

LAMPIRAN



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET DAN TEKNOLOGI
UNIVERSITAS NEGERI MALANG (UM)
FAKULTAS TEKNIK
JL Semarang 5 Malang 65145
Telepon: 0341-565307
Laman: www.um.ac.id

SURAT KETERANGAN

Yang bertanda tangan di bawah ini :

Nama : Drs. Imam Sudjono, MT
NIP : 196003271986011002
Jabatan : Kepala Laboratorium Teknik Mesin FT UM

Menerangkan bahwa :

Nama : Setiyo Wahyudi (NIM 2011909)
Asal : Mahasiswa Prodi Teknik Mesin
Institut Teknologi Nasional (ITN) Malang

Telah melaksanakan penelitian (Uji microvickers, Fotomacro dan Uji Sem) di Laboratorium Teknik Mesin Fakultas Teknik Universitas Negeri Malang untuk keperluan penyusunan skripsi. Demikian Surat Keterangan ini dibuat dengan sebenarnya.

Malang, 13 Januari 2022
Kepala Lab. Teknik Mesin



Drs. IMAM SUDJONO, MT
NIP 196003271986011002



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**HASIL UJI KEKERASAN MICROVICKERS
SETIYO WAHYUDI (NIM 2011909)
INSTITUT TEKNOLOGI NASIONAL MALANG**

No	Kode Spesimen	Kekerasan (HV)				
		titik 1	titik 2	titik 3	titik 4	titik 5
1	A36	208.2	196.9	202.7	206.6	207.8
2	700	151.1	140.0	143.6	130.1	122.2
3	800	228.5	234.0	207.6	227.5	224.9
4	900	726.3	770.4	799.0	773.8	479.2

force : 500 gram
dwell : 10 detik

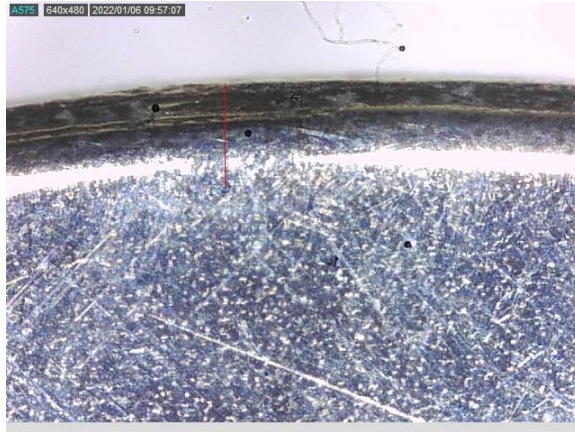
Malang, 17 Desember 2021
Kepala Lab. Teknik Mesin UM



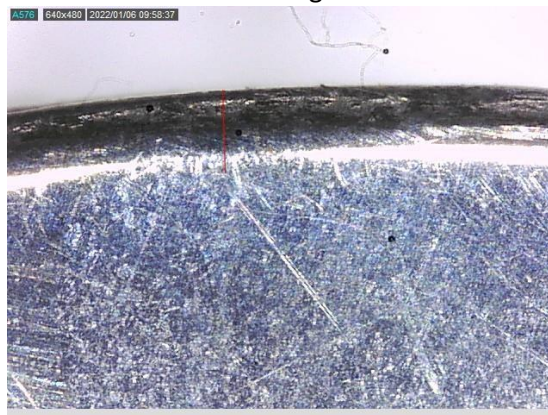
Drs. IMAM SUDJONO, MT
NIP.196003271986011002



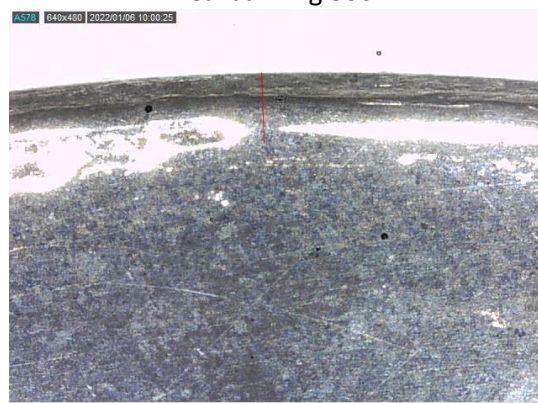
HASIL KETEBALAN KEKERASAN



Carburizing 700



Carburizing 800



Carburizing 900



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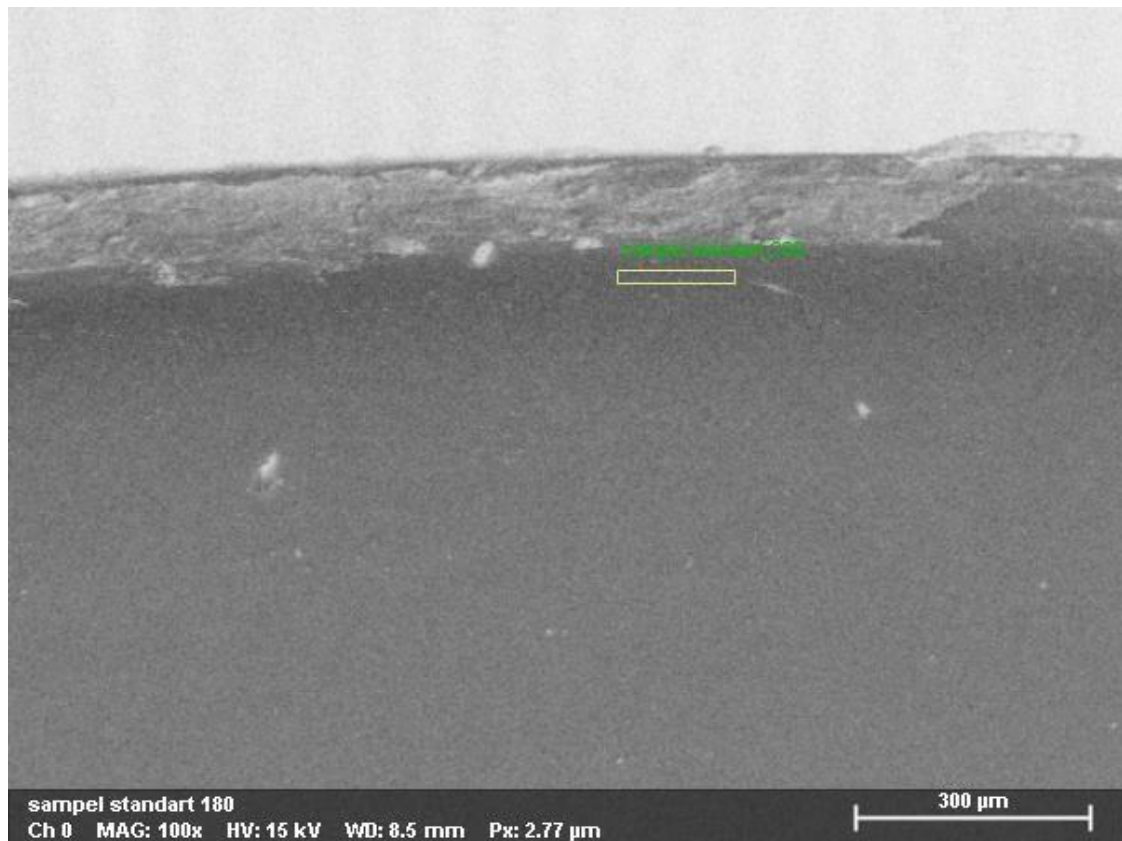
Application Note

Company / Department



Author : Teknik mesin UM
Creator : 1/7/2022
Sample Name : ASTM A36 CARBURIZING 700

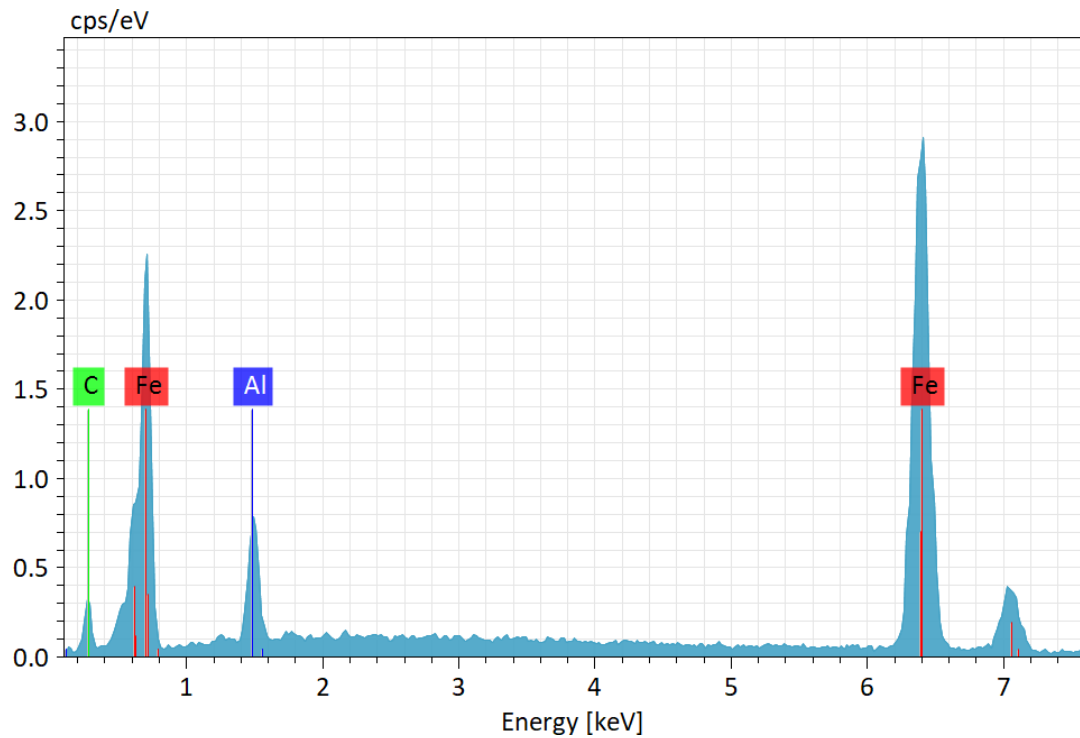
Area 1





Application Note

Company / Department



sampel standart 209

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Fe	26	16188	90.18	85.17	60.34	2.79	3.09
C	6	704	10.38	9.81	32.31	2.63	25.32
Al	13	2024	5.31	5.02	7.36	0.32	6.08
		Sum	105.88	100.00	100.00		



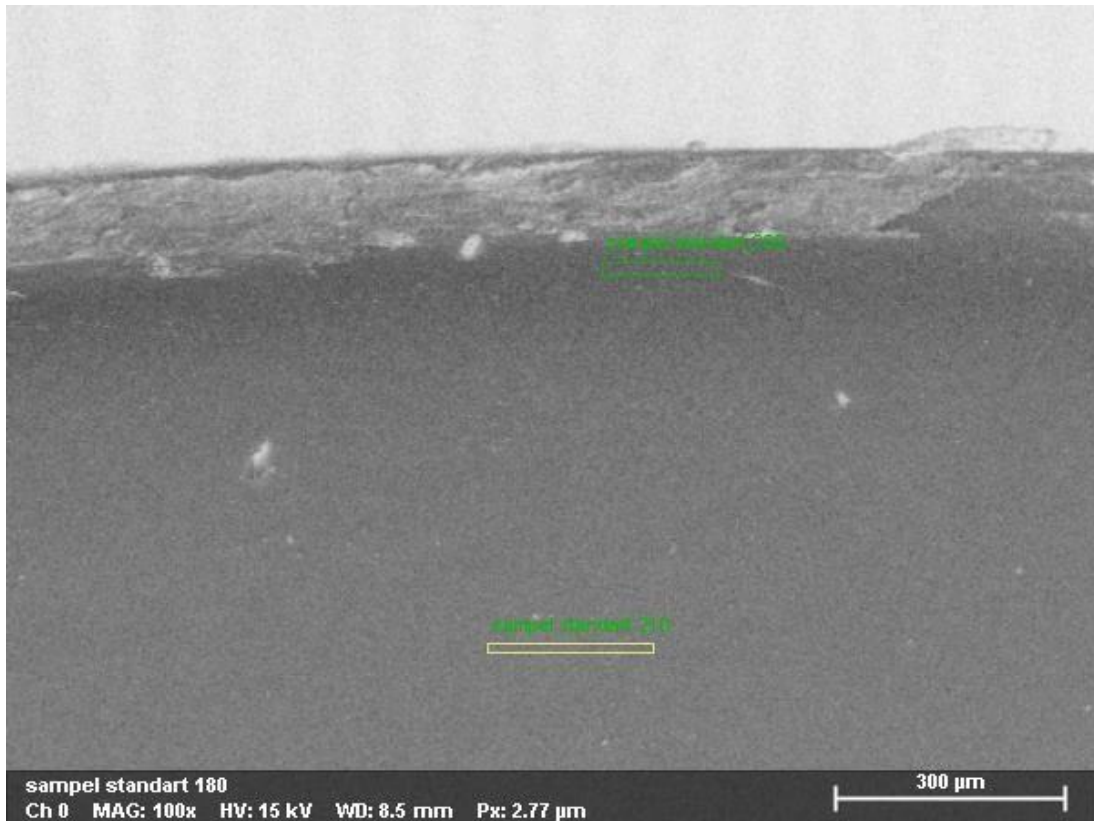
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Application Note

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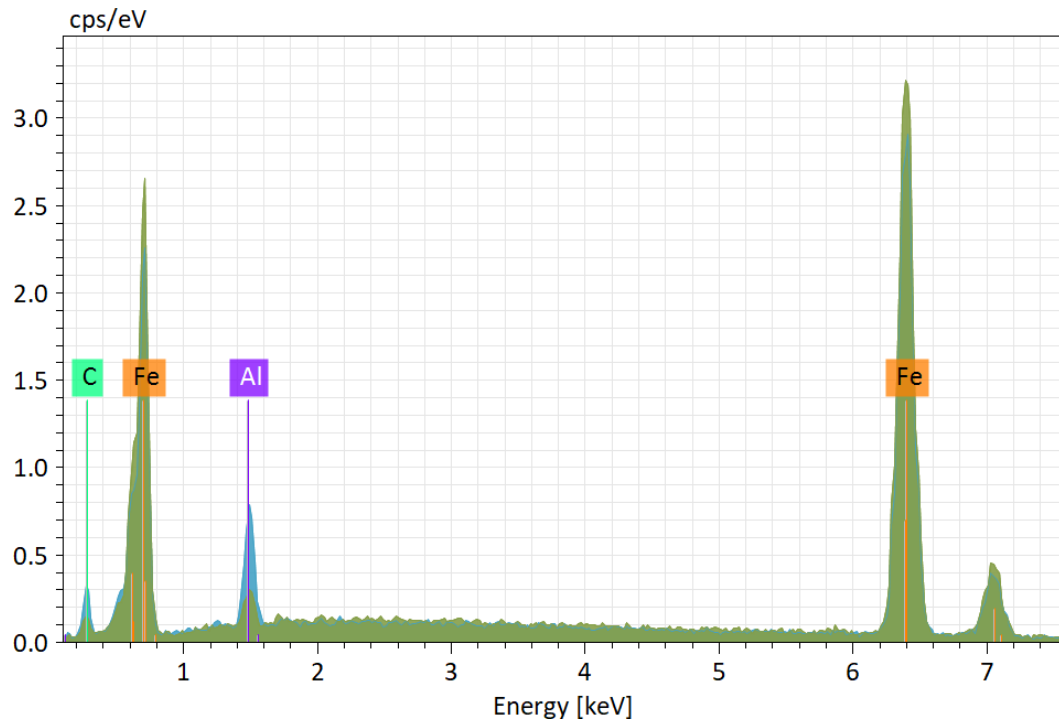


Area 2





Application Note
 Company / Department



sampel standart 210

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Fe	26	16736	96.60	94.44	80.99	2.98	3.09
C	6	276	4.22	4.13	16.46	1.46	34.69
Al	13	570	1.47	1.43	2.54	0.13	8.97
		Sum	102.29	100.00	100.00		



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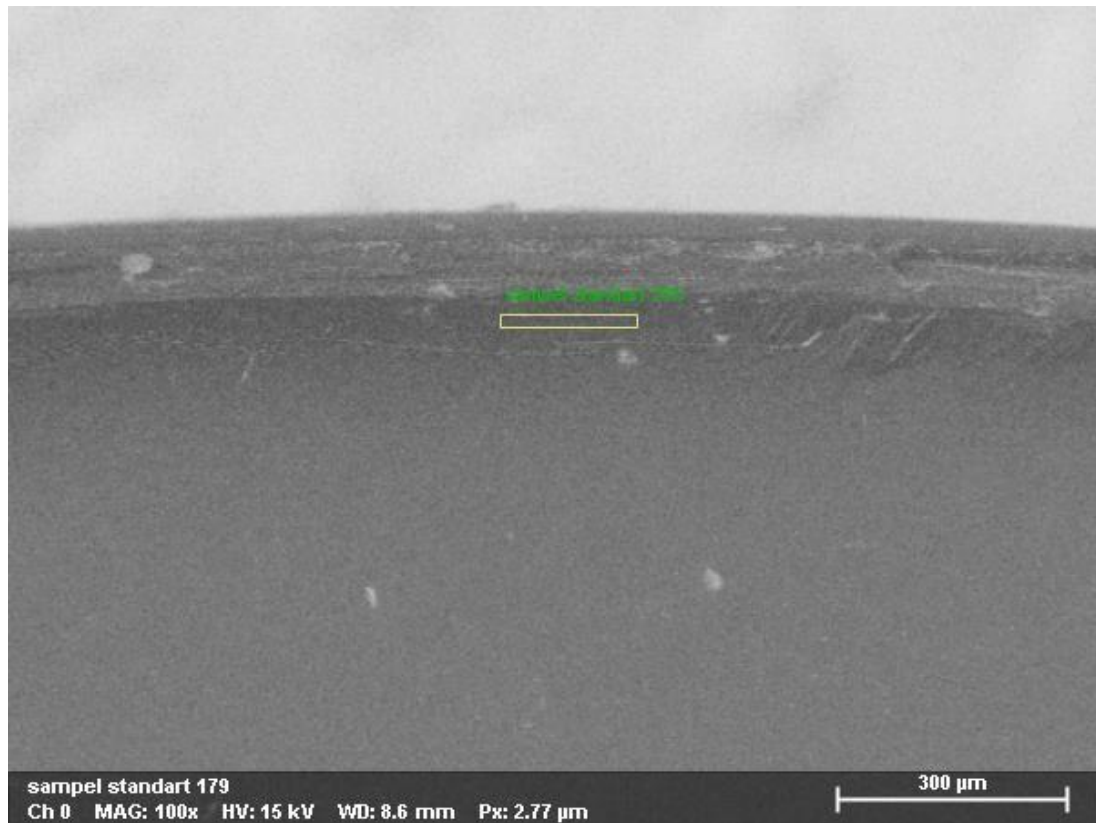
Application Note

Company / Department



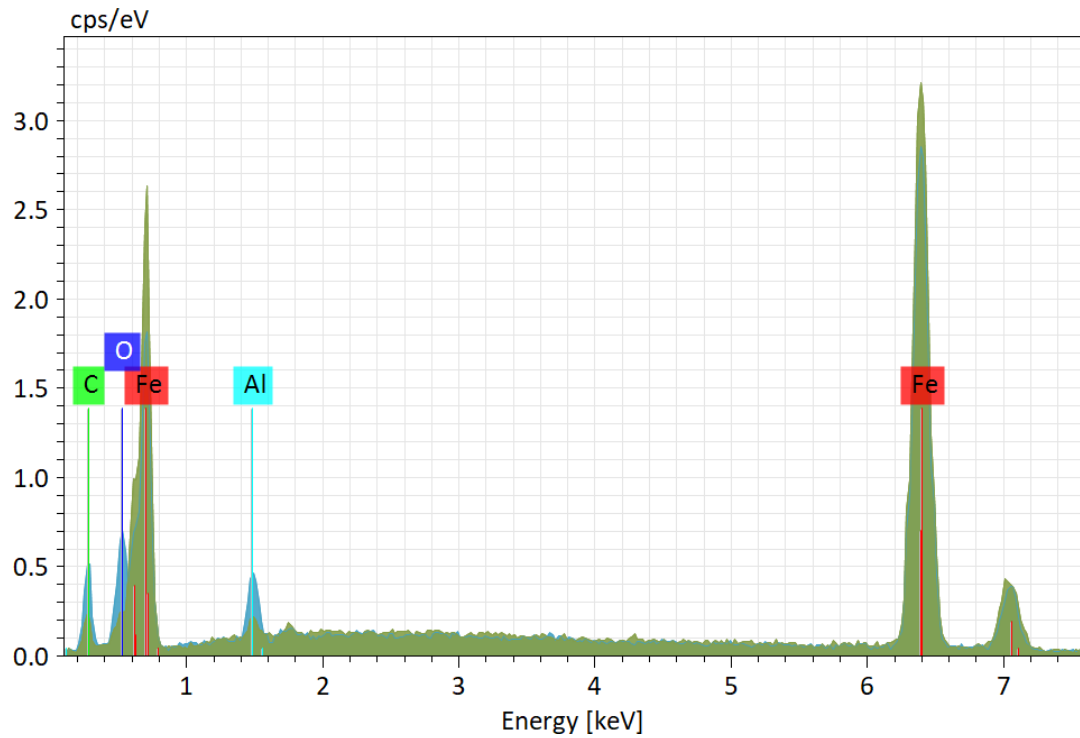
Author : Teknik mesin UM
Creator : 1/7/2022
Sample Name : ASTM A36 CARBURIZING 800

Area 1





Application Note
 Company / Department



sampel standart 203

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Fe	26	15917	80.28	76.93	45.36	2.49	3.10
C	6	1199	14.48	13.88	38.05	3.15	21.73
O	8	1537	6.68	6.40	13.18	1.38	20.58
Al	13	1154	2.91	2.79	3.40	0.20	7.04
		Sum	104.36	100.00	100.00		



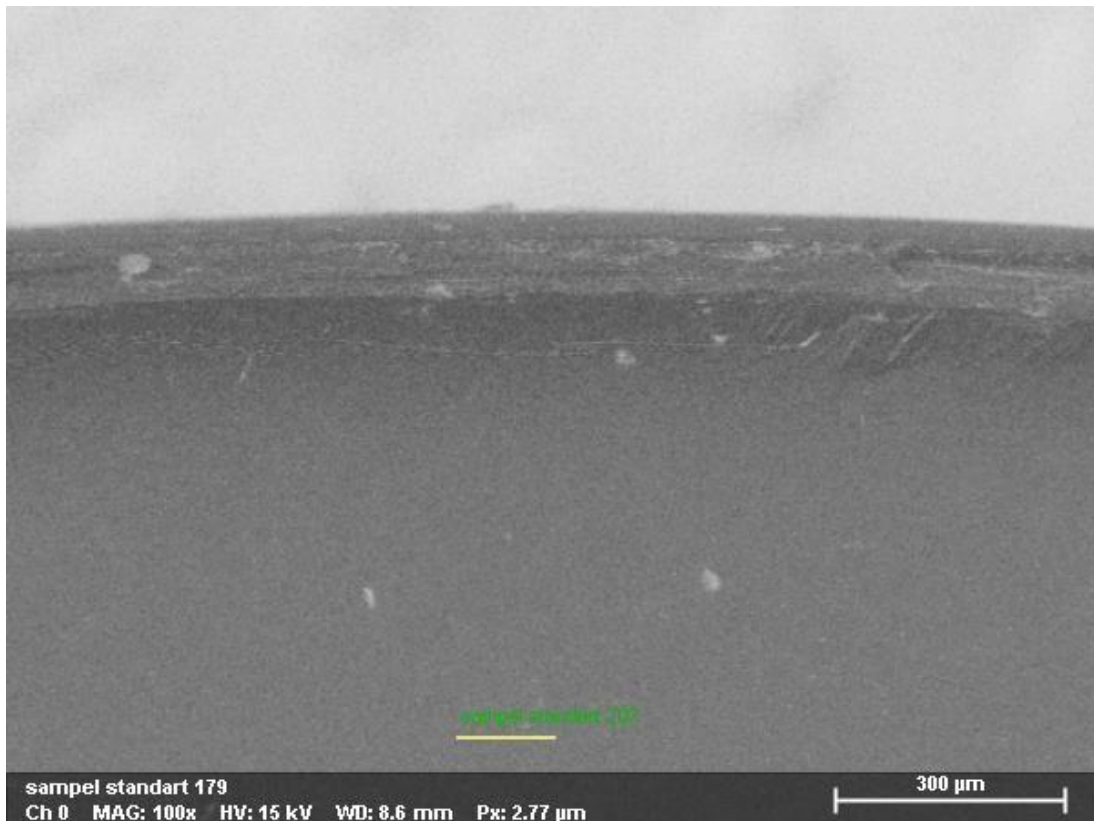
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Application Note

Company / Department

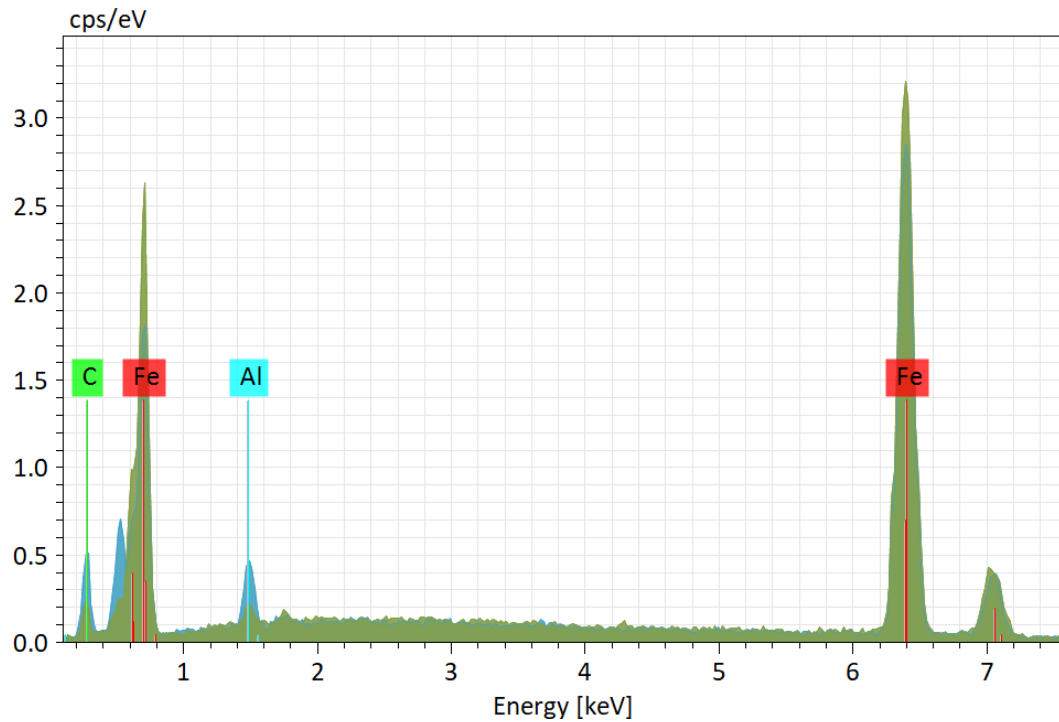


Area 2





Application Note
Company / Department



sampel standart 204

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Fe	26	16596	88.61	92.95	74.83	2.74	3.09
C	6	448	6.16	6.47	24.20	1.81	29.30
Al	13	227	0.56	0.58	0.97	0.08	14.04
		Sum	95.33	100.00	100.00		



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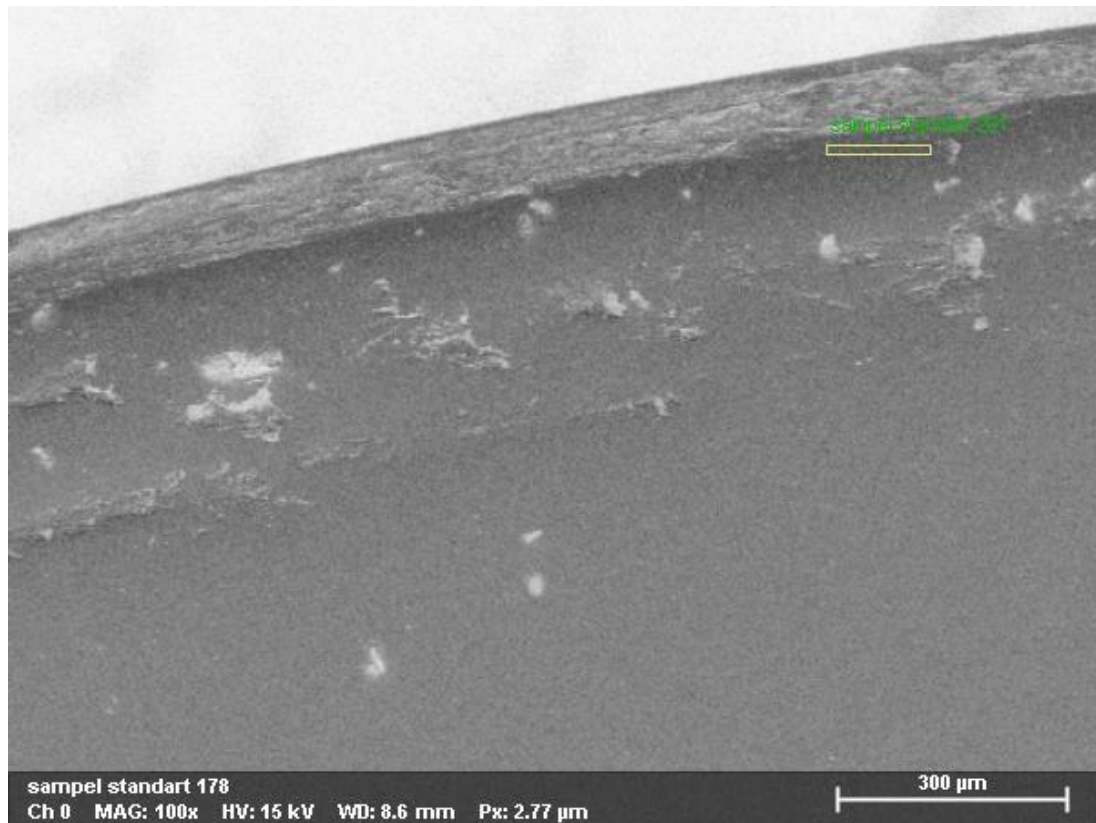
Application Note

Company / Department



Author : Teknik mesin UM
Creator : 1/7/2022
Sample Name : ASTM A36 CARBURIZING 900

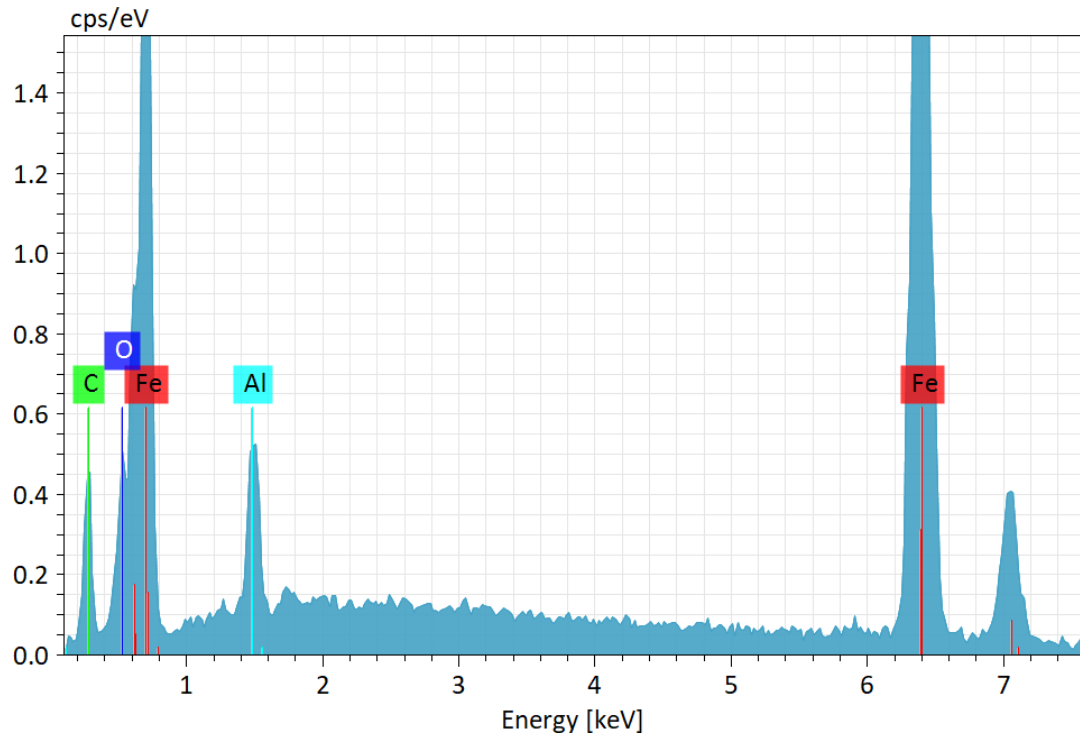
Area 1





Application Note

Company / Department



sampel standart 201

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Fe	26	15169	84.18	80.54	50.49	2.61	3.10
C	6	982	13.37	12.79	37.28	3.07	22.95
O	8	886	4.19	4.00	8.76	1.01	24.04
Al	13	1278	2.79	2.67	3.46	0.19	6.96
		Sum	104.52	100.00	100.00		



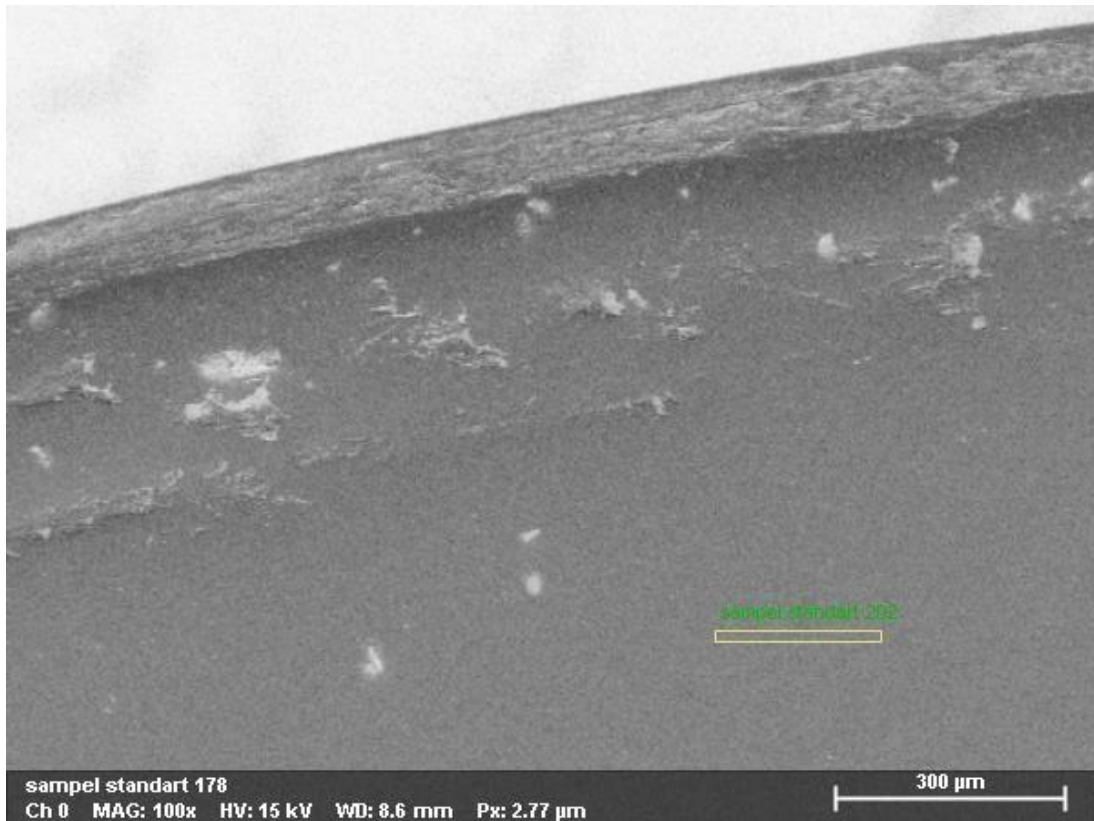
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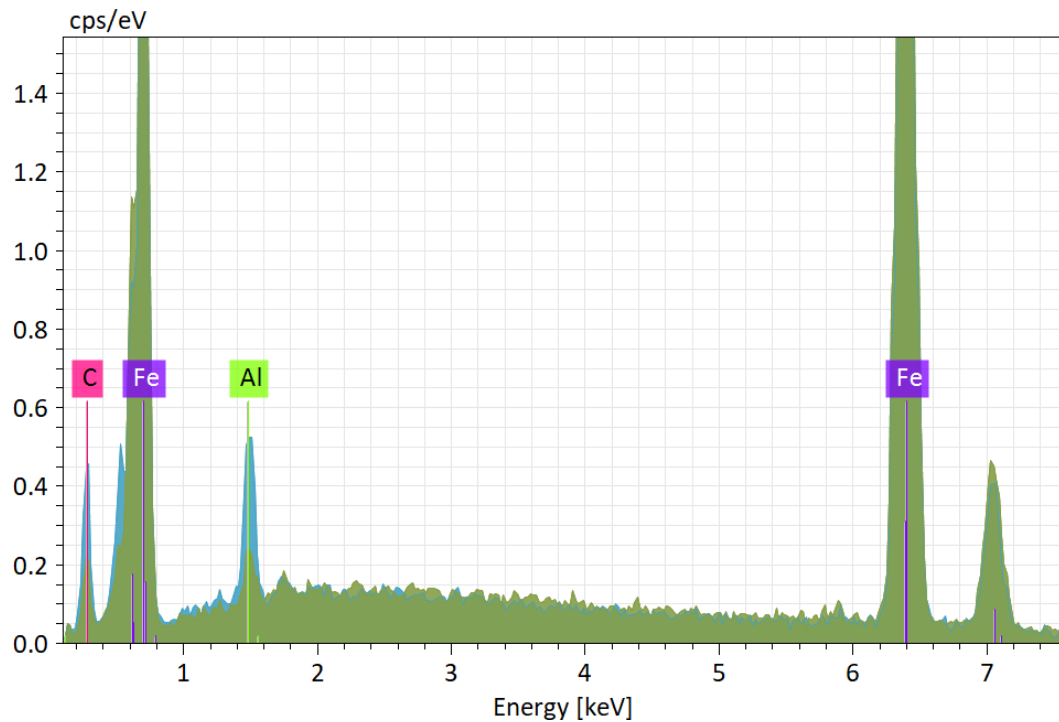
Area 2





Application Note

Company / Department



sampel standart 202

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Fe	26	16691	96.52	93.06	75.74	2.98	3.09
C	6	413	6.21	5.99	22.66	1.87	30.08
Al	13	352	0.99	0.95	1.60	0.11	10.85
		Sum	103.71	100.00	100.00		