

LAMPIRAN

LAMPIRAN 1 PERHITUNGAN UJI KIMIA DAN UJI FISIK

1. Kadar air

Komposisi	U1				U2				U3				Rerata KA
	Wo	W	Wso	KA	Wo	W	Wso	KA	Wo	W	Wso	KA	
CK100	1.0032	0.9354	1.0032	6.758373	1.0034	0.9394	1.0034	6.378314	1.0002	0.9418	1.0002	5.838832	6.325173
CK75	1.0042	0.9216	1.0042	8.225453	1.0079	0.9818	1.0079	2.589543	1.001	0.9837	1.001	1.728272	4.181089
Ck50	1.0022	0.9853	1.0022	1.68629	1.0007	0.9657	1.0007	3.497552	1.0043	0.9772	1.0043	2.698397	2.627413
CK25	1.0024	0.985	1.0024	1.735834	1.0014	0.9802	1.0014	2.117036	1.0013	0.9827	1.0013	1.857585	1.903485
PP100	1.0003	0.9813	1.0003	1.89943	1.001	1.0002	1.001	0.07992	1.0026	0.9992	1.0026	0.339118	0.772823

CK75:25PP

$$\% \text{ kadar air} = \frac{W_o - W}{W_{so}} \times 100\%$$

$$U1 = \frac{1,0042 - 0,9216}{1,0042} \times 100\% = 8,2254\%$$

$$U2 = \frac{1,0079 - 0,9818}{1,0079} \times 100\% = 2,5895\%$$

$$U3 = \frac{1,001 - 0,9837}{1,001} \times 100\% = 1,7282\%$$

$$\frac{U1 + U2 + U3}{3} = \frac{8,2254 + 2,5895 + 1,7282}{3} = 4,181033\%$$

Perhitungan yang sama untuk komposisi yang lain.

2. Kadar abu

Komposisi	U1			U2			U3			Rerata KA
	W0	Wdso	KA	W0	Wdso	KA	W0	Wdso	KA	
CK 100	0.0141	1	1.405923	0.0002	1.0008	0.019984	0.0009	1.0002	0.089982	0.505296
CK75	0.0297	1.0061	2.951993	0.0333	1.002	3.323353	0.5021	1.0007	50.17488	18.81674
CK50	0.1099	1.0004	10.98561	0.0462	1.0003	4.618614	0.1167	1.0005	11.66417	9.089463
CK25	0.0323	1.0043	3.21617	0.0218	1.0027	2.17413	0.044	1.0035	4.384654	3.258318
PP100	0.0026	1	0.259766	0.0009	1.0025	0.089776	0.0489	1.003	4.875374	1.741639

CK75:25PP

$$\% \text{ kadar abu} = \frac{W_o}{W_{dso}} \times 100\%$$

$$U1 = \frac{0,0297}{1,0061} \times 100\% = 2,9519\%$$

$$U2 = \frac{0,0333}{1,002} \times 100\% = 3,3233\%$$

$$U3 = \frac{0,5021}{1,0007} \times 100\% = 50,1748\%$$

$$\frac{U1 + U2 + U3}{3} = \frac{2,9519 + 3,3233 + 50,1748}{3} = 18,8166\%$$

Perhitungan yang sama untuk komposisi yang lain.

3. Kadar zat terbang

CK75:25PP

$$\% \text{ kadar zat terbang} = \frac{W_o - W}{W_o} \times 100\%$$

$$U1 = \frac{1,0021-0,4055}{1,0021} \times 100\% = 59,5359\%$$

$$U2 = \frac{1,0003-0,4677}{1,0003} \times 100\% = 53,244\%$$

$$U3 = \frac{1,0066-0,5860}{1,0066} \times 100\% = 41,7842\%$$

$$\frac{U1+U2+U3}{3} = \frac{59,5359+53,244+41,7842}{3} = 51,521033\%$$

Perhitungan yang sama untuk komposisi yang lain.

Komposisi	U1				U2				U3				Rerata KZT
	W	Wo	W	KZT	W	Wo	W	KZT	W	Wo	W	KZT	
CK 100	1.0002	0.7582	1.0002	24.19516	1.0006	0.7381	1.0006	26.23426	1.0007	0.4986	1.0007	50.17488	33.53477
CK 75	1.0021	0.4055	1.0021	59.53498	1.0003	0.4677	1.0003	53.24403	1.0066	0.586	1.0066	41.78422	51.52108
CK 50	1.0027	0.4395	1.0027	56.16835	1.0012	0.4452	1.0012	55.53336	1.0013	0.5466	1.0013	45.41097	52.37089
CK 25	1.0042	0.3306	1.0042	67.07827	1.0001	0.3381	1.0001	66.19338	1.0045	0.5052	1.0045	49.70632	60.99266
PP 100	1	0.6365	1	36.35	1.0008	0.0133	1.0008	98.67106	1.0005	0.1614	1.0005	83.86807	72.96304

4. Karbon tetap

Komposisi	U1				U2				U3				Rerata Karbon Tetap
	K.Abu	K.Air	K.ZT	Karbon Tetap	K.Abu	K.Air	K.ZT	Karbon Tetap	K.Abu	K.Air	K.ZT	Karbon Tetap	
CK100:0PP	1.405923	6.758373206	24.19516	67.64054283	0.019984	6.378314	26.23426	67.36744282	0.089982	5.838832	50.17488	43.89630818	59.63476461
CK75 :25PP	2.951993	8.225453097	59.53498	29.28757735	3.323353	2.589543	53.24403	40.84307759	50.17488	1.728272	41.78422	6.312626565	25.48109384
CK50:50PP	10.98561	1.686290162	56.16835	31.15975437	4.618614	3.497552	55.53336	36.35047432	11.66417	2.698397	45.41097	40.22646945	35.91223271
CK25:75PP	3.21617	1.735833998	67.07827	27.96972474	2.17413	2.117036	66.19338	29.51545319	4.384654	1.857585	49.70632	44.0514396	33.84553918
CK0:100PP	0.259766	1.899430171	36.35	61.49080383	0.089776	0.07992	98.67106	1.159240771	4.875374	0.339118	83.86807	10.91744186	24.52249549

CK75:25PP

% karbon tetap = 100 % - (%kadar air +%kadar abu+%kadar zat terbang)

% karbon tetap = 100% - (4,1810%+18,8167%+51,5210%) = 25,4810%

Perhitungan yang sama untuk komposisi yang sama.

5. Nilai kalor

CK75:25PP

Nilai kalor = 9292,45 kal/gr

Hasil Analisis Nilai Kalor



PT. Maju Jaya Modern
Ruko Palais De Paris
Blok H No. 9 Cikarang

REPORT OF ANALYSIS

COA No. 06-XII/21/RJS

Customer : Giovanni Robertho Wolfram
Sample Identification : Sampel Briket
Date of Analysis : November 15, 2021 to Desember 05, 2021

Sama Sampel	Parameter/ Metode	Hasil	Satuan
Briket KJ 75	Gross Energi (Bomb Kalorimeter)	9.605,21	Kkal/kg
Briket CK 50	Gross Energi (Bomb Kalorimeter)	8.155,53	Kkal/kg
Briket 3 PP100%	Gross Energi (Bomb Kalorimeter)	10.808,30	Kkal/kg
Briket 4 CK100%	Gross Energi (Bomb Kalorimeter)	2.902,31	Kkal/kg
Briket 5 KJ100%	Gross Energi (Bomb Kalorimeter)	5.557,72	Kkal/kg
Briket 6 KJ 25	Gross Energi (Bomb Kalorimeter)	9.063,35	Kkal/kg
Briket 7 KJ 50	Gross Energi (Bomb Kalorimeter)	9.378,77	Kkal/kg
Briket 8 CK 75	Gross Energi (Bomb Kalorimeter)	9.292,45	Kkal/kg
Briket 9 CK 25	Gross Energi (Bomb Kalorimeter)	9.094,69	Kkal/kg

PT. Maju Jaya Modern
Services Industry

Ryan Jonathan

Komposisi	Nilai Kalor
CK100:0PP	2902,31 Kkal/kg
CK75:25PP	9292,45 Kkal/kg
CK50:50PP	8155,53 Kkal/kg
CK25:75PP	9094,69 Kkal/kg
CK0:100PP	10808,30 Kkal/kg

6. Kuat tekan

CK75:25PP

$$\text{Kuat tekan (P)} = \frac{F}{A}$$

$$U1 = \frac{525,7657 \text{ Kgf}}{12,58 \text{ cm}^2} = 41,7937 \text{ Kgf/cm}^2$$

$$U2 = \frac{524,746 \text{ Kgf}}{12,58 \text{ cm}^2} = 41,7127 \text{ Kgf/cm}^2$$

$$\frac{U1+U2}{2} = 41,7532 \text{ Kgf/cm}^2$$

$$P = \frac{41,7532 \text{ Kgf/cm}^2}{0,83} = 50,305 \text{ Kgf/cm}^2$$

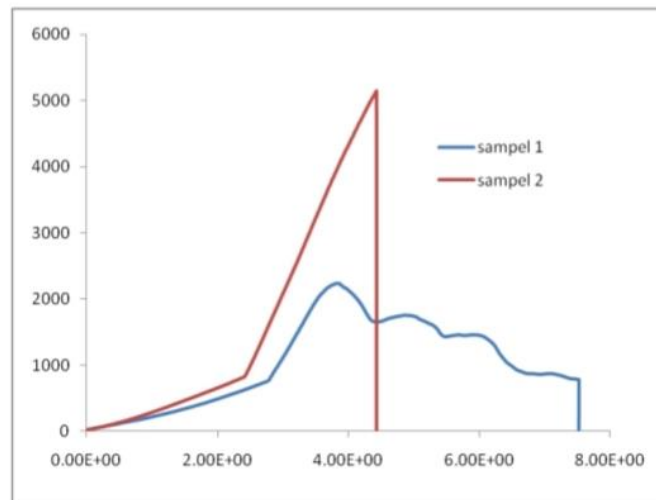


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4. Sampel GR04 CK 25

Sample No.	Vert. mm	Hori. mm	Sample Modul MPa	Yield Stress MPa	Yield Elon %	Max. Stress MPa	Max. Elon %	Break Stress MPa	Break Elon %	Max. Load N
1	37	34	0	1.78	11.3	1.78	11.26	0.62	22.1	2244
2	37	34	0	0	0	4.09	13.03	4.09	13	5148
Ave.	37	34	0	1.78	11.3	2.94	12.15	2.36	17.6	3696
Std dev.	0	0	0	0	0	1.63	1.25	2.45	6.4	2053.44

Grafik hasil uji



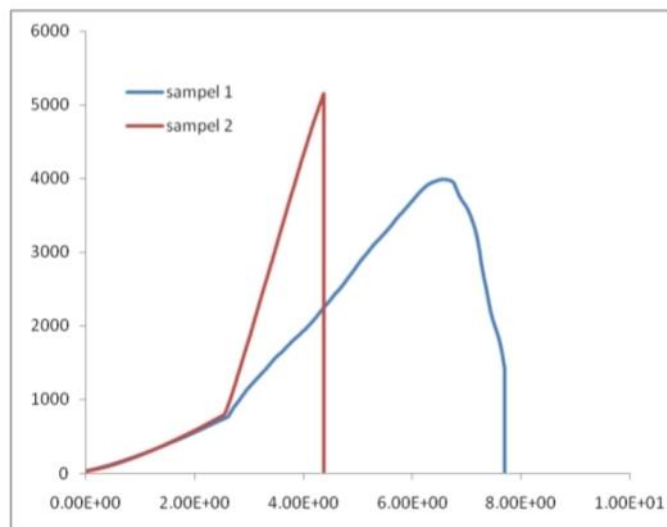


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5. Sampel GR05 CK 50

Sample No.	Vert. mm	Hori. mm	Sample Modul MPa	Yield Stress MPa	Yield Elon %	Max. Stress MPa	Max. Elon %	Break Stress MPa	Break Elon %	Max. Load N
1	37	34	0	3.17	19.2	3.17	19.24	1.12	22.6	3992
2	37	34	0	0	0	4.1	12.85	4.09	12.9	5154
Ave.	37	34	0	3.17	19.2	3.64	16.05	2.61	17.8	4573
Std dev.	0	0	0	0	0	0.66	4.52	2.1	6.9	821.66

Grafik hasil uji



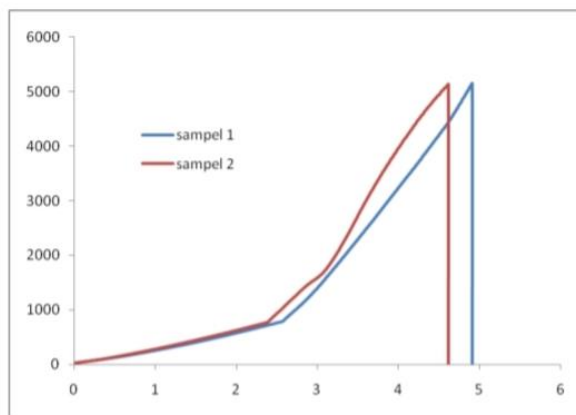


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6. Sampel GR06 CK 75

Sample No.	Vert. mm	Hori. mm	Sample Modul MPa	Yield Stress MPa	Yield Elon %	Max. Stress MPa	Max. Elon %	Break Stress MPa	Break Elon %	Max. Load N
1	37	34	0	0	0	4.1	14.44	4.09	14.4	5156
2	37	34	0	0	0	4.09	13.59	4.09	13.6	5146
Ave.	37	34	0	0	0	4.1	14.02	4.09	14	5151
Std dev.	0	0	0	0	0	0.01	0.6	0	0.6	7.07

Grafik hasil uji



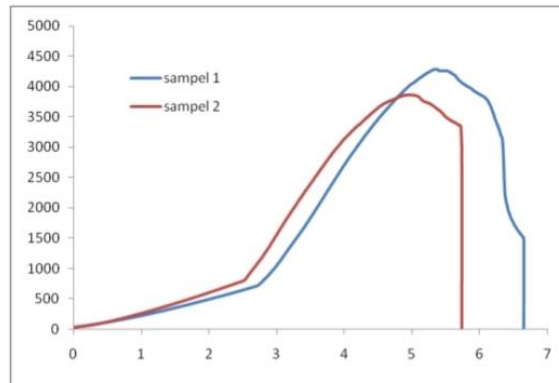


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7. Sampel GR07 PP 100

Sample No.	Vert. mm	Hori. mm	Sample Modul MPa	Yield Stress MPa	Yield %	Max. Stress MPa	Max. %	Break Stress MPa	Break %	Max. Load N
1	37	40	0	2.9	13.3	2.9	13.33	1.01	16.6	4286
2	37	40	0	2.61	12.4	2.61	12.35	2.27	14.3	3866
Ave.	37	40	0	2.76	12.9	2.76	12.84	1.64	15.5	4076
Std dev.	0	0	0	0.21	0.6	0.21	0.69	0.89	1.6	296.98

Grafik hasil uji



Bekasi, 29 November 2021


Ryan Jonathan
PT. Maju Jaya Modei

Perhitungan yang sama untuk komposisi yang lain.

Komposisi	U1			U2			Rerata
	F	A	P	F	A	P	
Ck75 (1)	525,7657	12,58	50,35395	524,746	12,58	50,25629	50,30512
CK50 (2)	407,184	12,58	38,99707	525,708	12,58	50,34842	44,67275
CK25 (3)	228,888	12,58	21,9212	525,096	12,58	50,28981	36,1055
PP100 (4)	437,172	14,8	35,58873	394,332	14,8	32,10127	33,845

Catatan : lampiran perhitungan untuk komposisi briket CK100:0PP, CK50:50PP, CK25:75PP dan CK0:100PP menggunakan rumus dan cara yang sama seperti diuraikan diatas.

LAMPIRAN 2 KEGIATAN PENELITIAN

Gambar Kegiatan



Tempat pembuangan akhir (TPA) sampah Kefamenanu



Sampah plastik yang telah dicuci



Cangkang kemiri yang telah diaranngkan



Proses penimbangan plastik



Pelelehan plastik



Proses pencetakan briket



Penjemuran briket yang telah dipres dan dicetak



Briquet yang telah kering



Proses pendinginan dalam desikator saat proses uji kimia (kadar abu, kadar abu dan kadar zat terbang)



Proses packing sampel untuk uji nilai kalor dan kuat tekan
