

LAMPIRAN A

1) Randemen

$$\text{Randemen} = \frac{\text{Arang}}{\text{Bahan Baku Mentah}} \times 100\%$$

1. Eceng Gondok

$$\text{Randemen} = \frac{46\text{ gram}}{200\text{ gram}} \times 100\% = 23\%$$

2. Buah Pinus

$$\text{Randemen} = \frac{106\text{ gram}}{200\text{ gram}} \times 100\% = 53\%$$

2) Nilai Kerapatan

M = Massa Sampel

P = Panjang

L = Lebar

t = Tinggi

$$\rho = \frac{M}{V} = \frac{M}{P \cdot L \cdot t}$$

1. Sampel A1

Eceng Gondok : Buah Pinus
100% : 0

M = 29,92 gram

P = 4,63 cm

L = 2,75 cm

t = 2,82 cm

$$\rho = \frac{M}{V} = \frac{29,92\text{ gram}}{4,63\text{ cm} \times 2,75\text{ cm} \times 2,82\text{ cm}} = \frac{29,92\text{ gram}}{35,905\text{ cm}^3} = 0,833 \frac{\text{gram}}{\text{cm}^3}$$

2. Sampel A2

Eceng Gondok : Buah Pinus
75% : 25%

M = 29,04 gram

$$P = 4,76 \text{ cm}$$

$$L = 2,75 \text{ cm}$$

$$t = 2,87 \text{ cm}$$

$$\rho = \frac{M}{V} = \frac{29,04 \text{ gram}}{4,76 \text{ cm} \times 2,75 \text{ cm} \times 2,87 \text{ cm}} = \frac{29,04 \text{ gram}}{37,568 \text{ cm}^3} = 0,772 \frac{\text{gram}}{\text{cm}^3}$$

3. Sampel A3

Eceng Gondok : Buah Pinus

50% : 50%

$$M = 26,11 \text{ gram}$$

$$P = 4,42 \text{ cm}$$

$$L = 2,75 \text{ cm}$$

$$t = 2,83 \text{ cm}$$

$$\rho = \frac{M}{V} = \frac{26,11 \text{ gram}}{4,42 \text{ cm} \times 2,75 \text{ cm} \times 2,83 \text{ cm}} = \frac{26,11 \text{ gram}}{34,398 \text{ cm}^3} = 0,759 \frac{\text{gram}}{\text{cm}^3}$$

4. Sampel A4

Eceng Gondok : Buah Pinus

25% : 75%

$$M = 30,20 \text{ gram}$$

$$P = 4,38 \text{ cm}$$

$$L = 2,75 \text{ cm}$$

$$t = 2,83 \text{ cm}$$

$$\rho = \frac{M}{V} = \frac{30,20 \text{ gram}}{4,38 \text{ cm} \times 2,75 \text{ cm} \times 2,83 \text{ cm}} = \frac{30,20 \text{ gram}}{33,966 \text{ cm}^3} = 0,889 \frac{\text{gram}}{\text{cm}^3}$$

5. Sampel A5

Eceng Gondok : Buah Pinus

0 : 100%

$$M = 32,94 \text{ gram}$$

$$P = 4,57 \text{ cm}$$

$$L = 2,73 \text{ cm}$$

$$t = 2,85 \text{ cm}$$

$$\rho = \frac{M}{V} = \frac{32,94 \text{ gram}}{4,57 \text{ cm} \times 2,73 \text{ cm} \times 2,85 \text{ cm}} = \frac{32,94 \text{ gram}}{35,556 \text{ cm}^3} = 0,926 \frac{\text{gram}}{\text{cm}^3}$$

6. Sampel B1

Eceng Gondok : Buah Pinus
50% : 50%

$$M = 26,11 \text{ gram}$$

$$P = 4,42 \text{ cm}$$

$$L = 2,75 \text{ cm}$$

$$t = 2,83 \text{ cm}$$

$$\rho = \frac{M}{V} = \frac{26,11 \text{ gram}}{4,42 \text{ cm} \times 2,75 \text{ cm} \times 2,83 \text{ cm}} = \frac{26,11 \text{ gram}}{34,398 \text{ cm}^3} = 0,759 \frac{\text{gram}}{\text{cm}^3}$$

7. Sampel B2

Eceng Gondok : Buah Pinus
50% : 50%

$$M = 29,59 \text{ gram}$$

$$P = 4,50 \text{ cm}$$

$$L = 2,75 \text{ cm}$$

$$t = 2,86 \text{ cm}$$

$$\rho = \frac{M}{V} = \frac{29,59 \text{ gram}}{4,50 \text{ cm} \times 2,75 \text{ cm} \times 2,86 \text{ cm}} = \frac{29,59 \text{ gram}}{35,392 \text{ cm}^3} = 0,836 \frac{\text{gram}}{\text{cm}^3}$$

8. Sampel C3

Eceng Gondok : Buah Pinus
50% : 50%

$$M = 32,62 \text{ gram}$$

$$P = 4,49 \text{ cm}$$

$$L = 2,76 \text{ cm}$$

$$t = 2,83 \text{ cm}$$

$$\rho = \frac{M}{V} = \frac{32,62 \text{ gram}}{4,49 \text{ cm} \times 2,76 \text{ cm} \times 2,83 \text{ cm}} = \frac{32,62 \text{ gram}}{35,07 \text{ cm}^3} = 0,93 \frac{\text{gram}}{\text{cm}^3}$$

3) Laju Pembakaran Briket

$$\text{Laju Pembakaran} = \frac{m}{t}$$

m = massa sampel (gram)

t = waktu (menit)

1. Sampel A1

m = 29,92 gram

t = 119 menit

$$\text{Laju Pembakaran} = \frac{29,92 \text{ gram}}{119 \text{ menit}} = 0,25 \frac{\text{gram}}{\text{menit}}$$

2. Sampel A2

m = 29,04 gram

t = 123 menit

$$\text{Laju Pembakaran} = \frac{29,04 \text{ gram}}{123 \text{ menit}} = 0,23 \frac{\text{gram}}{\text{menit}}$$

3. Sampel A3

m = 26,11 gram

t = 128 menit

$$\text{Laju Pembakaran} = \frac{26,11 \text{ gram}}{128 \text{ menit}} = 0,2 \frac{\text{gram}}{\text{menit}}$$

4. Sampel A4

m = 30,20 gram

t = 131 menit

$$\text{Laju Pembakaran} = \frac{30,20 \text{ gram}}{131 \text{ menit}} = 0,23 \frac{\text{gram}}{\text{menit}}$$

5. Sampel A5

m = 32,94 gram

t = 135 menit

$$\text{Laju Pembakaran} = \frac{32,94 \text{ gram}}{135 \text{ menit}} = 0,24 \frac{\text{gram}}{\text{menit}}$$

6. Sampel B1

m = 26,11 gram

t = 128 menit

$$\text{Laju Pembakaran} = \frac{26,11 \text{ gram}}{128 \text{ menit}} = 0,2 \frac{\text{gram}}{\text{menit}}$$

7. Sampel B2

m = 29,59 gram

t = 105 menit

$$\text{Laju Pembakaran} = \frac{29,59 \text{ gram}}{105 \text{ menit}} = 0,28 \frac{\text{gram}}{\text{menit}}$$

8. Sampel B3

m = 32,62 gram

t = 97 menit

$$\text{Laju Pembakaran} = \frac{32,62 \text{ gram}}{97 \text{ menit}} = 0,33 \frac{\text{gram}}{\text{menit}}$$

4) Kuat Tekan

Sampel	Maxium Poin Load (N)	Maximum Point Stress (N/cm²)
A1	195.52	19,55
A2	155.87	15,58
A3	177.53	17,75
A4	153.05	15,3
A5	177.04	17,7
B1	177.53	17,75
B2	209.93	20,99
B3	182,7	18,27

Lampiran B

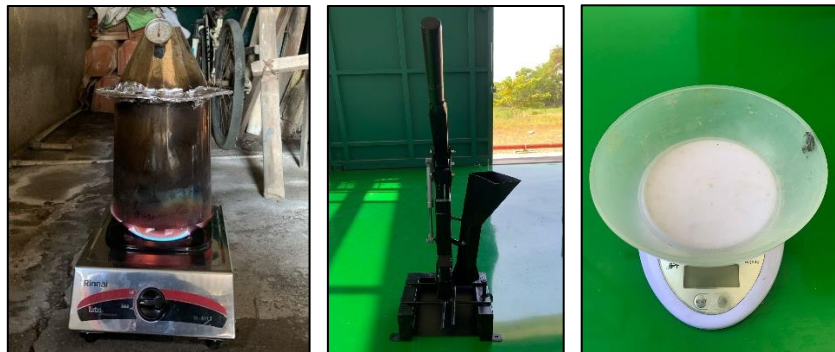
Dokumentasi Kegiatan Penelitian

Bahan Yang digunakan



Lampiran B.1 Eceng Gondok, Buah Pinus dan Molase (*Sumber: Peneliti*)

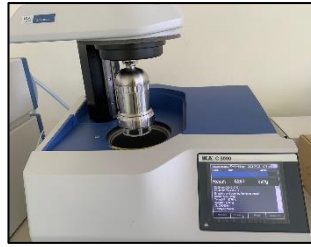
Alat Yang Digunakan



Lampiran B.2 Pirolisis, Pencetak Briket dan Timbangan (*Sumber: Peneliti*)



Lampiran B.3 Furnace, Cawan Krusibel dan Oven (*Sumber: Peneliti*)



Lampiran B.4 Timbangan Digital, *Bomb Calorimeter* dan *Universal Testing Machine* (Sumber: Peneliti)



Lampiran B.5 Ayakan, Jangka Sorong dan Loyang (Sumber: Peneliti)

Proses Pembuatan Briket



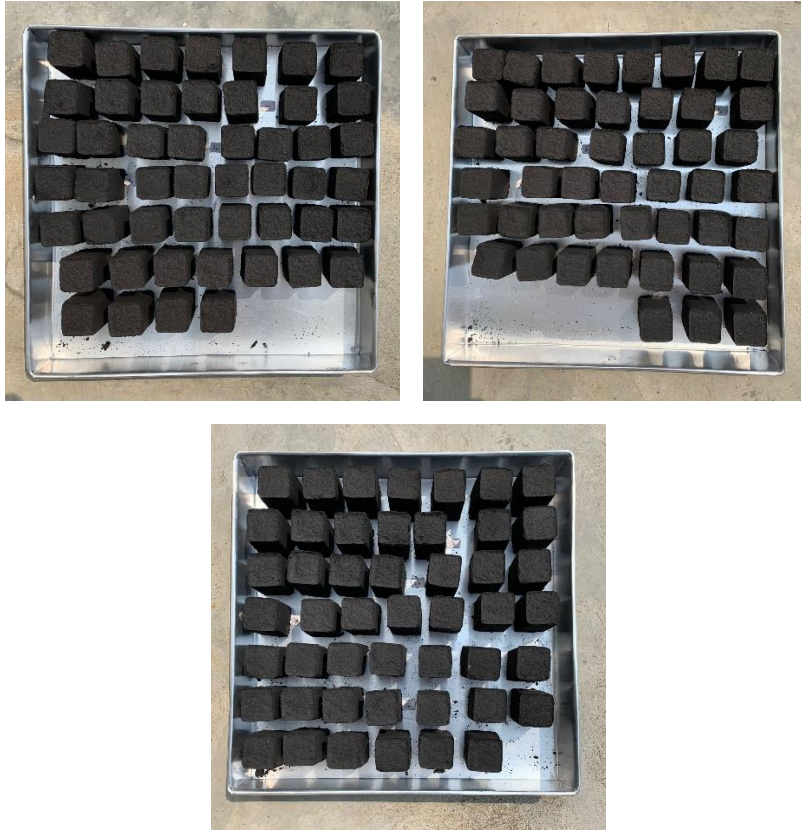
Lampiran B.6 Pengarangan, Penghalusan dan Pengayakan (Sumber: Peneliti)



Lampiran B.7 Penimbangan Arang, Molase, Pencampuran dan Pencetakan (Sumber: Peneliti)

Lampiran C

Produk Briket



Lampiran C.1 Briket Eceng Gondok dan Buah Pinus (*Sumber: Peneliti*)

BIODATA MAHASISWA



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Riwayat Pendidikan

SD Negeri Sukapura 06 Petang : 2007-2013
SMP Negeri 289 Jakarta : 2013-2016
SMA Negeri 83 Jakarta : 2016-2019