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LAMPIRAN A. DATA HASIL PENELITIAN

A₁. Data hasil pengujian nilai kalor biobriket sebelum torefaksi

BRIKET NO.	BERAT (Gram)	HHV (Cal/Gram)
1	1.006	4934.06
2	1.001	4777.11
3	1.001	5043.91
RATA-RATA		4918.36

A₂. Data hasil pengujian nilai kalor biobriket akibat pengaruh torefaksi

SUHU (°C)	WAKTU TINGGAL (menit)	HHV BAGIAN (cal/gram)			HHV RATA-RATA (cal/gram)	
		ATAS	TENGAH	BAWAH		
200	15	4989.00	5120.23	5076.55	5061.927	5110.74
	25	5095.84	5126.04	5061.78	5094.553	
	35	5300.73	5213.99	5012.50	5175.740	
250	15	5425.65	5384.22	5233.01	5347.627	5427.178
	25	5452.80	5552.58	5367.13	5457.503	
	35	5478.75	5510.54	5439.92	5476.403	
300	15	6219.40	5850.55	5670.31	5913.420	5919.567
	25	6204.46	6118.59	5721.05	6014.700	
	35	5969.38	5877.37	5644.99	5830.580	

A₃. Data berat biobriket sesudah dan sebelum uji torefaksi

Suhu (°C)	Waktu Tinggal (Menit)	Berat Sebelum (Gram)	Berat Sesudah (Gram)	Persentase Pengurangan Berat (%)
200	15	16.281	15.684	3.81
	25	15.789	14.367	9.90
	35	16.211	14.198	14.18
250	15	16.380	12.277	33.42
	25	15.230	8.975	69.69
	35	15.890	7.852	102.37
300	15	16.271	6.6873	143.31
	25	14.946	5.630	165.47
	35	15.556	7.1823	116.59

LAMPIRAN B. Final Report Hasil Uji Bom Kalorimeter

B₁. 200⁰ C, 15 menit, Bagian Atas

CALORIMETRY		FINAL REPORT	
DATE	01/26/12	TIME	1317 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	1	SAMPLE WT.	1.004
INIT. TEMP	29.884	ACID	E1 0
		SFR %	E2 0
TEMP RISE	2.1050	FUSE	E3 42.55
E VALUE	2399.76		
GROSS HEAT	4989.00	CAL/G	
	ADIABATIC	DYNAMIC	

B₅. 200⁰ C, 25 menit, Bagian Tengah

CALORIMETRY		FINAL REPORT	
DATE	01/26/12	TIME	1450 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	5	SAMPLE WT.	1.003
INIT. TEMP	27.780	ACID	E1 0
		SFR %	E2 0
TEMP RISE	2.1582	FUSE	E3 37.95
E VALUE	2399.76		
GROSS HEAT	5126.04	CAL/G	
	ADIABATIC	DYNAMIC	GM = 151261

B₂. 200⁰ C, 15 menit, Bagian Tengah

CALORIMETRY		FINAL REPORT	
DATE	01/26/12	TIME	1345 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	2	SAMPLE WT.	1.002
INIT. TEMP	27.038	ACID	E1 0
		SFR %	E2 0
TEMP RISE	2.1546	FUSE	E3 40.25
E VALUE	2399.76		
GROSS HEAT	5120.23	CAL/G	
	ADIABATIC	DYNAMIC	

B₆. 200⁰ C, 25 menit, Bagian Bawah

CALORIMETRY		FINAL REPORT	
DATE	01/26/12	TIME	1516 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	6	SAMPLE WT.	1.005
INIT. TEMP	28.188	ACID	E1 0
		SFR %	E2 0
TEMP RISE	2.1370	FUSE	E3 41.4
E VALUE	2399.76		
GROSS HEAT	5061.78	CAL/G	
	ADIABATIC	DYNAMIC	

B₃. 200⁰ C, 15 menit, Bagian Bawah

CALORIMETRY		FINAL REPORT	
DATE	01/26/12	TIME	1412 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	3	SAMPLE WT.	1.002
INIT. TEMP	26.194	ACID	E1 0
		SFR %	E2 0
TEMP RISE	2.1378	FUSE	E3 43.7
E VALUE	2399.76		
GROSS HEAT	5076.55	CAL/G	
	ADIABATIC	DYNAMIC	

B₇. 200⁰ C, 35 menit, Bagian Atas

CALORIMETRY		FINAL REPORT	
DATE	01/26/12	TIME	1541 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	7	SAMPLE WT.	1.001
INIT. TEMP	29.105	ACID	E1 0
		SFR %	E2 0
TEMP RISE	2.2278	FUSE	E3 40.25
E VALUE	2399.76		
GROSS HEAT	5300.73	CAL/G	
	ADIABATIC	DYNAMIC	

B₄. 200⁰ C, 25 menit, Bagian Atas

CALORIMETRY		FINAL REPORT	
DATE	01/26/12	TIME	1431 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	4	SAMPLE WT.	1.000
INIT. TEMP	26.105	ACID	E1 0
		SFR %	E2 0
TEMP RISE	2.1388	FUSE	E3 36.8
E VALUE	2399.76		
GROSS HEAT	5095.84	CAL/G	
	ADIABATIC	DYNAMIC	GM = 4095

B₈. 200⁰ C, 35 menit, Bagian Tengah

CALORIMETRY		FINAL REPORT	
DATE	01/26/12	TIME	1604 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	8	SAMPLE WT.	1.001
INIT. TEMP	29.698	ACID	E1 0
		SFR %	E2 0
TEMP RISE	2.1926	FUSE	E3 42.55
E VALUE	2399.76		
GROSS HEAT	5213.99	CAL/G	
	ADIABATIC	DYNAMIC	

B₉. 200⁰ C, 35 menit, Bagian Bawah

CALORIMETRY		FINAL REPORT	
DATE	01/26/12	TIME	1621 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	9	SAMPLE WT.	1.005
INIT. TEMP	30.095	ACID	E1 0
		SFR %C	E2 0
		FUSE	E3 42.55
TEMP RISE	2.1169		
E VALUE	2399.76		
GROSS HEAT	5012.50	CAL/G	
	ADIABATIC	DYNAMIC	

B₁₃. 250⁰ C, 25 menit, Bagian Atas

CALORIMETRY		FINAL REPORT	
DATE	27/01/12	TIME	1034 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	4	SAMPLE WT.	1.001
INIT. TEMP	29.306	ACID	E1 0
		SFR %C	E2 0
		FUSE	E3 42.55
TEMP RISE	2.2922		
E VALUE	2399.76		
GROSS HEAT	5452.80	CAL/G	
	ADIABATIC	DYNAMIC	

B₁₀. 250⁰ C, 15 menit, Bagian Atas

CALORIMETRY		FINAL REPORT	
DATE	27/01/12	TIME	0936 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	1	SAMPLE WT.	1.003
INIT. TEMP	27.534	ACID	E1 0
		SFR %C	E2 0
		FUSE	E3 43.7
TEMP RISE	2.2859		
E VALUE	2399.76		
GROSS HEAT	5425.65	CAL/G	
	ADIABATIC	DYNAMIC	

B₁₄. 250⁰ C, 25 menit, Bagian Tengah

CALORIMETRY		FINAL REPORT	
DATE	27/01/12	TIME	1051 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	5	SAMPLE WT.	1.002
INIT. TEMP	29.999	ACID	E1 0
		SFR %C	E2 0
		FUSE	E3 37.95
TEMP RISE	2.3342		
E VALUE	2399.76		
GROSS HEAT	5552.58	CAL/G	
	ADIABATIC	DYNAMIC	

B₁₁. 250⁰ C, 15 menit, Bagian Tengah

CALORIMETRY		FINAL REPORT	
DATE	27/01/12	TIME	0955 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	2	SAMPLE WT.	1.001
INIT. TEMP	28.179	ACID	E1 0
		SFR %C	E2 0
		FUSE	E3 40.25
TEMP RISE	2.2626		
E VALUE	2399.76		
GROSS HEAT	5384.22	CAL/G	
	ADIABATIC	DYNAMIC	

B₁₅. 250⁰ C, 25 menit, Bagian Bawah

CALORIMETRY		FINAL REPORT	
DATE	27/01/12	TIME	1110 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	6	SAMPLE WT.	1.004
INIT. TEMP	30.273	ACID	E1 0
		SFR %C	E2 0
		FUSE	E3 41.4
TEMP RISE	2.2627		
E VALUE	2399.76		
GROSS HEAT	5367.13	CAL/G	
	ADIABATIC	DYNAMIC	

B₁₂. 250⁰ C, 15 menit, Bagian Bawah

CALORIMETRY		FINAL REPORT	
DATE	27/01/12	TIME	1012 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	3	SAMPLE WT.	1.003
INIT. TEMP	28.787	ACID	E1 0
		SFR %C	E2 0
		FUSE	E3 42.55
TEMP RISE	2.2049		
E VALUE	2399.76		
GROSS HEAT	5233.01	CAL/G	
	ADIABATIC	DYNAMIC	

B₁₆. 250⁰ C, 35 menit, Bagian Atas

CALORIMETRY		PRELIMINARY REPORT	
DATE	27/01/12	TIME	1134 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	7	SAMPLE WT.	1.002
INIT. TEMP	29.678	CCF VALUE	0
TEMP RISE	2.2876		
E VALUE	2399.76		
GROSS HEAT	5478.75	CAL/G	
	ADIABATIC	DYNAMIC	

B17. 250⁰ C, 35 menit, Bagian Tengah

CALORIMETRY PRELIMINARY REPORT			
DATE	27/01/12	TIME	1157 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	8	SAMPLE WT.	0.999
INIT. TEMP	28.728	COF VALUE	0
TEMP RISE	2.2939		
E VALUE	2399.76		
GROSS HEAT	5510.54	CAL/G	
	ADIABATIC	DYNAMIC	

B21. 300⁰ C, 15 menit, Bagian Bawah

CALORIMETRY FINAL REPORT			
DATE	30/01/12	TIME	1123 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	3	SAMPLE WT.	1.000
INIT. TEMP	26.975	ACID	E1 0
		SFR %C	E2 0
TEMP RISE	2.3782	FUSE	E3 36.8
E VALUE	2399.76		
GROSS HEAT	5670.31	CAL/G	
	ADIABATIC	DYNAMIC	Bawah

B18. 250⁰ C, 35 menit, Bagian Bawah

250 ⁰ C 35' Bawah CALORIMETRY FINAL REPORT			
DATE	30/01/12	TIME	1405 HRS
CHANNEL	1	CAL. ID	1
*SAMPLE ID	10	SAMPLE WT.	1.005
INIT. TEMP	29.226	ACID	E1 0
		SFR %C	E2 0
TEMP RISE	2.2992	FUSE	E3 50.6
E VALUE	2399.76		
GROSS HEAT	5439.92	CAL/G	
	ADIABATIC	DYNAMIC	

B22. 300⁰ C, 25 menit, Bagian Atas

CALORIMETRY FINAL REPORT			
DATE	30/01/12	TIME	1201 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	4	SAMPLE WT.	1.005
INIT. TEMP	24.996	ACID	E1 0
		SFR %C	E2 0
TEMP RISE	2.6175	FUSE	E3 46
E VALUE	2399.76		
GROSS HEAT	6204.46	CAL/G	
	ADIABATIC	DYNAMIC	Atas

B19. 300⁰ C, 15 menit, Bagian Atas

CALORIMETRY FINAL REPORT			
DATE	30/01/12	TIME	0937 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	1	SAMPLE WT.	1.004
INIT. TEMP	27.227	ACID	E1 0
		SFR %C	E2 0
TEMP RISE	2.6169	FUSE	E3 35.65
E VALUE	2399.76		
GROSS HEAT	6219.40	CAL/G	
	ADIABATIC	DYNAMIC	Atas

B23. 300⁰ C, 25 menit, Bagian Tengah

CALORIMETRY FINAL REPORT			
DATE	30/01/12	TIME	1220 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	5	SAMPLE WT.	1.004
INIT. TEMP	26.474	ACID	E1 0
		SFR %C	E2 0
TEMP RISE	2.5780	FUSE	E3 43.7
E VALUE	2399.76		
GROSS HEAT	6118.59	CAL/G	
	ADIABATIC	DYNAMIC	Tengah

B20. 300⁰ C, 15 menit, Bagian Tengah

CALORIMETRY FINAL REPORT			
DATE	30/01/12	TIME	1322 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	8	SAMPLE WT.	1.002
INIT. TEMP	29.028	ACID	E1 0
		SFR %C	E2 0
TEMP RISE	2.4655	FUSE	E3 27.6
E VALUE	2399.76		
GROSS HEAT	5877.37	CAL/G	
	ADIABATIC	DYNAMIC	Tengah

B24. 300⁰ C, 25 menit, Bagian Bawah

CALORIMETRY FINAL REPORT			
DATE	30/01/12	TIME	1244 HRS
CHANNEL	1	CAL. ID	1
SAMPLE ID	6	SAMPLE WT.	1.000
INIT. TEMP	28.337	ACID	E1 0
		SFR %C	E2 0
TEMP RISE	2.4022	FUSE	E3 43.7
E VALUE	2399.76		
GROSS HEAT	5721.05	CAL/G	
	ADIABATIC	DYNAMIC	Bawah

B25. 300⁰ C, 35 menit, Bagian Atas

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CALORIMETRY   FINAL REPORT
DATE 30/01/12   TIME 1304 HRS
CHANNEL 1       CAL. ID 1
SAMPLE ID 7     SAMPLE WT. 1.002
INIT. TEMP 28.932 ACID E1 0
                SFR %C E2 0
TEMP RISE 2.5116 FUSE E3 46
E VALUE 2399.76
GROSS HEAT 5965.38 CAL/G Atas
                ADIABATIC DYNAMIC

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B26. 300⁰ C, 35 menit, Bagian Tengah

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CALORIMETRY   FINAL REPORT
DATE 30/01/12   TIME 1322 HRS
CHANNEL 1       CAL. ID 1
SAMPLE ID 8     SAMPLE WT. 1.002
INIT. TEMP 29.028 ACID E1 0
                SFR %C E2 0
TEMP RISE 2.4655 FUSE E3 27.6
E VALUE 2399.76
GROSS HEAT 5877.37 CAL/G Tengah
                ADIABATIC DYNAMIC

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B27. 300⁰ C, 35 menit, Bagian Bawah

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CALORIMETRY   FINAL REPORT
DATE 30/01/12   TIME 1342 HRS
CHANNEL 1       CAL. ID 1
SAMPLE ID 9     SAMPLE WT. 0.098
INIT. TEMP 29.130 ACID E1 0
                SFR %C E2 0
TEMP RISE 2.3234 FUSE E3 43.7
E VALUE 2399.76
GROSS HEAT 56449.9 CAL/G Bawah
                ADIABATIC DYNAMIC

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LAMPIRAN C.FOTO-FOTO KEGIATAN PENELITIAN



C₁. Instalasi peralatan uji torefaksi



C₃. *Setting* awal bom kalorimeter



C₂. Uji torefaksi



C₄. Uji nilai kalor