



LAMPIRAN 1

HASIL PENGUJIAN KOMPOSISI KIMIA

Unsur paduan	Komposisi AC4B tanpa penambahan Ti	Komposisi AC4B penambahan 0.036wt. % Ti	Komposisi AC4B penambahan 0.045 wt. % Ti	Komposisi AC4B berdasarkan standar PT. X
Si	9.412	9.40	9.38	7 – 10
Cu	2.837	2.80	2.88	2 – 4
Mg	0.222	0.172	0.181	0.5 maks
Zn	0.712	0.319	0.261	1 maks
Fe	0.658	0.786	0.762	1 maks
Mn	0.242	0.308	0.310	0.5 maks
Ni	0.049	0.0547	0.05058	0.35 maks
Ti	0.029	0.0795	0.101	0.2 maks
Pb	0.124	0.0834	0.0787	0.2 maks
Sn	0.043	0.028	0.031	0.1 maks
Cr	0.021	0.027	0.02	0.1 maks
Al	<i>Remains</i>	<i>Remains</i>	<i>Remains</i>	<i>Remains</i>



LAMPIRAN 2
HASIL PENGUJIAN KEKERASAN MAKRO AC4B

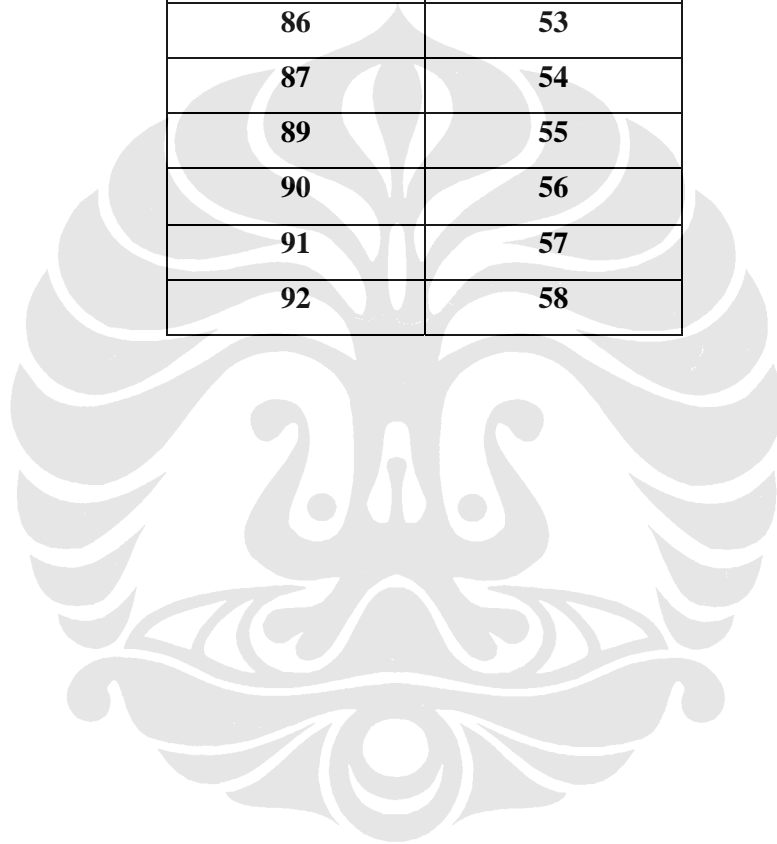
0 wt. % Ti (BHN)		
	Tebal	Tipis
	84.19	83.45
	78.85	85.45
	82.59	85.71
	88.06	87.13
	83.45	-
Average	83.43	87.48
error	0.03	0.01

0.0505 wt. % Ti (BHN)		
	Tebal	Tipis
	89.96	85.84
	85.71	93.2
	82.72	94.97
	87.53	92.34
	82.9	90.65
Average	85.77	91.4
error	0.03	0.03

0.072 wt. % Ti (BHN)		
	Tebal	Tipis
	86.61	90.09
	91.77	93.93
	87.79	87.40
	95.72	92.20
	85.20	96.32
Average	89.42	91.99
error	0.04	0.03

Konversi nilai kekerasan dari BHN ke HRB^[26]

BHN 500 kg	HRB
80	47
81	48
82	49
83	50
84	51
85	52
86	53
87	54
89	55
90	56
91	57
92	58





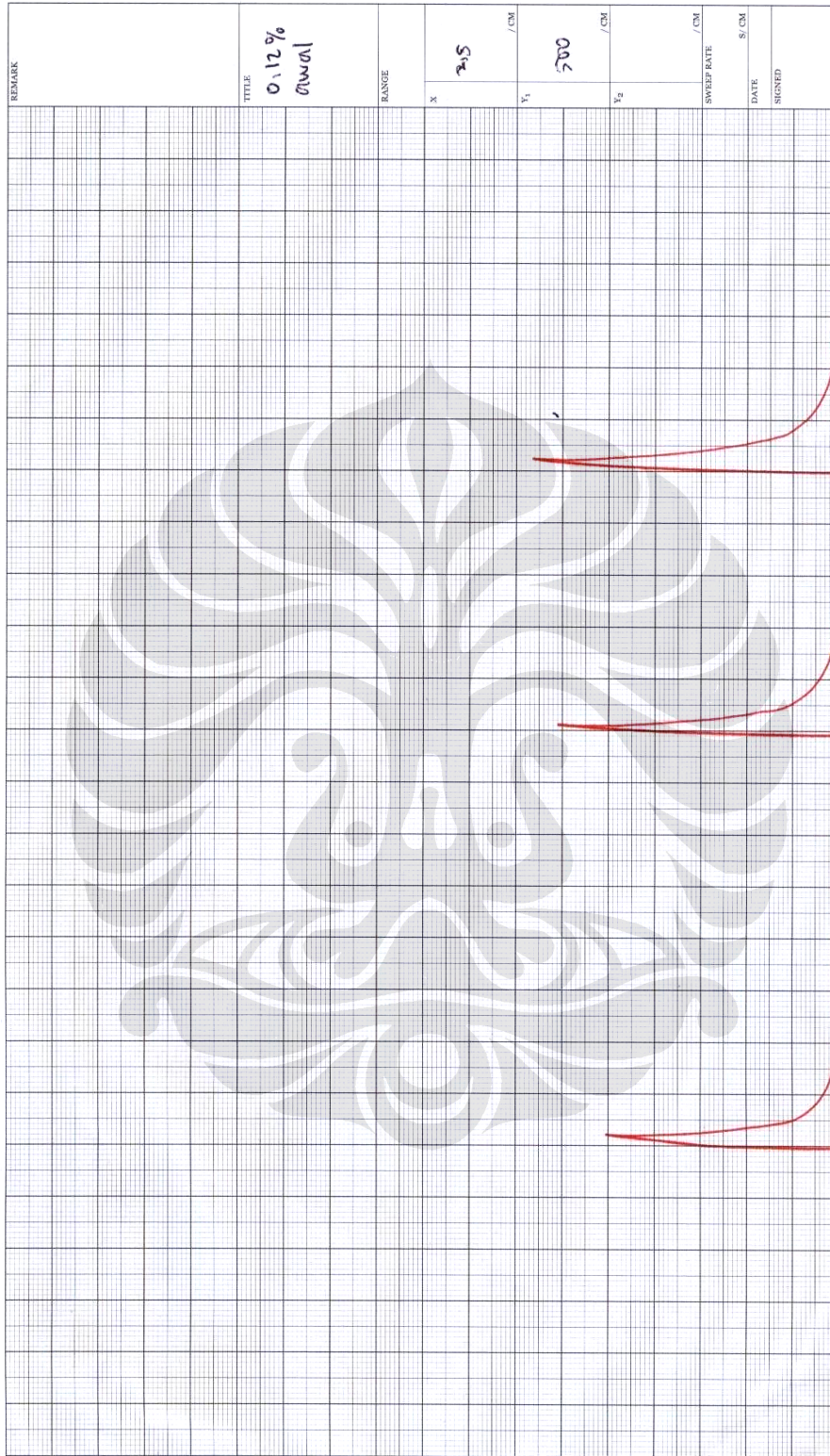
LAMPIRAN 3
HASIL PENGUJIAN KEKUATAN TARIK AC4B

Penambahan Ti	No	Do (mm)	A0 (mm ²)	Gauge length	Pmaks (kg/mm ²)	ΔL	UTS (MPa)	elongasi (%)
0 %	1	15.1	178.99	50	1300	0.25	72.6	0.5
	2	15.1	178.99	50	2350	0.5	131.3	1
	3	14.7	169.63	50	3100	0.5	182.7	1
Rata-rata					2250		128.89	0.83
STDEV					738.24		58.18	0.24
Penyimpangan					0.33		0.45	0.28

Penambahan Ti	No	Do (mm)	A0 (mm ²)	Gauge length	Pmaks (kg/mm ²)	ΔL	UTS (MPa)	elongasi (%)
0.0505 wt. %	1	15.1	174.2779	50	2500	0.7	143.4	1.4
	2	15.1	176.625	50	3000	0.5	169.9	1
	3	14.7	178.9879	50	3300	0.6	184.4	1.2
Rata-rata					2933.33		165.89	1.2
STDEV					329.98		74.67	0.16
Penyimpangan					0.11		0.45	0.14

Penambahan Ti	No	Do (mm)	A0 (mm ²)	Gauge length	Pmaks (kg/mm ²)	ΔL	UTS (MPa)	elongasi (%)
0.072 wt. %	1	15.1	186.1706	50	2600	0.25	139.7	0.5
	2	15.1	186.1706	50	3450	0.75	185.3	1.5
	3	14.7	167.3306	50	3200	0.5	191.2	1
Rata-rata					3083.33		172.07	1
STDEV					356.68		77.47	0.41
Penyimpangan					0.12		0.45	0.41

Grafik pengujian tarik 0.0505 wt % Ti



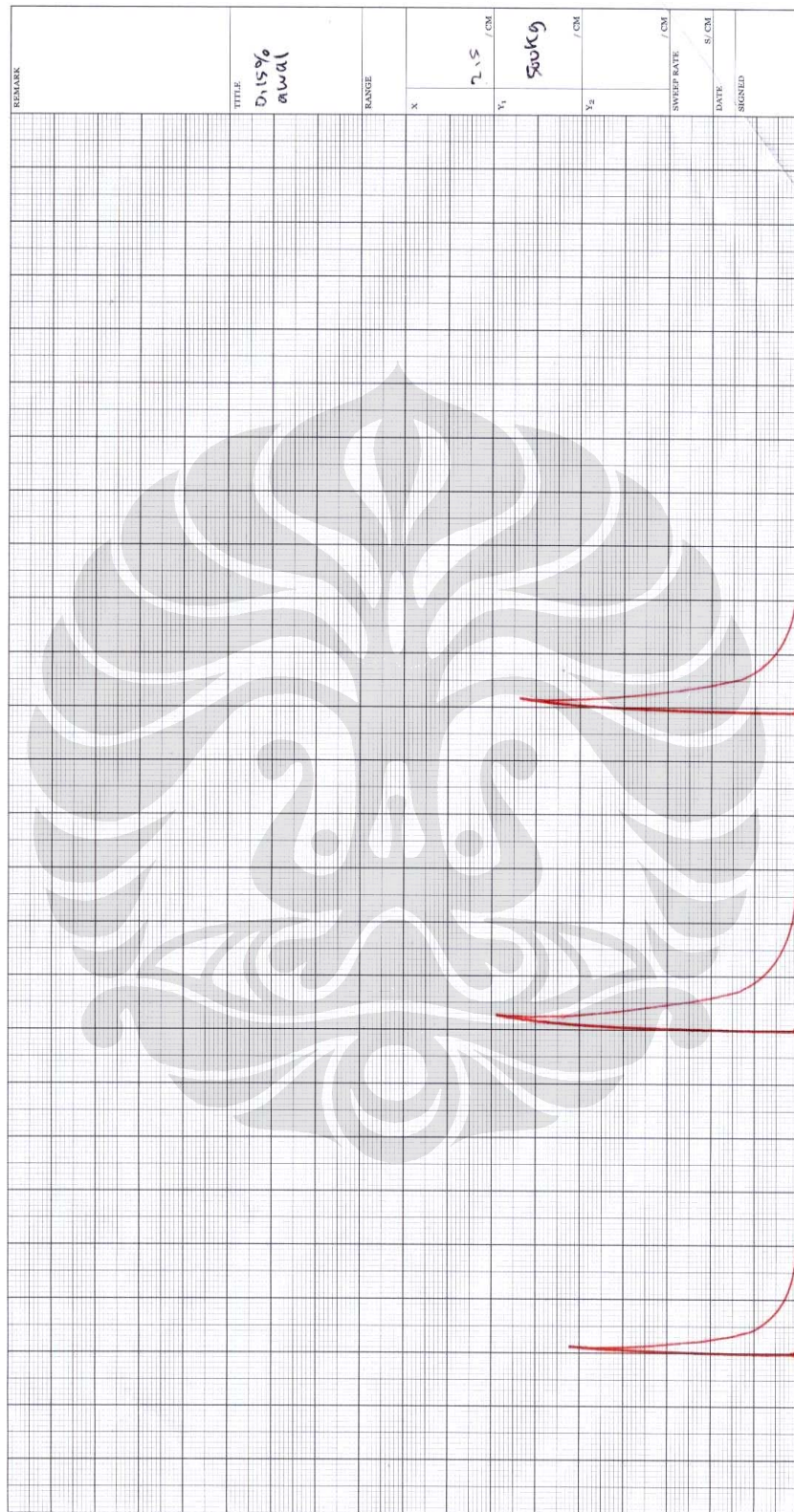
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2

1

3

Grafik pengujian tarik 0.072 wt. % Ti



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LAMPIRAN 4

HASIL PENGUKURAN NILAI DAS

0 wt. % Ti	Tebal	tipis
titik	mikron	mikron
1	20.27	37.5
2	20.88	30.27
3	24.38	29.94
4	26.22	31.22
5	28	28.55
6	24.72	28.27
7	24.11	31.44
8	22.66	28.88
9	23.5	28
10	22.33	30.27
rata rata	23.51	29.97
stdev	2.17	2.72
error	0.092	0.09

	Tebal			
titik	EF (0.0505 wt.% Ti)mm	mikron	FB (0.072 wt.% Ti) mm	mikron
1	5.20	28.89	4.20	23.33
2	3.60	20.00	3.00	16.67
3	3.70	20.56	4.10	22.78
4	5.40	30.00	4.20	23.33
5	3.70	20.56	3.60	20.00
6	4.20	23.33	3.20	17.78
7	4.40	24.44	3.70	20.56
8	4.60	25.56	4.10	22.78
9	4.00	22.22	4.90	27.22
10	4.20	23.33	4.60	25.56
	rata rata	23.89		22.00
	stdev	3.43		3.28
	error	0.14		0.15

	tipis			
titik	EF (0.0505 wt.% Ti) mm	mikron	FB (0.072 wt.% Ti) mm	mikron
1	2.00	11.11	2.00	11.11
2	2.20	12.22	2.00	11.11
3	2.20	12.22	2.10	11.67
4	2.40	13.33	2.30	12.78
5	2.90	16.11	2.00	11.11
6	2.50	13.89	2.30	12.78
7	2.00	11.11	2.10	11.67
8	1.90	10.56	2.00	11.11
9	2.50	13.89	2.00	11.11
10	2.10	11.67	2.20	12.22
	rata rata	12.61		11.67
	stdev	1.70		0.69
	error	0.13		0.06

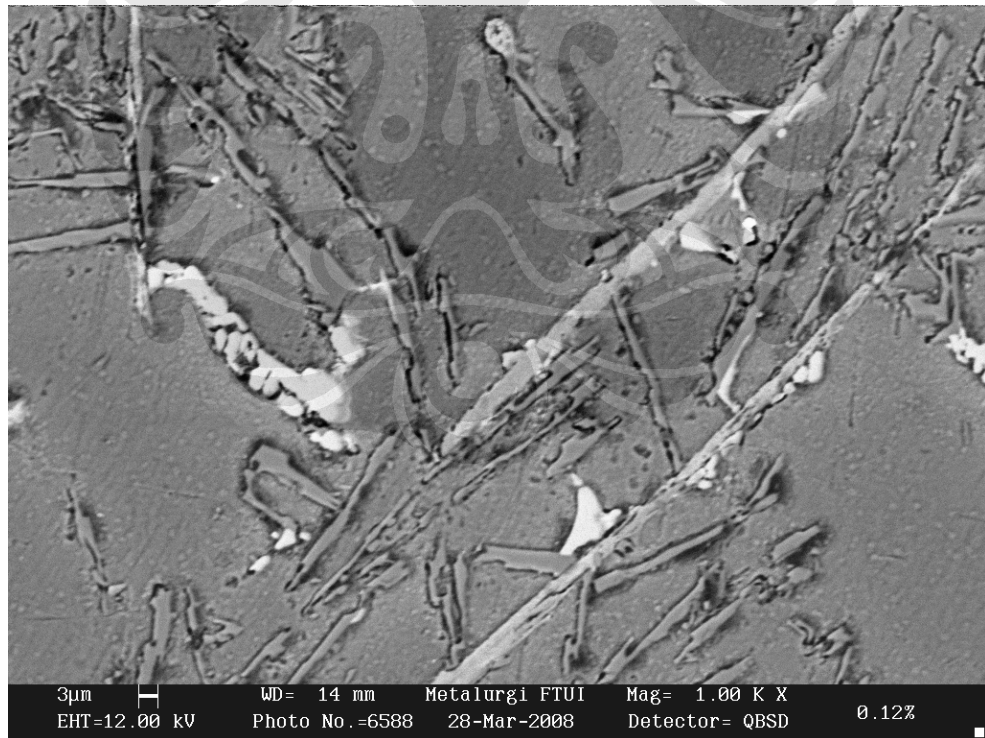
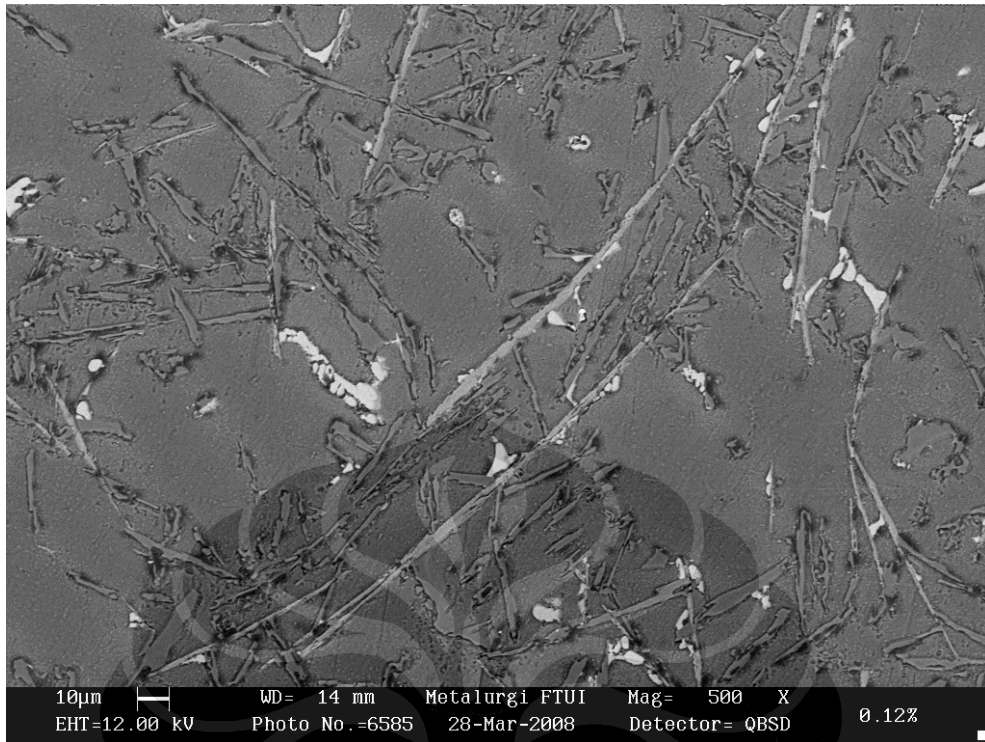




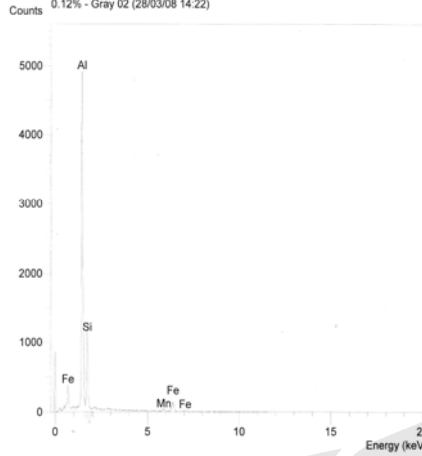
LAMPIRAN 5

HASIL PENGAMATAN SEM DAN EDAX

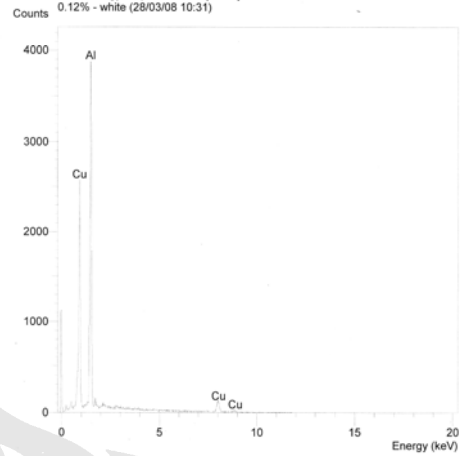
Hasil pengamatan SEM 0.0505 wt. % Ti



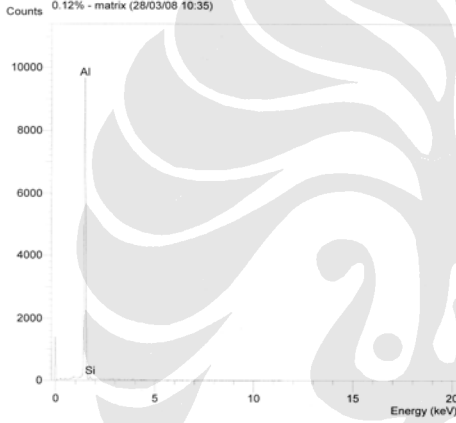
Operator : jaya
 Client : Dept. Metalurgi dan Material Universitas Indonesia
 Job : Energy Dispersive X-Ray Analysis
 0.12% - Gray 02 (28/03/08 14:22)



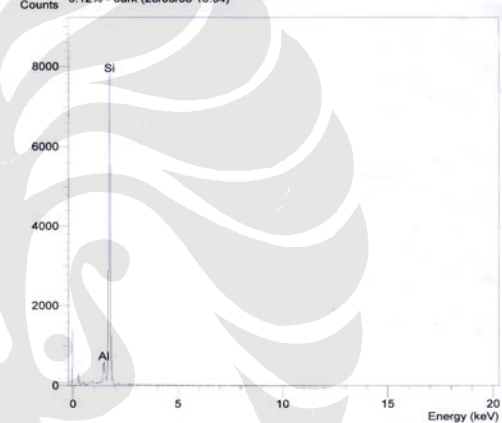
Operator : jaya
 Client : Dept. Metalurgi dan Material Universitas Indonesia
 Job : Energy Dispersive X-Ray Analysis
 0.12% - white (28/03/08 10:31)



Operator : jaya
 Client : Dept. Metalurgi dan Material Universitas Indonesia
 Job : Energy Dispersive X-Ray Analysis
 0.12% - matrix (28/03/08 10:35)



Operator : jaya
 Client : Dept. Metalurgi dan Material Universitas Indonesia
 Job : Energy Dispersive X-Ray Analysis
 0.12% - dark (28/03/08 10:34)



SEMQuant results. Listed at 14:23:32 on 28/03/08
 Operator: jaya
 Client: Dept. Metalurgi dan Material Universitas Indonesia
 Job: Energy Dispersive X-Ray Analysis
 Spectrum label: 0.12% - Gray 02

System resolution = 62 eV

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

3 peaks possibly omitted: -0.02, 0.24, 2.14 keV

Standards :

Al K CeAl2 03/03/07
 Si K Low Carbon Steel 13/09/06
 Mn K Mangan 02 13/09/06
 Fe K FeS2 22/03/06

Elmt	Spect. Type	Element %	Atomic %
Al K	ED	58.50	68.83
Si K	ED	13.41	15.15
Mn K	ED	4.45	2.57
Fe K	ED	23.64	13.44
Total		100.00	100.00

* = <2 Sigma

SEMQuant results. Listed at 10:32:14 on 28/03/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: 0.12% - white

System resolution = 60 eV

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

4 peaks possibly omitted: -0.02, 0.24, 0.48,
2.82 keV

Standards :
Al K CeAl2 03/03/07
Cu K Copper 22/03/06

Elmt	Spect.	Element	Atomic
	Type	%	%
Al K	ED	33.13	53.85
Cu K	ED	66.87	46.15
Total		100.00	100.00

* = <2 Sigma

SEMQuant results. Listed at 10:36:12 on 28/03/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: 0.12% - matrix

System resolution = 59 eV

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

5 peaks possibly omitted: -0.02, 0.24, 0.48,
0.94, 2.16 keV

Standards :
Al K CeAl2 03/03/07
Si K Low Carbon Steel 13/09/06

Elmt	Spect.	Element	Atomic
	Type	%	%
Al K	ED	98.48	98.54
Si K	ED	1.52	1.46
Total		100.00	100.00

* = <2 Sigma

SEMQuant results. Listed at 10:35:15 on 28/03/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: 0.12% - dark

System resolution = 59 eV

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

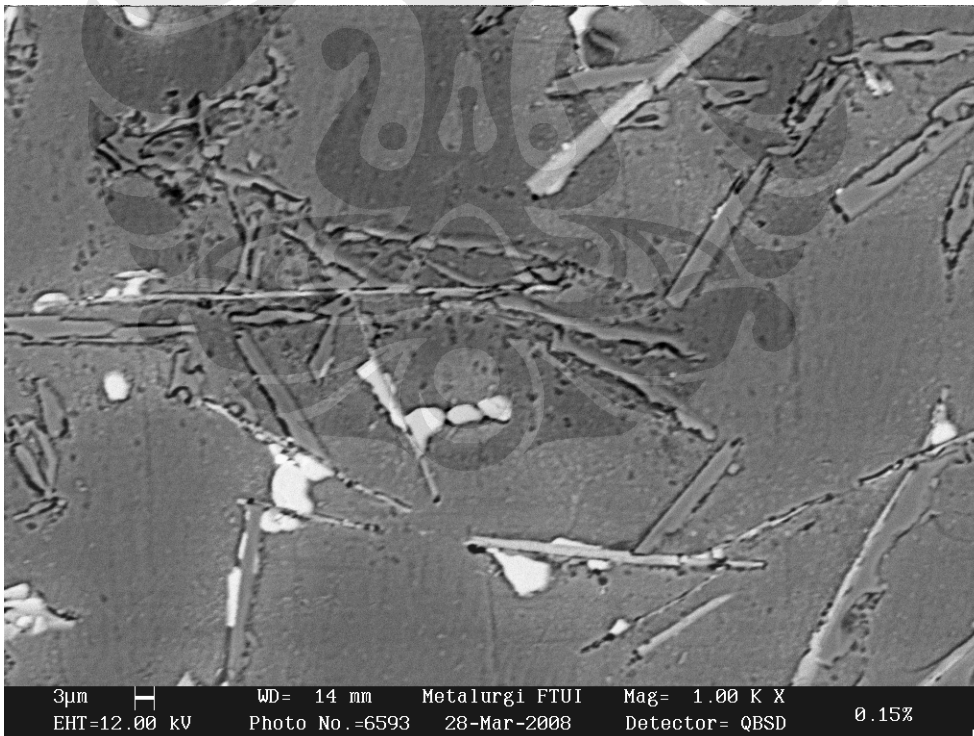
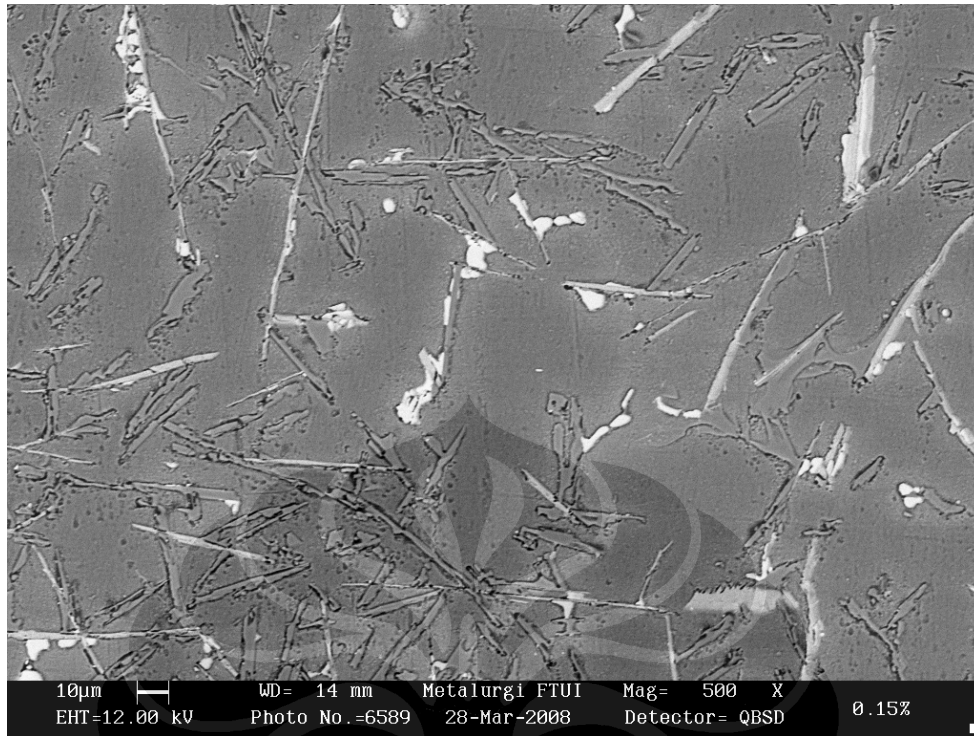
4 peaks possibly omitted: -0.02, 0.26, 0.50,
0.92 keV

Standards :
Al K CeAl2 03/03/07
Si K Low Carbon Steel 13/09/06

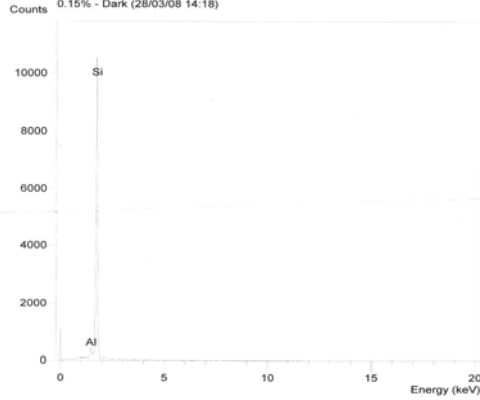
Elmt	Spect.	Element	Atomic
	Type	%	%
Al K	ED	7.77	8.06
Si K	ED	92.23	91.94
Total		100.00	100.00

* = <2 Sigma

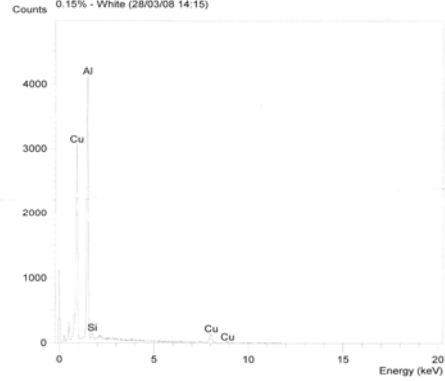
Hasil pengamatan SEM 0.072 wt. % Ti



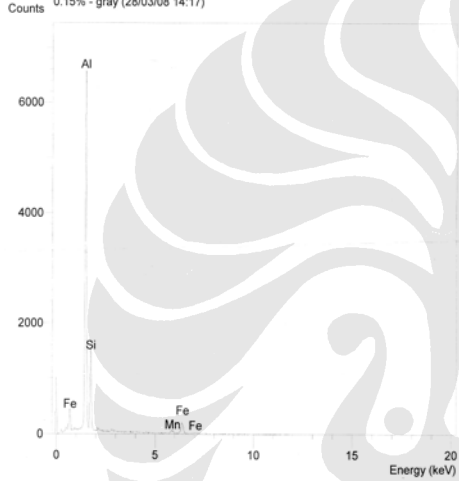
Operator : jaya
 Client : Dept. Metalurgi dan Material Universitas Indonesia
 Job : Energy Dispersive X-Ray Analysis
 0.15% - Dark (28/03/08 14:18)



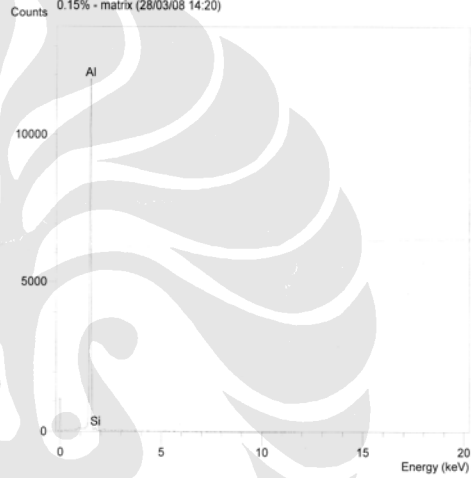
Operator : jaya
 Client : Dept. Metalurgi dan Material Universitas Indonesia
 Job : Energy Dispersive X-Ray Analysis
 0.15% - White (28/03/08 14:15)



Operator : jaya
 Client : Dept. Metalurgi dan Material Universitas Indonesia
 Job : Energy Dispersive X-Ray Analysis
 0.15% - gray (28/03/08 14:17)



Operator : jaya
 Client : Dept. Metalurgi dan Material Universitas Indonesia
 Job : Energy Dispersive X-Ray Analysis
 0.15% - matrix (28/03/08 14:20)



SEMQuant results. Listed at 14:19:51 on 28/03/08
 Operator: jaya
 Client: Dept. Metalurgi dan Material Universitas Indonesia
 Job: Energy Dispersive X-Ray Analysis
 Spectrum label: 0.15% - Dark

System resolution = 59 eV

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

5 peaks possibly omitted: -0.02, 0.24, 0.50,
 2.82, 8.00 keV

Standards :

Al K CeAl2 03/03/07
 Si K Low Carbon Steel 13/09/06

Elmt	Spect. Type	Element %	Atomic %
Al K	ED	3.57	3.71
Si K	ED	96.43	96.29
Total		100.00	100.00

* = <2 Sigma

SEMQuant results. Listed at 14:17:19 on 28/03/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: 0.15% - White

System resolution = 60 eV

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

3 peaks possibly omitted: -0.02, 0.24, 2.14 keV

Standards :
Al K CeAl2 03/03/07
Si K Low Carbon Steel 13/09/06
Cu K Copper 22/03/06

Elmt	Spect.	Element	Atomic
	Type	%	%
Al K	ED	32.98	53.44
Si K	ED	0.51	0.79
Cu K	ED	66.51	45.77
Total		100.00	100.00

* = <2 Sigma

SEMQuant results. Listed at 14:18:49 on 28/03/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: 0.15% - gray

System resolution = 62 eV

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

4 peaks possibly omitted: -0.02, 0.24, 2.14,
2.82 keV

Standards :
Al K CeAl2 03/03/07
Si K Low Carbon Steel 13/09/06
Mn K Mangan 02 13/09/06
Fe K FeS2 22/03/06

Elmt	Spect.	Element	Atomic
	Type	%	%
Al K	ED	57.84	68.88
Si K	ED	11.96	13.69
Mn K	ED	5.46	3.20
Fe K	ED	24.73	14.23
Total		100.00	100.00

* = <2 Sigma

SEMQuant results. Listed at 14:20:56 on 28/03/08
Operator: jaya
Client: Dept. Metalurgi dan Material Universitas Indonesia
Job: Energy Dispersive X-Ray Analysis
Spectrum label: 0.15% - matrix

System resolution = 59 eV

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

5 peaks possibly omitted: -0.02, 0.24, 0.46,
0.92, 2.14 keV

Standards :
Al K CeAl2 03/03/07
Si K Low Carbon Steel 13/09/06

Elmt	Spect.	Element	Atomic
	Type	%	%
Al K	ED	98.67	98.72
Si K	ED	1.33	1.28
Total		100.00	100.00

* = <2 Sigma



CHECK SHEET (19 september 2007)

Temp melting : 810 °C
 Komposisi Grain refiner : 0,0505 wt. % Ti
 Temp. penambahan grain refiner : 760 °C
 Jenis Grain Refiner : Flux Coveral 2815
 Waktu GBF : 8 menit

No Part	
1	Kiri
2	Kanan

No shot	No Part	Temp Dies (°C)		Temp molten (°C)	Tekanan mesin (kg/cm ²)	Jam ke	Jenis cacat	Marking	Uji Bocor
1	1	214	184	704					
	2	315	376	704					
2	3	TRIAL							
	4								
3	5	270,5	207,8	704	230	0	cacat kotor	EA	
	6	354,4	375,6				ok!	EB	
4	7	264,7	211,9	704	250	1	ok!	EE	
	8	343,9	368,5				ok!	EF	
5	9	265,2	218,7	705	230	1	ok!	E1A	
	10	348,4	363,2				ok!	E1B	
6	11	263,1	223,3	706	230	1	ok!	E1E	
	12	349,6	364,4				ok!	E1F	
7	13	261,4	221,9	707	230	1	ok!	E1G	
	14	347,3	361,5				ok!	E1H	
8	15	264,7	231,8	708	230	1	ok!	E1I	ya
	16	367,8	376,1				ok!	E1J	
9	17	265,5	234,6	707	230	1	ok!	E1K	
	18	367,7	384,0				ok!	E1L	
10	19	273,2	244,0	707	230	1	ok!	E1M	
	20	362,8	379,8				ok!	E1N	ya
11	21	274,8	249,4	708	230	1	ok!	E1O	
	22	379,1	388,2				ok!	E1P	
12	23	TRIAL/ISTIRAHAT		708	230	1	ok!	E1Q	
	24						ok!	E1R	
13	25	229	221	706	236	2	ok!	E2A	
	26	316	320				ok!	E2B	
14	27	228	221	707	236	2	ok!	E2E	
	28	328	352				ok!	E2F	ya
15	29	236	229	707	236	3	ok!	E3A	
	30	227	333				ok!	E3B	ya
16	31	235	227	707	236	3	ok!	E3E	
	32	346	363				ok!	E3F	
17	33	241	235	707	236	3	Aus Misrun	E3G	
	34	350	372				ok!	E3H	ya
18	35	250	239	708	236	3	ok!	E3I	
	36	340	349				ok!	E3J	ya
19	37	253	246	708	236	3	ok!	E3K	
	38	361	376				ok!	E3L	
20	39	254	247	708	236	3	ok!	E3M	ya
	40	354	366				ok!	E3N	ya
21	41	259	253	708	236	3	ok!	E3O	
	42	364	379				ok!	E3P	ya
22	43	261	255	709	236	3	ok!	E3Q	
	44	366	383				ok!	E3R	
23	45	264	259	709	236	3	ok!	E3S	ya
	46	376	395				ok!	E3T	ya
24	47	265	261	709	236	3	ok!	E3U	
	48	370	388				ok!	E3V	
25	49	266	269	709	236	3	ok!	E3W	
	50	369	390				ok!	E3X	ya
26	51	269	268	709	236	3	ok!	E3Y	ya
	52	375	394				ok!	E3Z	ya
27	53	269	270	709	262	3	ok!	E3I	
	54	378	405				ok!	E32	ya
28	55	271	270	710	262	4	ok!	E4A	
	56	386	404				ok!	E4B	ya
29	57	272	271	710	262	4	ok!	E4E	ya
	58	386	390				ok!	E4F	ya
30	59	268	266	709	262	4	ok!	E4G	
	60	366	381				ok!	E4H	ya
31	61	273	271	709	262	4	ok!	E4I	
	62	380	404				ok!	E4J	
32	63	275	272	709	262	4	ok!	E4K	ya
	64	382	407				ok!	E4L	ya
33	65	247	245	708	262	4	ok!	E4M	
	66	337	346				ok!	E4N	
34	67	259	253	708	262	4	ok!	E4O	
	68	355	362				ok!	E4P	ya
35	69	276	266	707	262	4	ok!	E4Q	
	70	368	391				ok!	E4R	ya
36	71	274	269	708	262	4	ok!	E4S	
	72	374	396				ok!	E4T	ya
37	73	275	270	708	262	4	ok!	E4U	
	74	375	400				ok!	E4V	
38	75	stop produksi 15:06							
	76								

CHECK SHEET (20 september 2007)

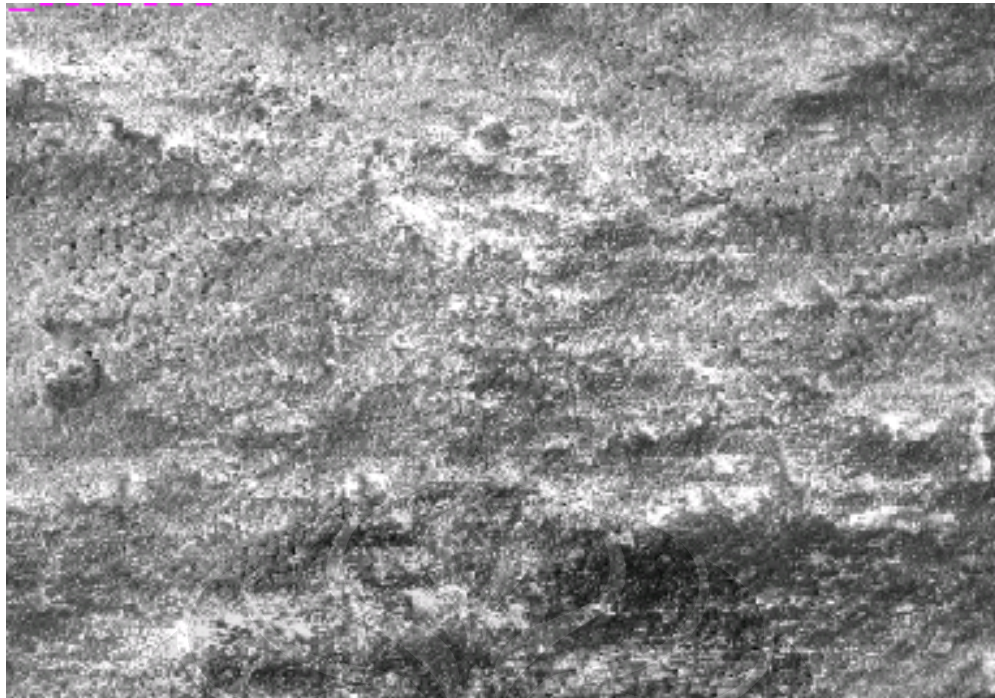
Temp melting : 800° C
 Komposisi Grain refiner : 0.072 wt. % Ti
 Temp. penambahan grain refiner : 760 °C
 Jenis Grain Refiner : Flux Coveral 2815
 Waktu GBF : 8 menit

No Part	
1	Kiri
2	Kanan

No shot	No Part	Temp Dies (°C)	Temp molten (°C)	Tekanan mesin (kg/cm ²)	Jam ke	Jenis cacat	Marking	Uji Bocor
1	1							
	2							
	3							
2	4							
	5							
3	6	262	254	700	200	0	ok!	FA
	7	335	353	700	200	0	ok!	FB
4	8	259	252	700	200	0	ok!	FE
	9	342	355	700	200	0	ok!	FF
5	10	262	256	700	200	0	ok!	FG
	11	347	362	700	200	0	ok!	FH
6	12	259	253	700	200	0	ok!	FI
	13	333	341	700	200	0	ok!	FJ
7	14	257	254	700	200	1	ok!	F1A
	15	348	357	700	200	1	ok!	F1B
8	16	262	258	700	200	1	ok!	F1E
	17	358	371	700	200	1	ok!	F1F
9	18	260	256	700	200	1	ok!	F1G
	19	341	357	700	200	1	misrun	F1H
10	20	262	259	700	200	1	ok!	F1I
	21	349	359	700	200	1	ok!	F1J
11	22	266	262	700	200	1	ok!	F1K
	23	360	374	700	200	1	ok!	F1L
12	24	249	235	710	200	1	ok!	F1M
	25	328	333	710	200	1	ok!	F1N
13	26	249	246	700	200	1	ok!	F1O
	27	356	357	700	200	1	ok!	F1P
14	28	249	248	700	200	1	ok!	F1Q
	29	360	379	700	200	1	ok!	F1R
15	30	253	247	700	200	1	ok!	F1S
	31	367	351	700	200	1	ok!	F1T
16	32	251	244	700	200	1	ok!	F1U
	33	351	353	700	200	1	ok!	F1V
17	34	254	248	700	200	2	inklusi pasir	F2A
	35	348	345	700	200	2	ok!	F2B
18	36	254	249	700	200	2	ok!	F2E
	37	350	346	700	200	2	ok!	F2F
19	38	260	255	700	200	2	ok!	F2G
	39	362	357	700	200	2	ok!	F2H
20	40	261	256	700	200	2	ok!	F2I
	41	369	364	700	200	2	ok!	F2J
21	42	258	252	700	200	2	ok!	F2K
	43	355	352	700	200	2	ok!	F2L
22	44	263	258	700	200	2	ok!	F2M
	45	375	384	700	200	2	ok!	F2N
23	46	265	261	700	200	2	ok!	F2O
	47	380	380	700	200	2	ok!	F2P
24	48	264	253	700	200	2	ok!	F2Q
	49	368	376	700	200	2	ok!	F2R
25	50	268	265	700	200	2	ok!	F2S
	51	380	394	700	200	2	ok!	F2T
26	52	267	264	700	200	2	ok!	F2U
	53	372	386	700	200	2	ok!	F2V
27	54	269	260	700	200	2	ok!	F2W
	55	359	368	700	200	2	ok!	F2X
28	56	263	257	710	200	3	ok!	F3A
	57	359	368	710	200	3	ok!	F3B
29	58	268	263	700	200	3	ok!	F3E
	59	371	385	700	200	3	ok!	F3F
30	60	267	261	700	200	3	ok!	F3G
	61	365	377	700	200	3	ok!	F3H
31	62	267	265	700	200	3	ok!	F3I
	63	378	388	700	200	3	ok!	F3J
32	64	269	266	700	200	3	ok!	F3K
	65	378	377	700	200	3	ok!	F3L
33	66	257	251	710	200	3	misrun	F3M
	67	355	357	710	200	3	ok!	F3N
34	68	260	255	700	200	3	ok!	F3O
	69	382	380	700	200	3	ok!	F3P
35	70	265	262	700	200	3	ok!	F3Q
	71	381	372	700	200	3	ok!	F3R
36	72	266	263	700	200	3	ok!	F3S
	73	397	400	700	200	3	ok!	F3T
37	74	269	266	700	200	3	ok!	F3U
	75	383	379	700	200	3	ok!	F3V
38	76	269	266	700	200	3	ok!	F3W
	77	378	400	700	200	3	ok!	F3X
39	78	271	268	700	200	3	ok!	F3Y
	79	373	384	700	200	3	ok!	F3Z
40	80	270	266	700	200	3	ok!	F31
	81	384	399	700	200	3	ok!	F32
41	82	273	268	700	200	4	ok!	F4A
	83	373	376	700	200	4	ok!	F4B
42	84	279	269	710	200	4	ok!	F4E
	85	389	400	710	200	4	ok!	F4F
43	86	273	268	700	200	4	ok!	F4G
	87	384	396	700	200	4	ok!	F4H
44	88	270	267	710	200	4	ok!	F4I
	89	368	367	710	200	4	ok!	F4J
45	90	270	266	700	200	4	ok!	F4K
	91	374	37	700	200	4	ok!	F4L
46	92	267	262	700	200	4	ok!	F4M
	93	364	365	700	200	4	pasir gugur	F4N
47	94	268	264	700	200	4	ok!	F4O
	95	369	372	700	200	4	ok!	F4P
48	96	272	264	710	200	4	ok!	F4Q
	97	369	372	710	200	4	ok!	F4R
49	98	268	260	700	200	4	ok!	F4S
	99	380	390	700	200	4	ok!	F4T
50	100	270	264	700	200	4	ok!	F4U
		386	397	700	200	4	ok!	F4V

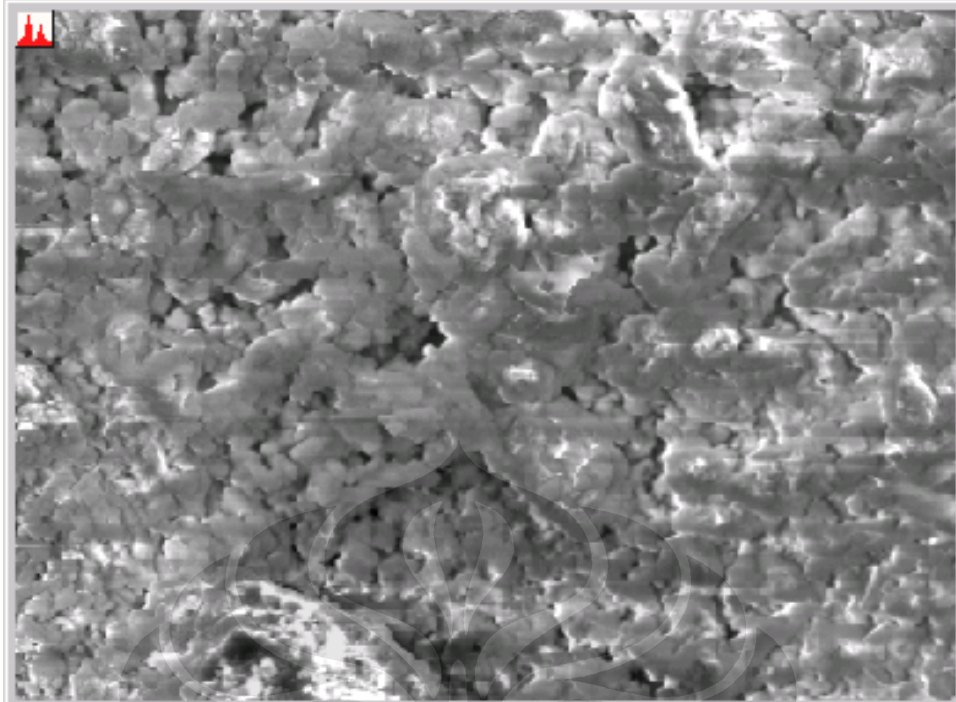


LAMPIRAN 7
COVERAL GR – 2815



Element	Class.	(keV)	mass%
B	K*		
O			17.02
F	K	0.677	33.12
Al	K*		
Cl	K	2.621	1.06
K	K	3.312	33.64
Ti	K	4.508	15.17
Total			100.00

Gambar mikrostruktur dan tabel komposisi Coveral GR pada perbesaran 200X



Element	Class.	(keV)	mass%
B	K*		
O			16.58
F	K	0.677	34.51
Na	K	1.041	0.55
Cl	K	2.621	1.62
K	K	3.312	32.03
Ti	K	4.508	14.72
Total			100.00

Gambar mikrostruktur dan tabel komposisi Coveral GR pada perbesaran 800X

F rata2 = 34,15 wt. %

Na rata2 = 0,55 wt. %

Cl rata2 = 1,34 wt. %

K rata2 = 32,84 wt. %

Ti rata2 = 14,95 wt. %

COVERAL* GR 2815

Sodium Free Granulated Flux for Grain Refining of Aluminium and Aluminium Alloys

General description	<p>COVERAL GR 2815 is a sodium free grain refining granulated flux suitable for Aluminium and Aluminium alloys including those containing alloying amounts of magnesium. It is a universal grain refiner based on titanium and boron.</p> <p>COVERAL GR 2815 when plunged into the melt reacts to form titanium diboride and aluminium boride. These finely dispersed species are highly efficient nuclei that promote a fine equiaxed grain growth during solidification. This grain structure ensures excellent feeding characteristics leading to optimum mechanical properties in the casting. This improvement in feeding properties is beneficial in sand casting application but is of particular benefit in gravity die casting where solidification rates are usually quite high.</p>
Advantages	<p>COVERAL GR 2815 is sodium free.</p> <p>COVERAL GR 2815 is dust free in use and emits low fume during application.</p> <p>Granulated fluxes can be used at reduced application rates compared to powder fluxes.</p>
Application	<p>Any dross present on the melt surface should be carefully removed. The required amount of COVERAL GR 2815 is then placed on the melt surface and plunged to the bottom of the melt using a clean and preheated plunging tool and stirred vigorously into the melt. After the reaction is complete the melt surface should be drossed off using a suitable skimming tool.</p> <p>Any subsequent degassing by tablets or by FDU impeller treatment can be done without any detrimental effects to the grain refining efficiency.</p>
Application temperature	700 °C and higher.
Addition rate	0.05 - 0.15 % of the metal weight, depending on alloy type.
Packing	25 Kg polyethylene lined multi-ply paper sacks.
Storage	Like all fluxes, COVERAL GR 2815 should be stored in a dry place. Close opened packages or storage bins securely after use.
Labelling	Xn Harmful.
Health and safety	<p>For safety reasons this product must be used only in accordance with the instructions for use contained in this Technical Data Sheet.</p> <p>The Material Safety Data Sheet for this product is available on request.</p>
Further remarks	<p>The data given in this leaflet are only guide values and do not represent a specification. All rights to make technical changes to improve the product are reserved.</p>

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