0$  = Massa awal (gram)

$M_1$  = Massa setelah dioven (gram)

$$\text{Kadar air (\%)} = \frac{a-b}{a} \times 100$$

Sampel A

Arang bambu : Arang pelepah pisang  
100% : 0%  
Massa awal = 44,04 gram  
Massa setelah dioven = 43,99 gram  
Kadar air (%) =  $\frac{M_0 - M_1}{M_0} \times 100$   
=  $\frac{44,04 - 43,99}{44,04} \times 100$

$$= 0,11 \%$$

#### Sampel B

Arang bambu	:	Arang pelepah pisang
75%	:	25%
Massa awal		= 45,85 gram
Massa setelah dioven		= 45,79 gram
Kadar air (%)		$= \frac{M_0 - M_1}{M_0} \times 100$
		$= \frac{45,85 - 45,79}{45,85} \times 100$
		= 0,13 %

#### Sampel C dan 1

Arang bambu	:	Arang pelepah pisang
50%	:	50%
Massa awal		= 49,06 gram
Massa setelah dioven		= 49,01 gram
Kadar air (%)		$= \frac{M_0 - M_1}{M_0} \times 100$
		$= \frac{49,06 - 49,01}{49,06} \times 100$
		= 0,10 %

#### Sampel D

Arang bambu	:	Arang pelepah pisang
25%	:	75%
Massa awal		= 35,80 gram
Massa setelah dioven		= 35,76 gram
Kadar air (%)		$= \frac{M_0 - M_1}{M_0} \times 100$
		$= \frac{35,80 - 35,76}{35,80} \times 100$
		= 0,11 %

#### Sampel E

Arang bambu	:	Arang pelepah pisang	
0%	:	100%	
Massa awal			= 40,03 gram
Massa setelah dioven			= 39,94 gram
Kadar air (%)			= $\frac{M_0 - M_1}{M_0} \times 100$
			= $\frac{40,03 - 39,94}{40,03} \times 100$
			= 0,22 %

Sampel 2

Arang bambu	:	Arang pelepah pisang	
50%	:	50%	
Massa awal			= 42,14 gram
Massa setelah dioven			= 42,09 gram
Kadar air (%)			= $\frac{M_0 - M_1}{M_0} \times 100$
			= $\frac{42,14 - 42,09}{42,14} \times 100$
			= 0,11 %

Sampel 3

Arang bambu	:	Arang pelepah pisang	
50%	:	50%	
Massa awal			= 45,33 gram
Massa setelah dioven			= 45,28 gram
Kadar air (%)			= $\frac{M_0 - M_1}{M_0} \times 100$
			= $\frac{45,33 - 45,28}{45,33} \times 100$
			= 0,11 %

4. Pengujian bagian yang hilang pada pemanasan 950°C

$M_0$  = Massa awal (gram)

$M_1$  = Massa setelah difurnace(gram)



$$\text{Bagian yang hilang pada pemanasan } 950^{\circ}\text{C } (\%) = \frac{a-b}{a} \times 100$$

Sampel A

$$\begin{array}{l} \text{Arang bambu} \quad : \quad \text{Arang pelepah pisang} \\ 100\% \quad \quad : \quad \quad \quad 0\% \\ \text{Massa awal} \quad \quad \quad \quad \quad \quad \quad = 76,02 \text{ gram} \end{array}$$

$$\text{Massa setelah difurnace} \quad \quad \quad = 75,12 \text{ gram}$$

$$\begin{aligned} \text{bagian yang hilang pada pemanasan } 950^{\circ}\text{C } (\%) &= \frac{M_0 - M_1}{M_0} \times 100 \\ &= \frac{76,02 - 75,12}{76,02} \times 100 \\ &= 1,29 \% \end{aligned}$$

Sampel B

$$\begin{array}{l} \text{Arang bambu} \quad : \quad \text{Arang pelepah pisang} \\ 75\% \quad \quad \quad : \quad \quad \quad 25\% \\ \text{Massa awal} \quad \quad \quad \quad \quad \quad \quad = 79,70 \text{ gram} \end{array}$$

$$\text{Massa setelah difurnace} \quad \quad \quad = 78,80 \text{ gram}$$

$$\begin{aligned} \text{bagian yang hilang pada pemanasan } 950^{\circ}\text{C } (\%) &= \frac{M_0 - M_1}{M_0} \times 100 \\ &= \frac{79,70 - 78,80}{79,70} \times 100 \\ &= 1,30 \% \end{aligned}$$

Sampel C dan 1

$$\begin{array}{l} \text{Arang bambu} \quad : \quad \text{Arang pelepah pisang} \\ 50\% \quad \quad \quad : \quad \quad \quad 50\% \\ \text{Massa awal} \quad \quad \quad \quad \quad \quad \quad = 85,97 \text{ gram} \end{array}$$

$$\text{Massa setelah difurnace} \quad \quad \quad = 85,07 \text{ gram}$$

$$\begin{aligned} \text{bagian yang hilang pada pemanasan } 950^{\circ}\text{C } (\%) &= \frac{M_0 - M_1}{M_0} \times 100 \\ &= \frac{85,97 - 85,07}{85,97} \times 100 \\ &= 1,05 \% \end{aligned}$$

#### Sampel D

Arang bambu : Arang pelepah pisang  
25% : 75%

Massa awal = 68,52 gram

Massa setelah difurnace = 67,63 gram

$$\begin{aligned}\text{bagian yang hilang pada pemanasan } 950^{\circ}\text{C } (\%) &= \frac{M_0 - M_1}{M_0} \times 100 \\ &= \frac{68,52 - 67,63}{68,52} \times 100 \\ &= 1,13 \%\end{aligned}$$

#### Sampel E

Arang bambu : Arang pelepah pisang  
0% : 100%

Massa awal = 65,23 gram

Massa setelah difurnace = 64,39 gram

$$\begin{aligned}\text{bagian yang hilang pada pemanasan } 950^{\circ}\text{C } (\%) &= \frac{M_0 - M_1}{M_0} \times 100 \\ &= \frac{65,23 - 64,39}{65,23} \times 100 \\ &= 1,18 \%\end{aligned}$$

#### Sampel 2

Arang bambu : Arang pelepah pisang  
50% : 50%

Massa awal = 65,57 gram

Massa setelah difurnace = 64,71 gram

$$\begin{aligned}\text{bagian yang hilang pada pemanasan } 950^{\circ}\text{C } (\%) &= \frac{M_0 - M_1}{M_0} \times 100 \\ &= \frac{65,57 - 64,71}{65,57} \times 100 \\ &= 1,31 \%\end{aligned}$$

#### Sampel 3

Arang bambu : Arang pelepah pisang  
50% : 50%

Massa awal = 69,59 gram

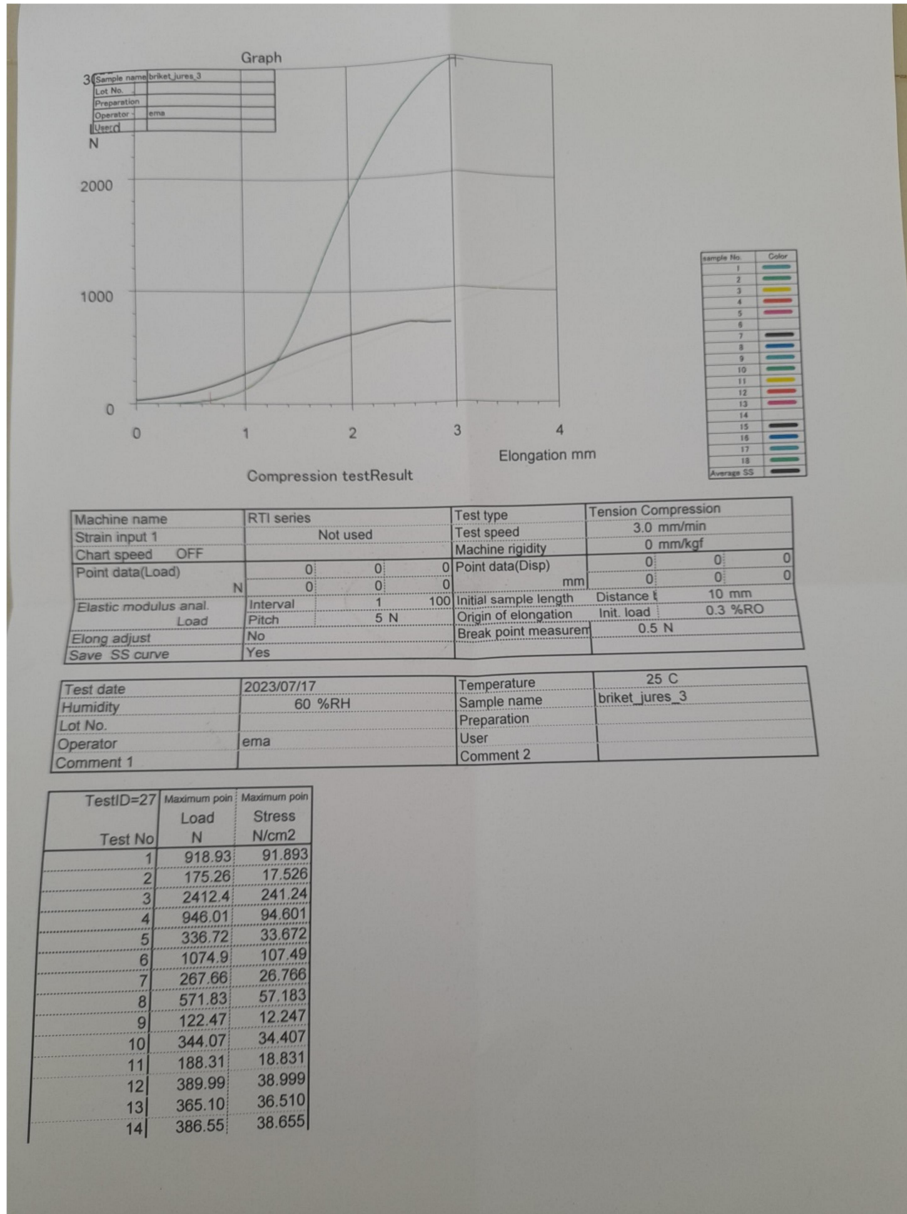
Massa setelah difurnace = 68,74 gram

bagian yang hilang pada pemanasan 950°C (%) =  $\frac{M_0 - M_1}{M_0} \times 100$

$$= \frac{69,59 - 68,74}{69,74} \times 100$$

$$= 1,22 \%$$

5. Pengujian kuat tekan



## 6. Pengujian nilai kalor



Pengujian nilai kalor menggunakan Bomb calorimeter IKA C 3000

## 7. Persiapan bahan



Alat



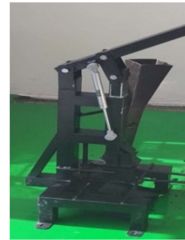
Tungku karbonisasi



Timbangan analitik



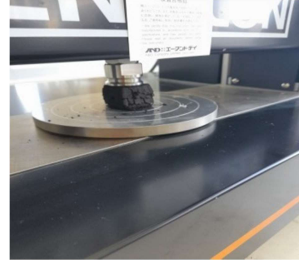
Bomb calorimeter IKA C3000



Alat cetakan briket



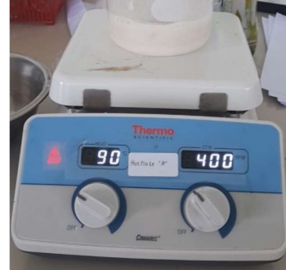
Cawan



Universal pressure testing



Furnace



Magnetic stirrer



Oven



Jangka sorong



Ayakan 80mesh, 100 mesh dan 120 mesh



Desikator



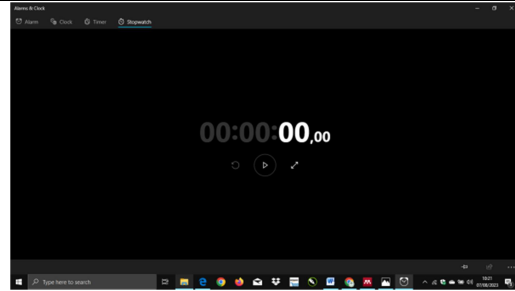
Gelas beker 500 ml



Spatula










Korek api



Stopwacth



8. Alur penelitian

 <p>1. Persiapan bahan</p>	 <p>2. Proses karbonisasi</p>
 <p>3. Proses penghalusan</p>	 <p>4. Ayak sesuai ukuran serbuk</p>
 <p>5. Proses pencampuran</p>	 <p>6. Proses pencetakan</p>
 <p>7. Hasil jadi</p>	



## BIODATA



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