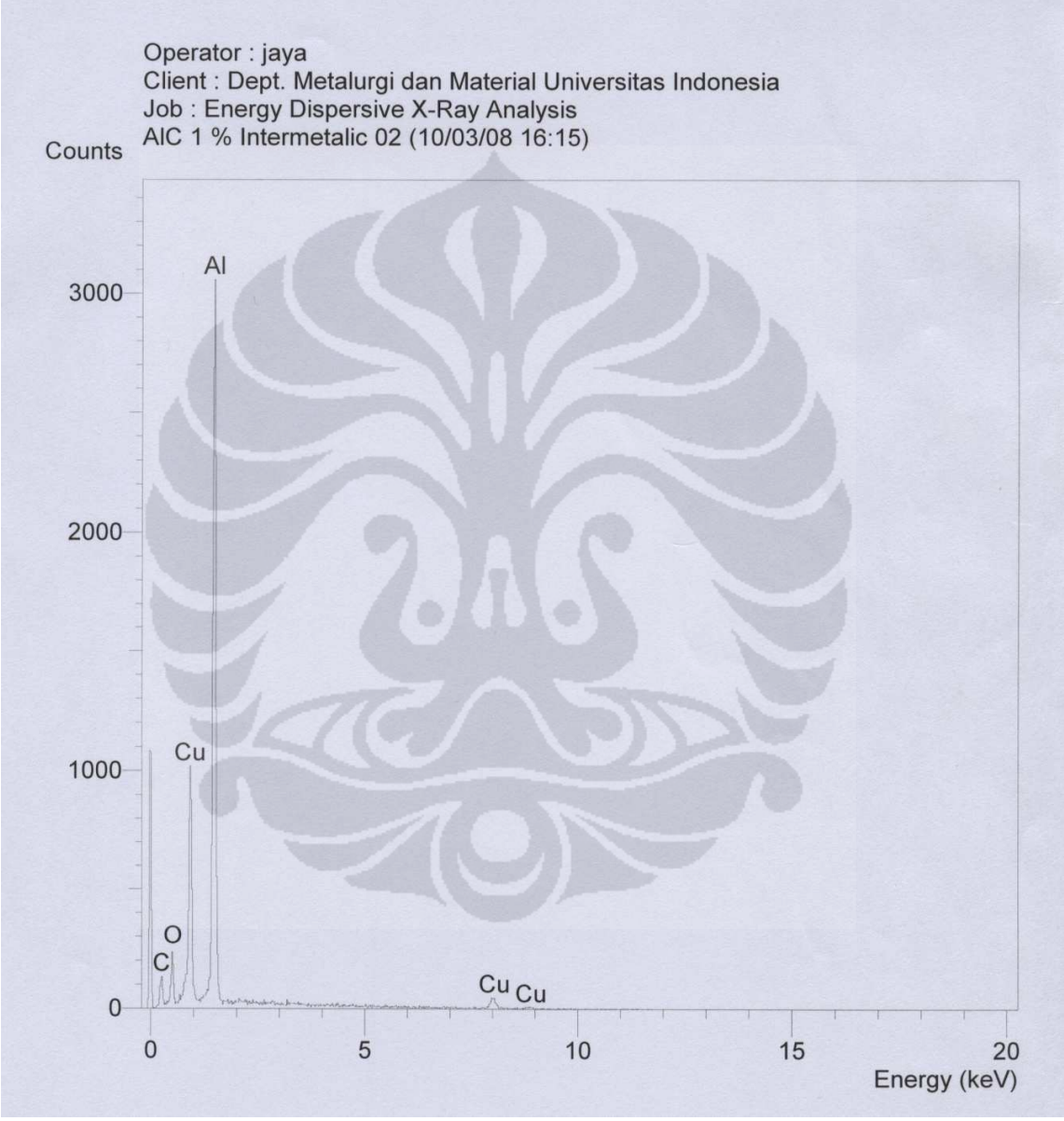
LAMPIRAN

Data Komposisi Hasil Uji EDS untuk Sample Al-C 1%Vf Grafit

a. Fasa berwarna putih (intermetalik)



SEMQuant results. Listed at 16:19:33 on 10/03/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: AlC 1 % Intermetalic 02

System resolution = 60 eV

Quantitative method: ZAF (3 iterations).
Analysed all elements and normalised results.

1 peak possibly omitted: -0.02 keV

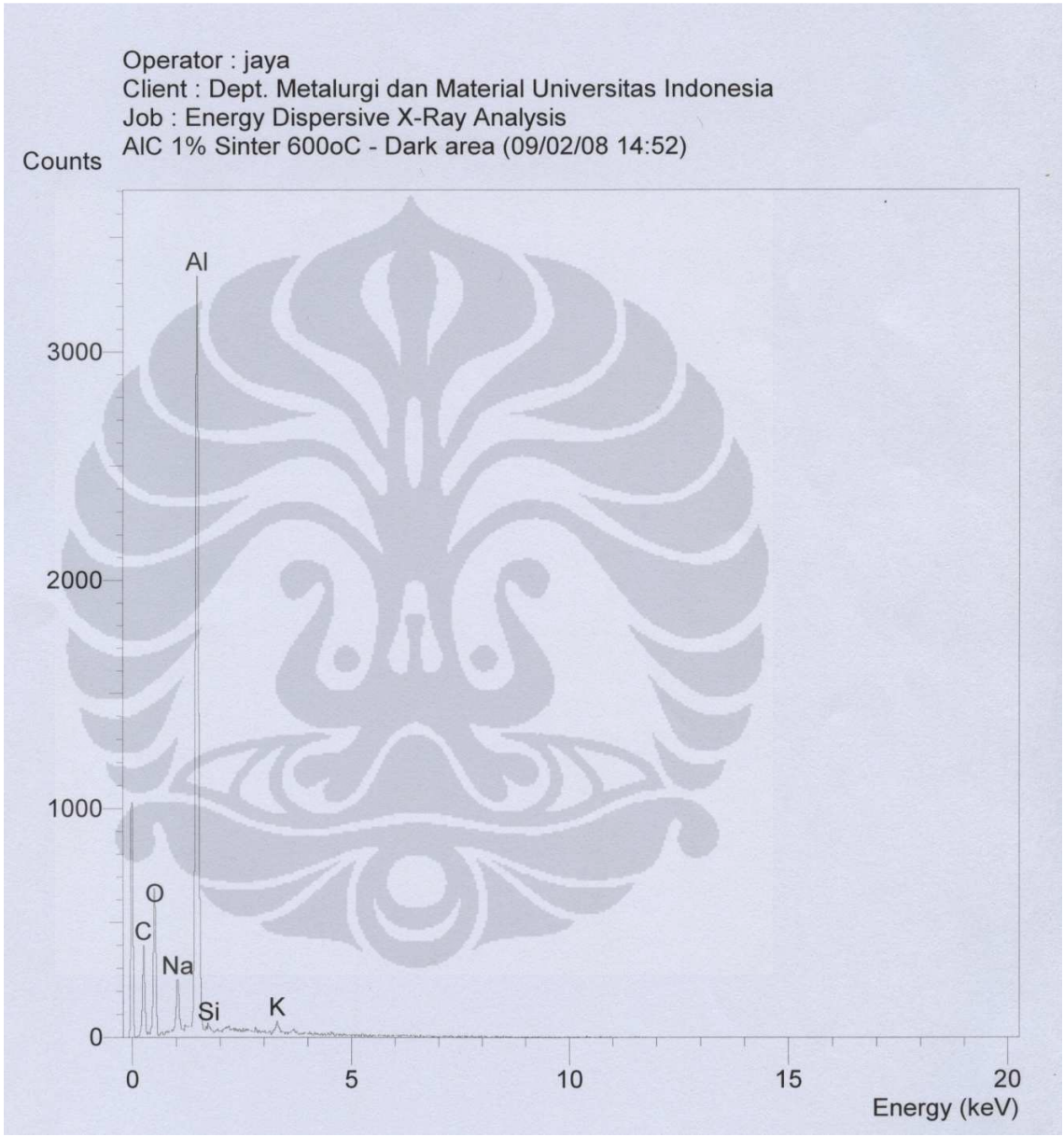
Standards :

C K	Carbon Low	13/09/06
O K	AL2O3	22/03/06
Al K	CeAl2	03/03/07
Cu K	Copper	22/03/06

Elmt	Spect. Type	Element %	Atomic %
C K	ED	1.71	5.04
O K	ED	3.13	6.95
Al K	ED	46.11	60.63
Cu K	ED	49.05	27.38
Total		100.00	100.00

* = <2 Sigma

b. Fasa berwarna gelap (hitam)



SEMQuant results. Listed at 14:53:43 on 09/02/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: AlC 1% Sinter 600oC - Dark area

System resolution = 60 eV

Quantitative method: ZAF (3 iterations).
Analysed all elements and normalised results.

2 peaks possibly omitted: -0.02, 2.16 keV

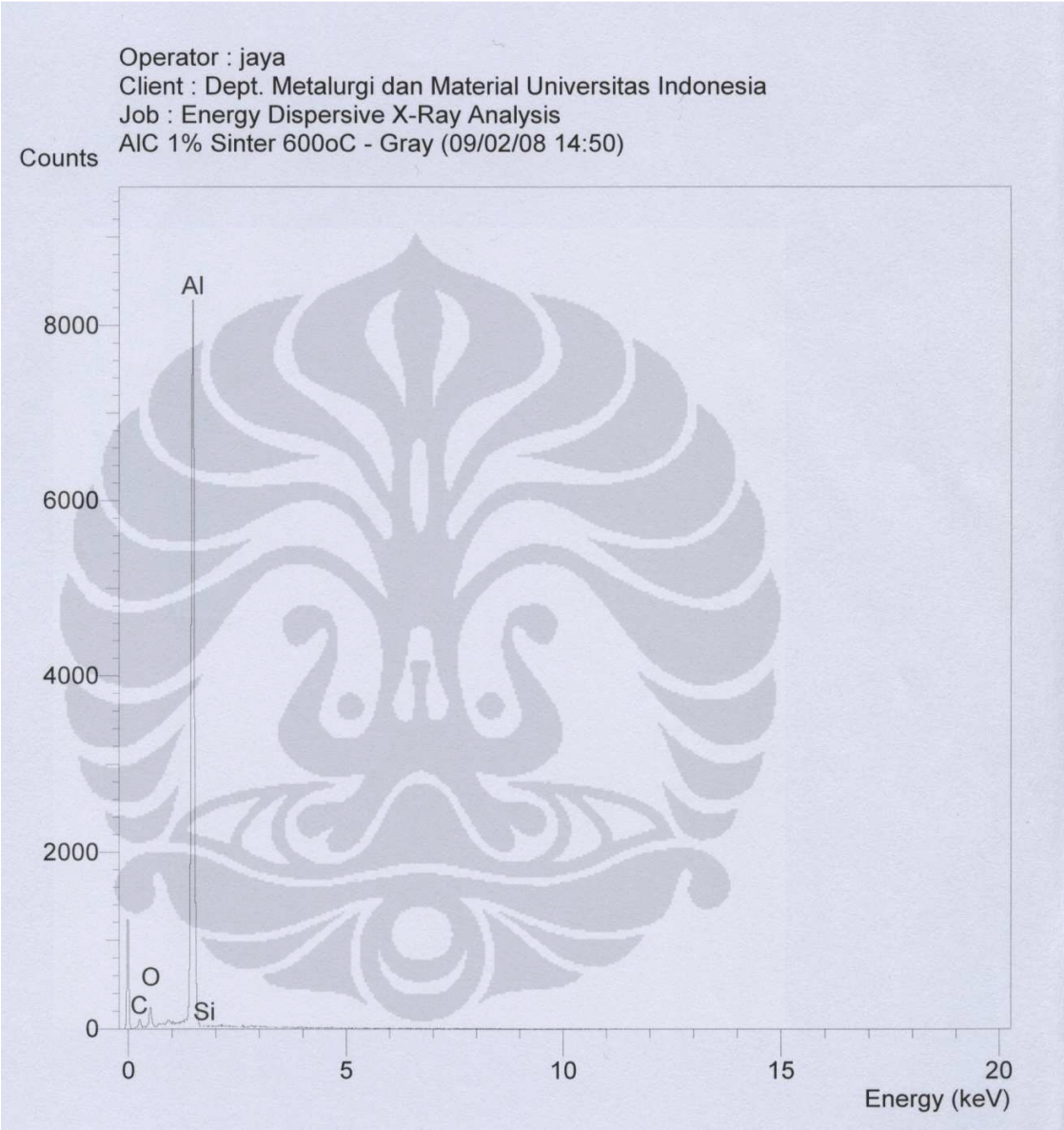
Standards :

C	K	Carbon Low 13/09/06
O	K	AL2O3 22/03/06
Na	K	Orthoclase 22/03/06
Al	K	CeAl2 03/03/07
Si	K	Low Carbon Steel 13/09/06
K	K	Orthoclase 22/03/06

Elmt	Spect. Type	Element %	Atomic %
C K	ED	5.28	9.73
O K	ED	22.15	30.63
Na K	ED	6.79	6.53
Al K	ED	62.01	50.83
Si K	ED	0.66	0.52
K K	ED	3.11	1.76
Total		100.00	100.00

* = <2 Sigma

c. Fasa berwarna abu-abu



SEMQuant results. Listed at 14:51:44 on 09/02/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: AlC 1% Sinter 600oC - Gray

System resolution = 59 eV

Quantitative method: ZAF (2 iterations).
Analysed all elements and normalised results.

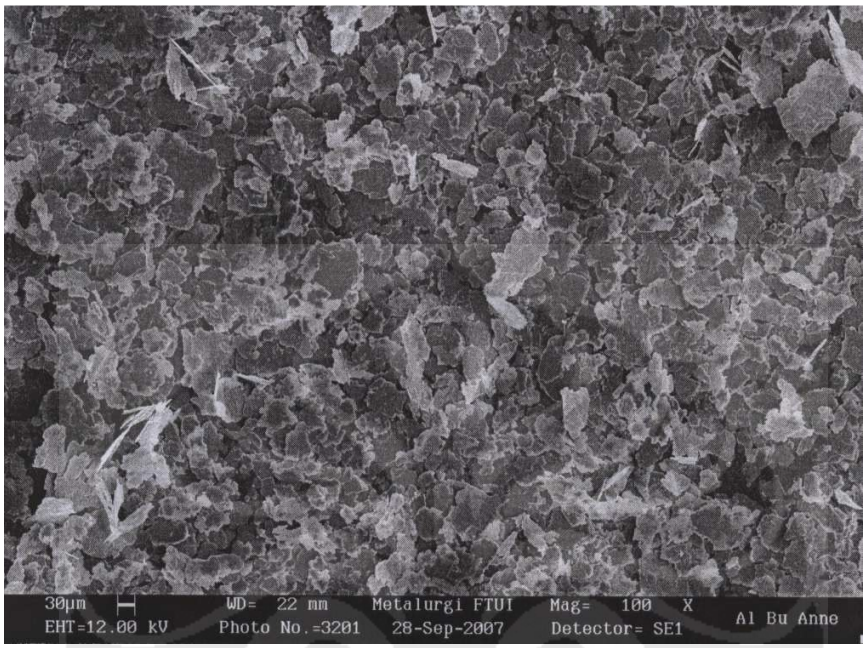
2 peaks possibly omitted: -0.02, 0.94 keV

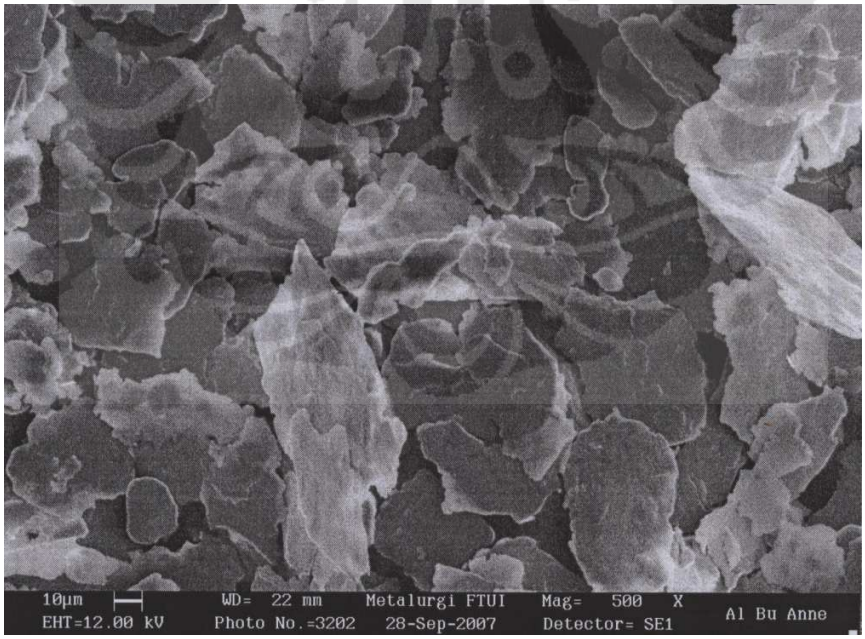
Standards :
C K Carbon Low 13/09/06
O K AL2O3 22/03/06
Al K CeAl2 03/03/07
Si K Low Carbon Steel 13/09/06

Elmt	Spect. Type	Element %	Atomic %
C K	ED	1.57	3.34
O K	ED	5.50	8.78
Al K	ED	92.69	87.68
Si K	ED	0.23	0.21
Total		100.00	100.00

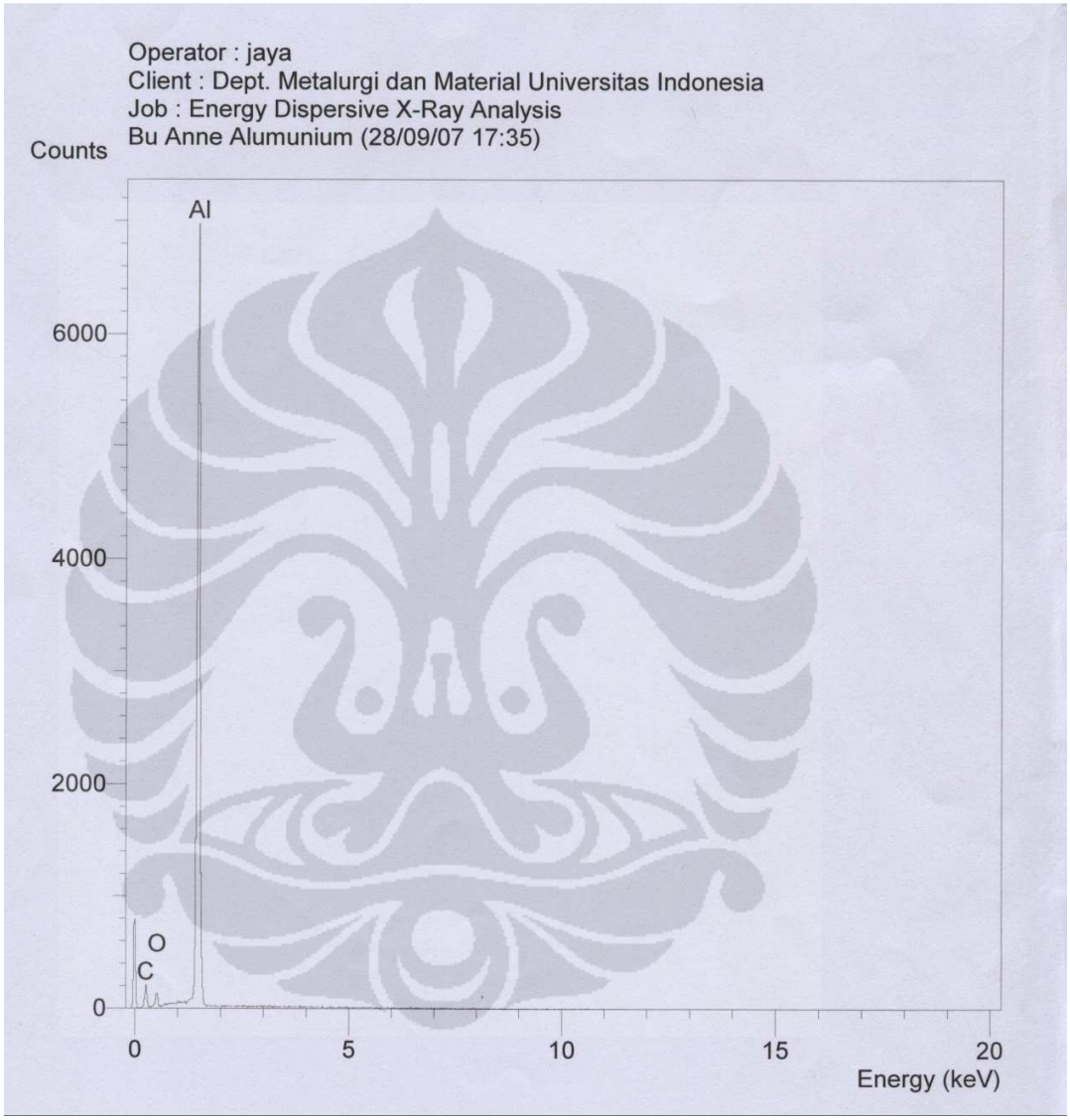
* = <2 Sigma

Bentuk Partikel Serbuk Aluminium Hasil Analisa SEM





Komposisi Aluminium Serbuk Hasil Uji EDS



SEMQuant results. Listed at 17:37:07 on 28/09/07
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: Bu Anne Alumunium

System resolution = 59 eV

Quantitative method: ZAF (3 iterations).
Analysed all elements and normalised results.

1 peak possibly omitted: -0.02 keV

Standards :
O K AL2O3 22/03/06
Al K CeAl2 03/03/07

Elmt	Spect. Type	Element %	Atomic %
O K	ED	4.58	7.48
Al K	ED	95.42	92.52
Total		100.00	100.00

* = <2 Sigma

DATA PENGOLAHAN UJI DENSITAS

Sinter 600^{o}C **Massa Jenis Air = 1,01189 gram/cm^{3}**

Kadar Grafit	Berat Kering (gram)	Berat dalam Air (gram)	Volume dalam Air (cm^{3})	Densitas Sample (gram/cm^{3})	Standar Deviasi	Densitas Rata-Rata (gram/cm^{3})
0,5%	5,61	2,33	2,303	2,436353176	0,020	2,422
	5,71	2,4	2,372	2,407454958		
1%	4,44	1,99	1,967	2,257684221	0,041	2,287
	4,44	1,94	1,917	2,315871959		
3%	4,74	2,31	2,283	2,076345714	0,043	2,046
	4,64	2,33	2,303	2,015094249		
5%	4,4	2,21	2,184	2,014622624	0,019	2,001
	4,42	2,25	2,223	1,987801689		
7%	4,11	2,11	2,085	1,971027441	0,016	1,960
	4,14	2,15	2,125	1,948476558		

DATA PENGOLAHAN UJI POROSITAS (sinter 600^{o}C)

Kadar Grafit	Berat kering (gram)	Berat dalam air (gram)	Densitas Sample (gram/cm^3)	Volume Total (cm^3)	Densitas teoritis (gram/cm^3)	Porositas (%)
0,5%	5,61	2,33	2,42	2,074	2,728	11,23
	5,71	2,4				
1%	4,44	2,35	2,29	1,629	2,725	16,109
	4,44	2,1				
3%	4,74	2,31	2,046	1,764	2,715	24,668
	4,64	2,33				
5%	4,4	2,21	2,001	1,630	2.706	26.038
	4,42	2,25				
7%	4,11	2,11	1,96	1,527	2,696	27,319
	4,14	2,15				

DATA PENGOLAHAN UJI KEKERASAN

Beban (P) = 31,25 kg Diameter Indentor = 1,6 mm Diameter Indentor = 3 mm (kuning)

Perlakuan Sample	d1 (mm)		d1 rata2 (mm)	BHN (Kg/mm^2)	d2 (mm)		d2 rata2 (mm)	BHN (Kg/mm^2)	d3 (mm)		d3 rata2 (mm)	BHN (Kg/mm^2)	Standar Deviasi	BHN (Kg/mm^2)
	x	y			x	y			x	y				
0.5 %	0,831	0,823	0,8270	54,02	0,802	0,789	0,7955	58,74	0,733	0,795	0,7640	64,06	5,02569	58,94
1 %	0,761	0,737	0,7490	66,83	0,744	0,742	0,7430	67,99	0,800	0,791	0,7955	58,74	5,036695	64,52
3 %	0,847	0,837	0,8420	51,95	0,853	0,842	0,8475	51,22	0,781	0,859	0,8200	55,02	2,018288	52,73
5 %	0,882	0,909	0,8955	48,51	0,900	0,902	0,9010	47,91	0,929	0,917	0,9230	45,59	1,5388	47,34
7 %	0,820	0,829	0,8245	54,37	0,797	0,829	0,8130	56,05	0,825	0,862	0,8435	51,75	5,709969	49,85

DATA PENGOLAHAN PENGUJIAN KUAT TEKAN

Kadar Grafit (%)	Diameter (mm)	Tinggi (mm)	Luas (mm^2)	Beban (Newton)	Kuat Tekan (N/mm^2)	Standar Deviasi	Kuat Tekan rata-rata (N/mm^2)	Kondisi Akhir
0,5	20 20	7,7 7,7	314 314	153.500 153.000	488,853 487,261	1,126	**488.057**	Baik
1	20,1 20	5,7 5,85	317 314	157.250 163.000	496,057 519,108	16,299	**507.582**	Baik
3	20,1 20,025	7.7 7,3	317 322	168.000 170.750	529,968 530,279	0,2199	**530.123**	Baik
5	20.20 20.20	5.6 7,0	320 320	171.000 175.600	534,375 548,750	10,165	**541.562**	Baik
7	20.25 20.25	6.3 6	322 322	175.900 177.750	546,273 552,019	4,063	**549.146**	Baik

DATA PENGOLAHAN PENGUJIAN KEAUSAN

Jarak Luncur (x) = 100000 mm; Tebal cincin (B) = 3.3 mm; Jari-jari cincin (r) = 14.7 mm; Beban (P) = 6.32 kg; Kec. Pembebanan = 1.6 m/s

Perlakuan Sample	b1 (mm)	b2 (mm)	SD	b rata2 (mm)	W (mm^3)	Laju Aus (x 10^{-5} mm^3/mm)	Laju Aus rata2 (x 10^{-5} mm^3/mm)
0.5 %	6,343	6,391	0,033941	6,367	4,875	4,88	4,1357
0.5 %	5,623	5,665	0,029698	5,644	3,395	3,4	
1 %	6,359	5,075	0,907925	5,717	3,529	3,53	4,05726
1 %	5,576	6,904	0,939038	6,238	4,585	4,59	
3 %	6,501	6,503	0,001414	6,502	5,192	5,19	5,23793
3 %	6,581	6,500	0,057276	6,540	5,283	5,28	
5 %	6,503	6,501	0,001414	6,504	5,197	5,2	5,25977
5 %	6,540	6,572	0,022627	6,556	5,322	5,32	
7 %	14,603	15,045	0,312541	14,824	61,532	61,5	70,88
7 %	16,110	16,280	0,120208	16,195	80,232	80,2	

DATA PENGOLAHAN SAMPEL NON-SINTER

PENGUJIAN KEKERASAN

Beban (P) = 31,25 kg Diameter Indentor = 3 mm

Aluminium matriks + grafit reinforced (non-sinter)

Kadar Grafit (%)	d1 (mm)		d1 rata2 (mm)	BHN (Kg/mm^2)
	x	y		
0,5 % (ns)	**0,991**	**0,911**	**0,9510**	**39,71**
1% (ns)	**0,913**	**0,945**	**0,9290**	**41,84**
3 % (ns)	**0,920**	**0,931**	**0,9255**	**42,19**
5 % (ns)	**0,886**	**0,928**	**0,9070**	**44,13**
7 % (ns)	**0,874**	**0,905**	**0,8895**	**46,07**

PENGUJIAN KEAUSAN

Jarak Luncur (x) = 100000 mm; Tebal cincin (B) = 3.3 mm;

Jari-jari cincin (r) = 14.7 mm; Beban (P) = 6.32 kg; Kec. Pembebanan = 1.6 m/s

Kadar Grafit (%)	b rata2 (mm)	W (mm^3)	Laju Aus (x 10^{-5} mm^3/mm)
0.5 % (ns)	10,706	23,17865	23,2
1% (ns)	6,400	4,951609	4,95
3 % (ns)	11,962	32,32685	32,3
5 % (ns)	12,095	33,42135	33,4
7 % (ns)	13,700	48,57	48,6

DATA PENGOLAHAN SAMPEL NON-SINTER

UJI DENSITAS

Massa Jenis Air = 1.01189 gram/cm^3

Kadar Grafit (%)	Berat kering (gram)	Berat dalam air (gram)	Volume dalam air (cm^3)	Densitas sample (gram/cm^3)
0,5 ns	5,68	2,49	2,461	2,308
1 ns	4,37	1,92	1,917	2,303
3 ns	4,61	2,06	2,036	2,264
5 ns	4,27	1,98	1,957	2,182
7 ns	4,05	2,05	2,026	1,999

UJI POROSITAS

Massa Jenis Air = 1.01189 gram/cm^3

Kadar Grafit (%)	Berat rata-rata kering (gram)	Berat dalam air (gram)	Densitas rata-rata (gram/cm^3)	Densitas teoritis (gram/cm^3)	Porositas (%)
0,5 ns	5,68	2,49	2,308	2,673	13,655
1 ns	4,37	1,92	2,303	2,660	13,424
3 ns	4,61	2,06	2,264	2,609	13,194
5 ns	4,27	1,98	2,182	2,559	14,734
7 ns	4,05	2,05	1,999	2,511	20,397

DATA PENGOLAHAN SAMPEL NON-SINTER

UJI KUAT TEKAN

Kadar Grafit (%)	Diameter (mm)	Tinggi (mm)	Luas (mm^2)	Beban (Newton)	Kuat Tekan (N/mm^2)	Kondisi Akhir
0,5	20,1	7,1	316	12000	38,026	Hancur
1	20,2	6,1	316	16500	52,286	Hancur
3	20,1	6,3	318	18000	56,617	Hancur
5	20.1	5,7	316	22250	70,507	Hancur
7	20,1.	5,7	316	23500	74,468	Hancur