LAMPIRAN 1
HASIL PENGUJIAN KOMPOSISI KIMIA

Pengujian Komposisi Paduan AC4B dengan penambahan 0,072 *wt.* % Ti

CENTER FOR MATERIALS PROCESSING AND FAILURE ANALYSIS
DEPARTEMEN TEKNIK METALURGI & MATERIAL-UNIVERSITAS INDONESIA
LABORATORIUM UJI MATERIAL
Kampus Baru UI – Depok 16424 – Indonesia
Phone : 021 – 788 49045, 786 3510 Fax : 021 – 787 2350 E-mail : cmpfa@metal.ui.ac.id

LAPORAN PENGUJIAN KOMPOSISI KIMIA
COMPOSITION TEST REPORT
Hal 2 dari 2

No Laporan / *Report Nr*	0539	Bahan / *Material*	Al alloy
Pemakai Jasa / *Customer*	Kaspar Purba	Identitas Bahan / *Material Identity*	0.15%
Alamat / *Address*	-	Tanggal Terima / *Receiving Date*	3 Juni 2008
No Kontrak / *Contract Nr.*	0539/PT.02/FT04/P/2008	Standar / *Standard*	ASTM A751
Tanggal Uji / *Date of Test*	6 Juni 2008	Mesin Uji / *Testing machine*	Emission Spectrometer

Kode Sampel / *Sample Code*	Al (%)	Si (%)	Fe (%)	Cu (%)	Mn (%)	Mg (%)	Zn (%)
0.15%	85.9	9.38	0.762	2.88	0.310	0.181	0.261
	Ni (%)	Ti (%)	Pb (%)	V (%)	Zr (%)	Ga (%)	Co (%)
	0.0368	0.101	0.0787	0.0104	0.0052	0.0134	0.0152

Depok, 10 Juni 2008
LABORATORIUM UJI MATERIAL
Direktur CMPFA,

(Dwi Marta Nurjaya ST, MT)

Pengujian Komposisi Paduan AC4B dengan penambahan 0,072 *wt.* % Ti setelah 4 jam

Department of Metallurgy and Materials Engineering
UNIVERSITY OF INDONESIA

CHEMICAL COMPOSITION TEST REPORT

Contract No. / No. Kontrak 597

Standards / Standar : ASTM A751

Customer / Pemberi Kerja :

Materials / Material : 0.15%

	Al	Si	Fe	Cu	Mn	Mg	Zn	Cr
1	85.7	9.71	0.778	2.82	0.262	0.179	0.261	< 0.0010
2	85.6	9.75	0.899	2.66	0.279	0.185	0.274	< 0.0010
3	85.9	9.57	0.799	2.79	0.252	0.184	0.282	< 0.0010
Ave	85.7	9.67	0.825	2.76	0.264	0.183	0.272	< 0.0010

	Ni	Ti	Be	Ca	Li	Pb	Sn	Sr
1	0.0680	0.0338	< 0.0001	< 0.0005	< 0.0001	0.0550	< 0.0100	< 0.0001
2	0.115	0.0358	< 0.0001	< 0.0005	< 0.0001	0.0588	0.0167	< 0.0001
3	0.0797	0.0335	< 0.0001	< 0.0005	< 0.0001	0.0600	< 0.0100	< 0.0001
Ave	0.0876	0.0344	< 0.0001	< 0.0005	< 0.0001	0.0580	< 0.0100	< 0.0001

	V	Na	Bi	Zr	B	Ga	Cd	Co
1	0.0087	< 0.0005	< 0.0050	0.0033	< 0.0005	0.0121	0.0018	0.0035
2	0.0097	< 0.0005	< 0.0050	0.0055	0.0013	0.0112	0.0031	0.0066
3	0.0089	< 0.0005	< 0.0050	0.0039	< 0.0005	0.0114	0.0019	0.0045
Ave	0.0091	< 0.0005	< 0.0050	0.0042	0.0006	0.0116	0.0023	0.0049

	Ag	Hg	In
1	0.0022	< 0.0030	< 0.0100
2	0.0024	< 0.0030	< 0.0100
3	0.0020	< 0.0030	< 0.0100
Ave	0.0022	< 0.0030	< 0.0100

Datum / date
6/17/2008

Tested by / Diuji oleh :
Deni

Approved by / Disetujui oleh :
Jaya

LAMPIRAN 2
HASIL PENGUJIAN KEKERASAN MAKRO AC4B

Pengujian kekerasan dengan penambahan 0,072 wt. % Ti pada sampel tebal

	titik	d1	d2	(d1+d2)/2	brinell
jam ke - 0	1	0.681	0.667	0.674	86.61674
	2	0.66	0.65	0.655	91.77511
	3	0.659	0.68	0.6695	87.79888
	4	0.64	0.643	0.6415	95.72205
	5	0.671	0.688	0.6795	85.20367
			rata - rata		**89.42**
			stdev		**4.29**
			error		**0.048**
	titik	**d1**	**d2**	**(d1+d2)/2**	**brinell**
jam ke - 1	1	0.712	0.71	0.711	77.73212
	2	0.713	0.726	0.7195	75.88216
	3	0.712	0.72	0.716	76.63593
	4	0.712	0.746	0.729	73.89064
			rata - rata		**76.04**
			stdev		**1.62**
			error		**0.021**
	titik	**d1**	**d2**	**(d1+d2)/2**	**brinell**
jam ke - 2	1	0.718	0.724	0.721	75.56247
	2	0.698	0.704	0.701	79.99526
	3	0.711	0.715	0.713	77.29088
	4	0.705	0.704	0.7045	79.19219
			rata - rata		**78.01**
			stdev		**1.99**
			error		**0.025**
	titik	**d1**	**d2**	**(d1+d2)/2**	**brinell**
jam ke - 3	1	0.713	0.702	0.7075	78.51331
	2	0.694	0.685	0.6895	82.72054
	3	0.71	0.695	0.7025	79.64962
	4	0.707	0.713	0.71	77.95414
	5	0.694	0.68	0.687	83.33117
			rata - rata		**80.43**
			stdev		**2.45**
			error		**0.03**
	titik	**d1**	**d2**	**(d1+d2)/2**	**brinell**
jam ke - 4	1	0.713	0.704	0.7085	78.28893
	2	0.707	0.713	0.71	77.95414
	3	0.725	0.716	0.7205	75.66881
	4	0.713	0.724	0.7185	76.0964
	5	0.717	0.729	0.723	75.1393
			rata - rata		**76.63**
			stdev		**1.41**
			error		**0.018**

Pengujian kekerasan dengan penambahan 0,072 wt. % Ti pada sampel tipis

Jam Ke - 0	titik	**d1**	**d2**	**(d1+d2)/2**	**brinell**
	1	0.657	0.665	0.661	90.09802
	2	0.647	0.648	0.6475	93.93737
	3	0.662	0.68	0.671	87.40219
	4	0.642	0.665	0.6535	92.20161
	5	0.636	0.643	0.6395	96.32814
			rata - rata		**91.99**
			stdev		**3.44**
			error		**0.037**
jam ke - 1	**titik**	**d1**	**d2**	**(d1+d2)/2**	**brinell**
	1	0.645	0.656	0.6505	93.06349
	2	0.667	0.664	0.6655	88.86986
	3	0.64	0.658	0.649	93.49892
	4	0.679	0.696	0.6875	83.20852
	5	0.671	0.668	0.6695	87.79888
			rata - rata		**89.29**
			stdev		**4.22**
			error		**0.047**
jam ke - 2	**titik**	**d1**	**d2**	**(d1+d2)/2**	**brinell**
	1	0.674	0.694	0.684	84.07279
	2	0.679	0.706	0.6925	81.9965
	3	0.671	0.668	0.6695	87.79888
	4	0.667	0.696	0.6815	84.69829
	5	0.69	0.706	0.698	80.69324
			rata - rata		**83.85**
			stdev		2.73
			error		0.032
jam ke - 3	**titik**	**d1**	**d2**	**(d1+d2)/2**	**brinell**
	1	0.696	0.706	0.701	79.99526
	2	0.679	0.678	0.6785	85.45804
	3	0.656	0.694	0.675	86.35725
	4	0.682	0.673	0.6775	85.71354
	5	0.69	0.706	0.698	80.69324
			rata - rata		**83.64**
			stdev		**3.04**
			error		**0.036**
jam ke - 4	**titik**	**d1**	**d2**	**(d1+d2)/2**	**brinell**
	1	0.674	0.694	0.684	84.07279
	2	0.691	0.703	0.697	80.9279
	3	0.695	0.696	0.6955	81.2818
	4	0.695	0.695	0.695	81.40027
	5	0.704	0.697	0.7005	80.11097
			rata - rata		**81.56**
			stdev		**1.49**
			error		**0.018**

Hardness Conversion Table

Approximate Hardness Equivalents Covering Range of Rockwell C and Rockwell B Scales

VPN	ROCKWELL SCALES															BRINELL	
DPH HV/10	A	B	C	D	E	F	G	H	K	15N	30N	45N	15T	30T	45T	BHN 500kg	BHN 3000kg
107	39	58			92	90	15		71				80	55	31	92	104
106	38	57			91	90	13		71				80	55	30	91	102
105	38	56			91	89	12		70				79	54	29	90	101
104	38	55			90	88	10		69				79	53	28	89	99
103	37	54			90	88	9		68				79	53	27	87	
102	37	53			89	87	7		67				78	52	26	86	
101	36	52			88	87	6		66				78	51	25	85	
100	36	51			88	86	4		65				78	51	24	84	
100	35	50			87	86	3		65				77	50	23	83	
99	35	49			87	85			64				77	49	22	82	
98	35	48			86	85			63				77	49	21	81	
97	34	47			85	84			62				76	48	20	80	
96	34	46			85	83			61				76	47	19	79	
95	33	45			84	83			60				76	46	18	79	
95	33	44			84	82			59				75	46	17	78	
94	32	43			83	82			58				75	45	16	77	
93	32	42			82	81			58				75	44	15	76	
92	31	41			82	81			57				74	44	14	75	
91	31	40			81	80			56				74	43	13	74	
90	31	39			80	79			55				74	42	11	74	
90	30	38			80	79			54				73	42	10	73	
89	30	37			79	78			53				73	41	9	72	
88	29	36			79	78		100	52				73	40	8	71	
88	29	35			78	77		100	52				72	40	7	71	
DPH HV/10	A	B	C	D	E	F	G	H	K	15N	30N	45N	15T	30T	45T	BHN 500kg	BHN 3000kg
VPN	ROCKWELL SCALES															BRINELL	

LAMPIRAN 3
HASIL PENGUJIAN KEKUATAN TARIK AC4B

Pengujian tarik paduan AC4B dengan penambahan 0 *wt.* % Ti

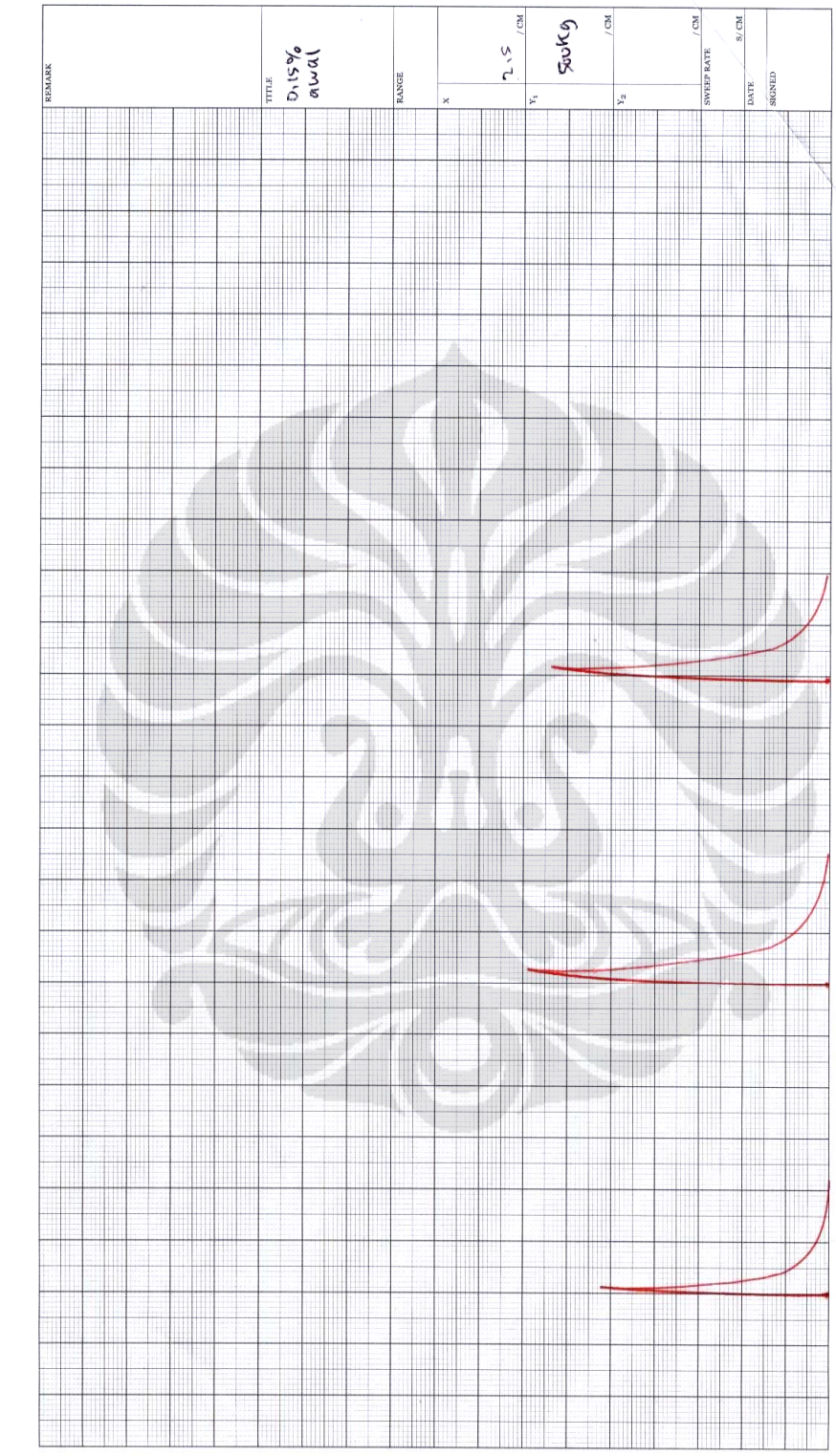
Penambahan Ti	No	Do (mm)	A0 (mm2)	Gauge length	Pmaks (kg/mm2)	ΔL	UTS (MPa)	elongasi (%)
0 %	1	15.1	178.99	50	1300	0.25	72.6	0.5
	2	15.1	178.99	50	2350	0.5	131.3	1
	3	14.7	169.63	50	3100	0.5	182.7	1
Rata-rata					2250		**128.89**	**0.83333333**
STDEV					738.241153		**58.18**	**0.24**
Penyimpangan					0.33		**0.45**	**0.28**

Pengujian tarik paduan AC4B dengan penambahan 0,072 *wt.* % Ti

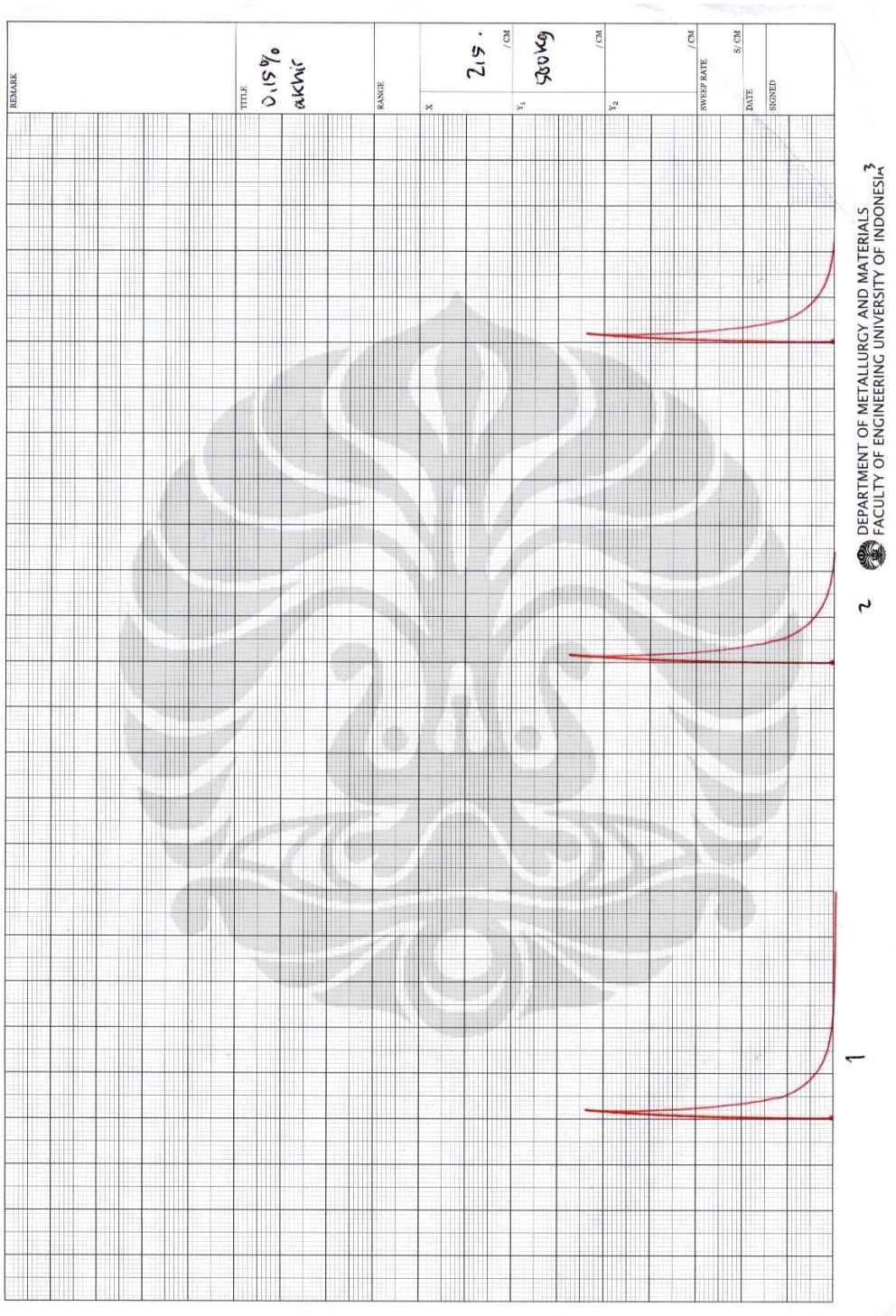
Penambahan Ti	No	Do (mm)	A0 (mm2)	Gauge length	Pmaks (kg/mm2)	ΔL	UTS (MPa)	elongasi (%)
0.072 wt. %	1	15.1	186.1706	50	2600	0.25	139.7	0.5
	2	15.1	186.1706	50	3450	0.75	185.3	1.5
	3	14.7	167.3306	50	3200	0.5	191.2	1
Rata-rata					3083.33		**172.07**	**1**
STDEV					356.68		**77.47**	**0.41**
Penyimpangan					0.12		**0.45**	**0.41**

Pengujian tarik paduan AC4B dengan penambahan 0,072 wt. % Ti setelah 4 jam

Penambahan Ti	No	Do (mm)	A0 (mm2)	Gauge length	Pmaks (kg/mm2)	ΔL	UTS (MPa)	elongasi (%)
0.072 wt. %	1	15.4	186.1706	50	2800	0.5	150.39	1
	2	15.5	188.5963	50	2900	0.5	153.77	1
	3	15.3	183.7607	50	2800	0.5	152.37	1
Rata-rata					2833.33		**152.08**	**1**
STDEV					57.73		**1.7**	**0**
Penyimpangan					0.02		**0.011**	**0**



Grafik pengujian tarik Paduan AC4B dengan penambahan 0.072 wt. % Ti



HASIL PENGUKURAN NILAI DAS

Grafik pengujian tarik Paduan AC4B dengan penambahan 0.072 wt. % Ti setelah 4 jam

Perhitungan DAS pada sampel tebal

Titik	Jam ke - 0 (μm)	Jam ke - 1 (μm)	Jam ke - 2 (μm)	Jam ke - 3 (μm)	Jam ke - 4 (μm)
1	23.3	29.44	29.44	24.44	28.33
2	16.7	24.44	24.44	26.67	26.67
3	22.8	30.28	24.44	27.22	22.78
4	23.3	30.28	23.33	21.11	26.67
5	20	27.22	23.06	21.67	26.67
6	17.8	26.67	27.78	26.67	25
7	20.6	31.67	25.28	25.78	25
8	22.8	33.33	27.78	23.06	22.78
9	27.2	28.33	30.83	28.33	31.11
10	25.6	27.78	30.28	27.22	23.33
rata rata	**22.01**	**28.94**	**26.67**	**25.22**	**25.83**
stdev	**3.28**	**5.6**	**2.8**	**3.61**	**3.33**
error	**0.15**	**0.2**	**0.09**	**0.13**	**0.11**

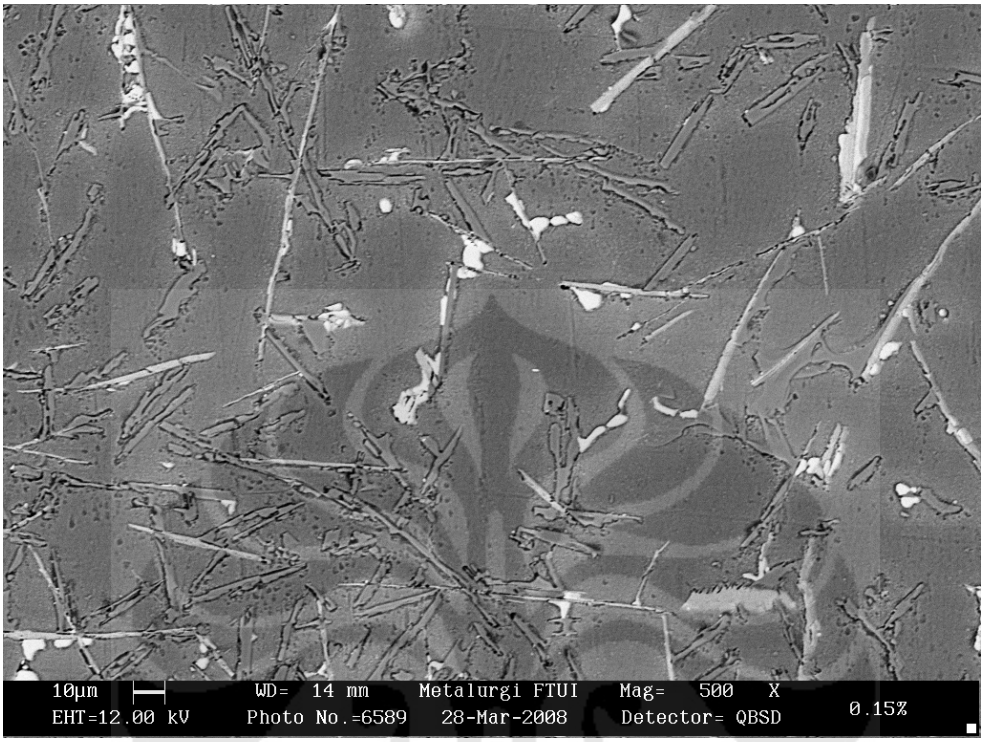
Perhitungan DAS pada sampel tipis

Titik	Jam ke - 0 (μm)	Jam ke - 1 (μm)	Jam ke - 3 (μm)	Jam ke - 2 (μm)	Jam ke - 4 (μm)
1	11.1	12.6	11.7	12.8	13.8
2	11.1	11.7	11.7	13.9	14.5
3	11.7	12.8	12.6	14.5	12.8
4	12.8	10.56	13.9	11.1	14.5
5	11.1	11.1	11.7	11.7	13.9
6	12.8	12.6	12.2	12.8	13.9
7	11.7	11.7	13.3	13.9	14.5
8	11.1	10.56	14.5	14.5	16.7
9	11.1	11.1	13.9	13.9	12.6
10	12.2	11.7	12.8	12.2	15
rata rata	**11.7**	**11.6**	**12.83**	**13.13**	**14.22**
stdev	**0.7**	**0.82**	**1.03**	**1.19**	**1.48**
error	**0.06**	**0.07**	**0.08**	**0.09**	**0.1**

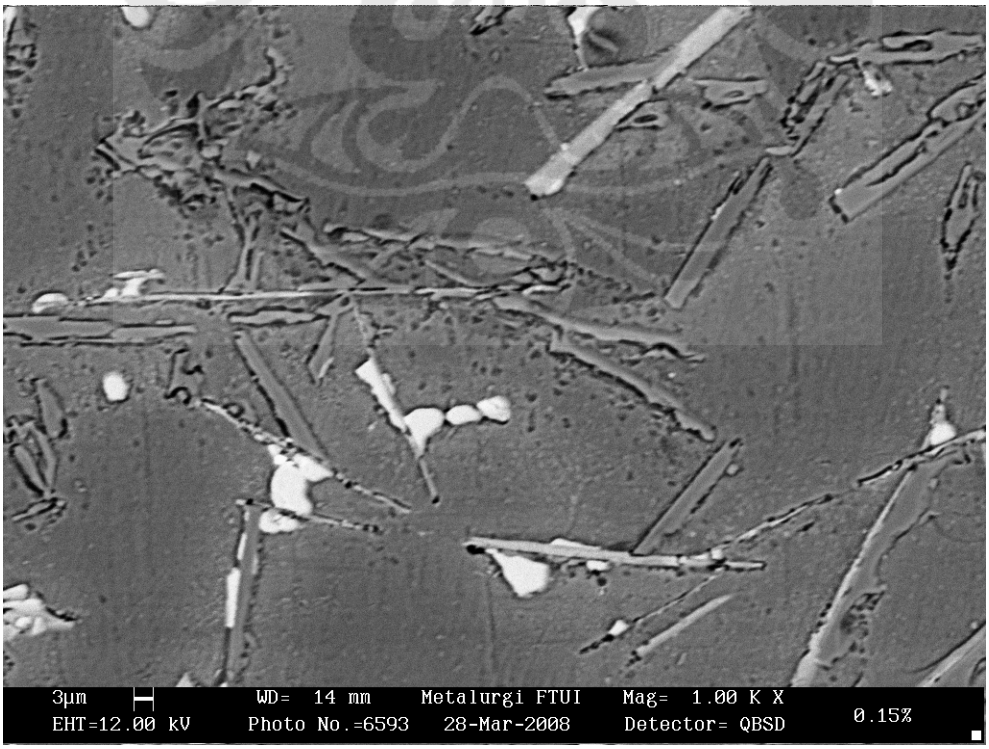
LAMPIRAN 4
HASIL PENGAMATAN SEM DAN EDAX

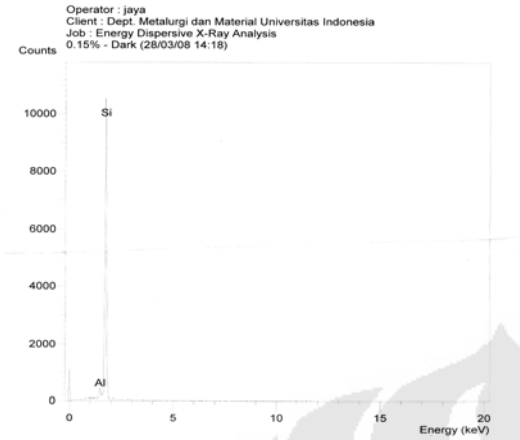
Hasil pengamatan SEM paduan AC4B dengan penambahan 0,072 wt. % Ti

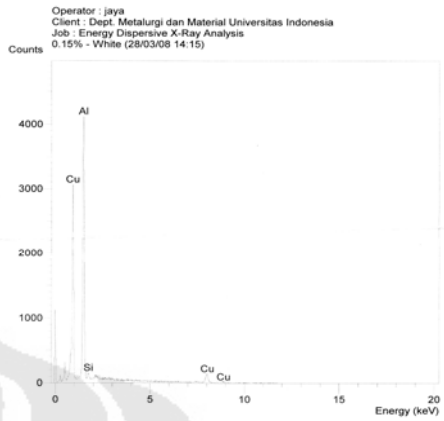
(perbesaran 500 X)

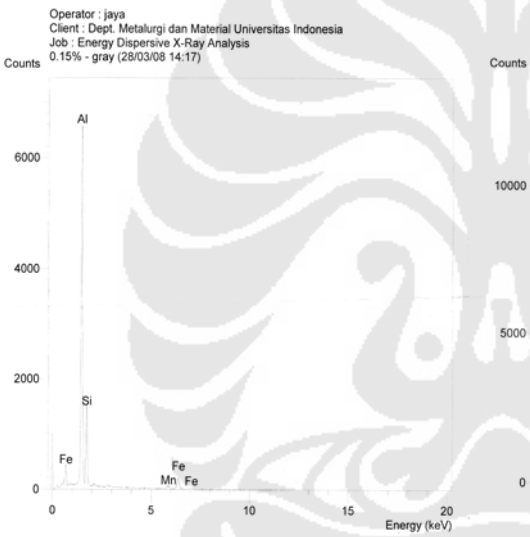


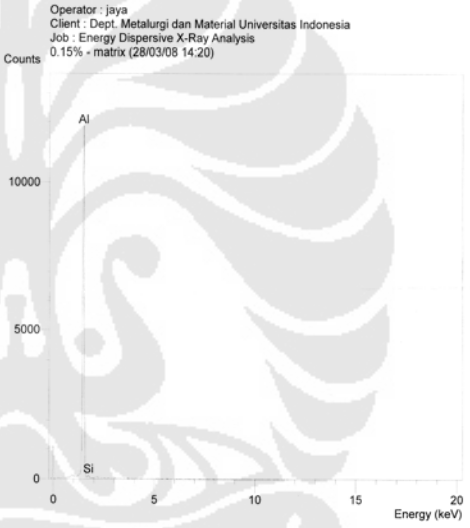
(perbesaran 1000 X)











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

* = <2 Sigma

LAMPIRAN 5
HASIL PENGUJIAN KEBOCORAN

CHECK SHEET (20 September 2007)

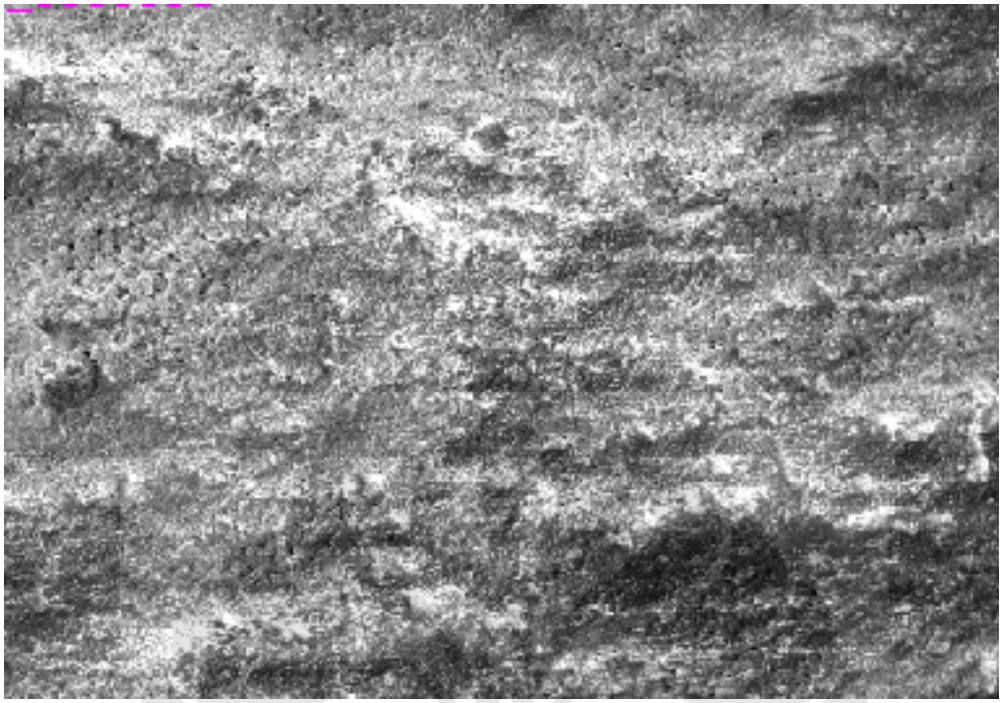
Temp melting :800° C
Komposisi Grain refiner :0.15 %
Temp penambahan grain refiner :760° C
Jenis Grain Refiner :Flux Coveral GR-2815
Waktu GBF :10 :15 (selama 8 menit)

No shot	No Part	Temp Dies Atas(°C)	Temp Dies Bawah(°C)	Temp molten(°C)	Tekanan mesin (kPa)	waktu (jam)	Jenis cacat	Mark	Uji Bocor
1	1	TRIAL							
	2								
2	3								
	4								
3	5	262	335	702	250	0		FA	ya
	6	254	353					FB	
4	7	259	342	702	250	0		FE	
	8	252	355					FF	
5	9	262	347	702	250	0		FG	
	10	256	362					FH	
6	11	259	333	703	250	0		FI	
	12	253	341					FJ	ya
COATING									
7	13	257	348	704	250	1		F1A	
	14	254	357					F1B	
8	15	262	358	705	250	1		F1E	
	16	258	371					F1F	
9	17	260	341	706	250	1		F1G	
	18	256	357				MUNCRAT	F1H	
10	19	262	349	706	250	1		F1I	
	20	259	359					F1J	
11	21	266	360	707	250	1		F1K	
	22	262	374					F1L	
12	23	249	328	710	250	1		F1M	
	24	236	339					F1N	
13	25	249	356	708	256	1		F1O	
	26	246	357					F1P	
14	27	240	360	708	256	1		F1Q	
	28	248	374					F1R	
15	29	253	367	708	256	1		F1S	
	30	247	381					F1T	
16	31	251	351	709	256	1		F1U	
	32	244	353					F1V	ya
17	33	254	348	709	256	2	PASIR	F2A	
	34	248	345					F2B	
COATING									
18	35	254	350	709	256	2		F2E	
	36	249	346					F2F	ya
19	37	260	362	709	256	2		F2G	
	38	255	257					F2H	
COATING									
20	39	261	369	709	256	2		F2I	
	40	256	364					F2J	ya
21	41	258	355	709	256	2		F2K	ya
	42	252	352					F2L	ya
22	43	263	375	709	256	2		F2M	ya
	44	258	384					F2N	
23	45	265	380	709	256	2		F2O	
	46	261	380					F2P	
24	47	269	368	709	256	2		F2Q	
	48	253	376					F2R	
25	49	268	380	709	256	2		F2S	
	50	265	399					F2T	
26	51	267	372	709	256	2		F2U	
	52	269	386					F2V	

27	53	269	359	709	256	2		F2W	
	54	260	368					F2X	
28	55	263	359	710	262	3		F3A	
	56	257	374					F3B	
29	57	268	371	709	262	3		F3E	
	58	263	385					F3F	
30	59	267	365	709	262	3		F3G	
	60	261	377					F3H	ya
31	61	267	378	709	262	3		F3I	ya
	62	265	388					F3J	ya
32	63	269	378	709	262	3		F3K	
	64	266	377					F3L	
COATING									
33	65	257	355	710	262	3	MISSRUN	F3M	
	66	251	357					F3N	
34	67	260	382	709	262	3		F3O	
	68	255	380					F3P	
35	69	265	381	709	262	3		F3Q	
	70	262	372					F3R	
36	71	266	397	709	262	3		F3S	ya
	72	263	400					F3T	
37	73	269	383	709	262	3		F3U	
	74	266	379					F3V	
38	75	269	378	709	262	3		F3W	ya
	76	266	400					F3X	ya
39	77	271	373	709	262	3		F3Y	
	78	268	384					F3Z	ya
40	79	270	384	709	262	3		F31	ya
	80	266	399					F32	ya
41	39	273	373	709	268	4		F4A	ya
	40	268	376					F4B	ya
42	41	273	389	710	268	4		F4E	ya
	42	269	400					F4F	
43	43	273	384	709	268	4		F4G	
	44	268	396					F4H	
44	45	270	368	710	268	4		F4I	
	46	267	367					F4J	ya
45	47	270	374	709	268	4		F4K	
	48	266	378					F4L	
46	49	267	364	709	268	4	PASIR	F4M	
	50	262	365					F4N	
47	51	268	379	709	268	4		F4O	
	52	264	397					F4P	
COATING									
48	53	272	369	710	268	4		F4Q	
	54	264	372					F4R	ya
49	55	268	380	709	268	4		F4S	
	56	260	390					F4T	
50	57	270	386	709	268	4		F4U	ya
	58	264	397					F4V	

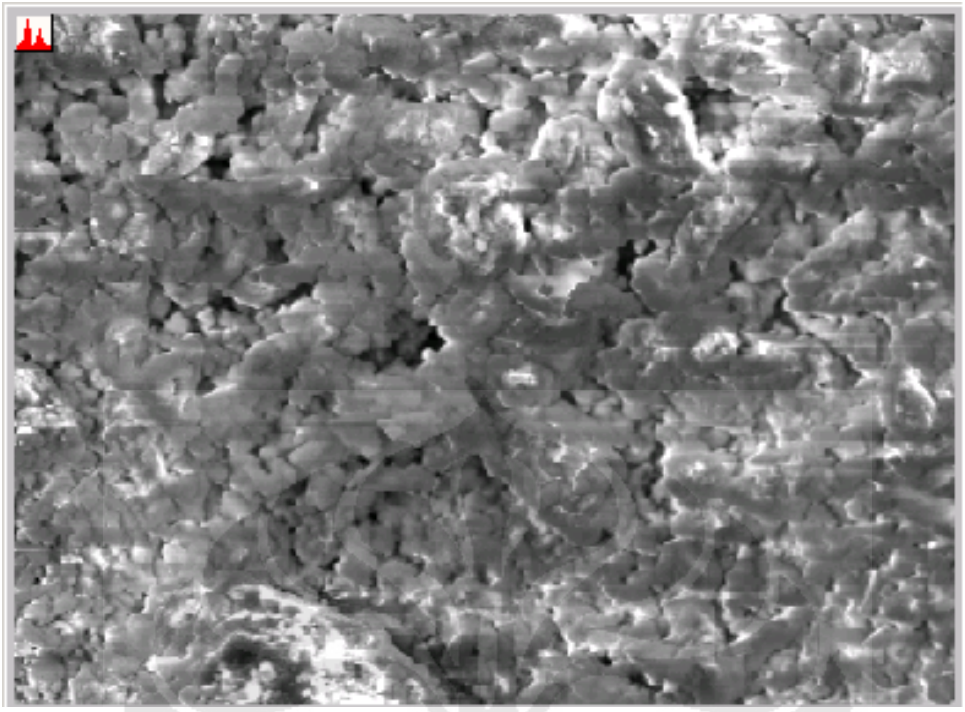
*) No. Part 1 = Kiri
No. Part 2 = Kanan

LAMPIRAN 6
COVERAL GR – 2815



Gambar mikrostruktur dan tabel komposisi Coveral GR pada perbesaran 200 X

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 800 X

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

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.%*

FOSECO

Edition 01/05 Technical Data Sheet

COVERAL* GR 2815

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

General description

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.
COVERAL GR 2815 when plunged into the melt reacts to form ttanium 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.

Advantages

COVERAL GR 2815 is sodium free.
COVERAL GR 2815 is dust free in use and emits low fume during application.
Granulated fluxes can be used at reduced application rates compared to powder fluxes.

Application

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.

Any subsequent degassing by tablets or by FDU impeller treatment can be done without any detrimental effects to the grain refining efficiency.

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

For safety reasons this product must be used only in accordance with the instructions for use contained in this Technical Data Sheet.
The Material Safety Data Sheet for this product is available on request.

Further remarks

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.

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