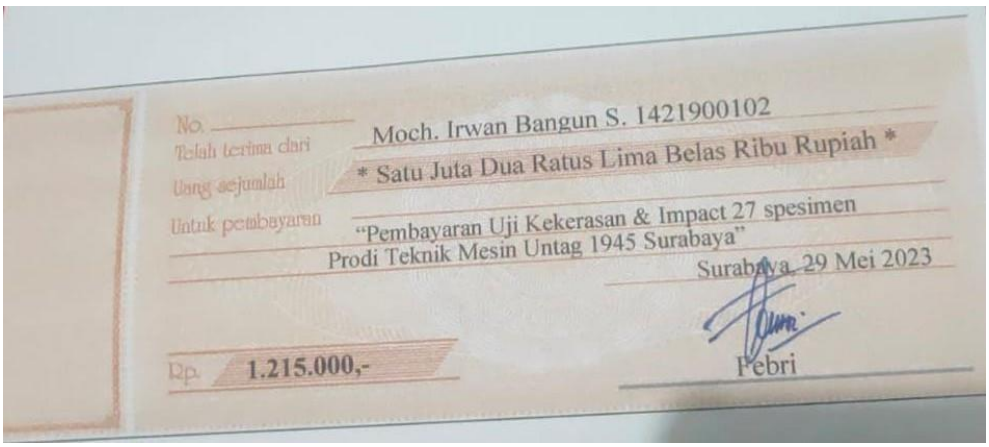
LAMPIRAN

1. Sertifikat Las BNSP Welder pengujian spesimen ASTM A36

2. Bukti Pembayaran Pengujian Dilabotarium Material Teknik Untag Surabaya



3. Sertifikat Plat Baja ASTM A36 / Benda Uji

SeAH Besteel Corp.
1-6, SORYONG-DONG,KUNSAN,
CHEONBUK, KOREA(573-711)

MILL CERTIFICATE

TEL : +82-(0)63-460-8572, 8318(QA)
+82-(0)63-460-8114(Repres.)
FAX : +82-(0)63-460-8423 Page(0/0)

Date : 2018-04-20
Cert. No. : 201804-207465
Customer : RIZQI BAROKAH STEEL
Heat No. : 273301

Steel Grade : AISI 1018/ASTM A36
Shape of Product : Plate Bar
Delivery Condition : Plate Rolled

Size (mm) : 6 X 1200
Length (mm) : 2,400
Weight (kg) : 138
Quantity(pcs) : 1,000

Inspection Items		Chemical Composition (wt. %)				
		C	SI	MN	P	S
		x 100	x 100	x 100	x 1000	x 1000
Spec.	Min.	15	20	0.85		
	Max.	20	24	1.067	0.016	0.021
	Result	20	24	1.067	0.025	0.024

Inspection Items	Product Hardness (HB)
	SURFACE

Mechanical Properties AISI 1018/ASTM A36

Mechanical Properties	Symbol	Steel
Yield strength (MPa)	*Sy*	245 - 300
Tensile strength (MPa)	*St*	420 - 440
Elongation (%)		27 - 30

<<Remarks>>

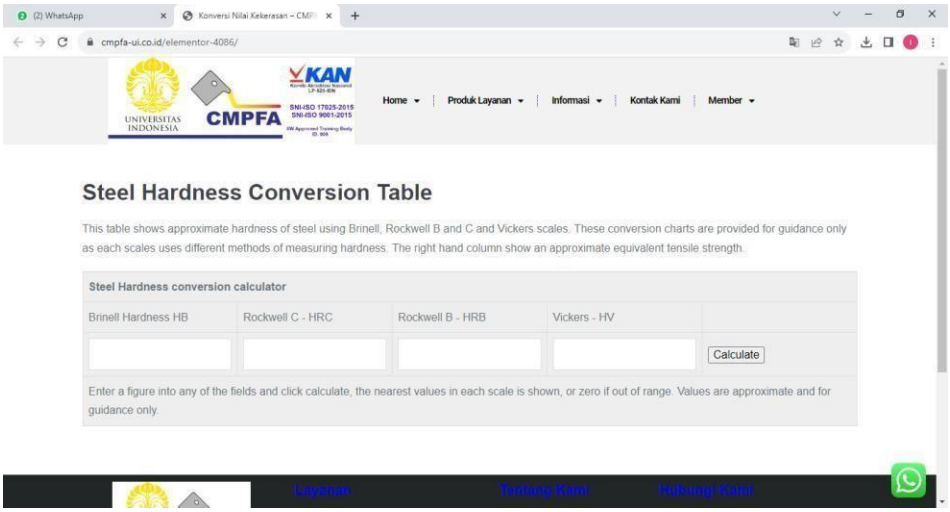
B/DS : 4

End of report

We hereby certify that the material described herein has been made in accordance with the rules of the contract.

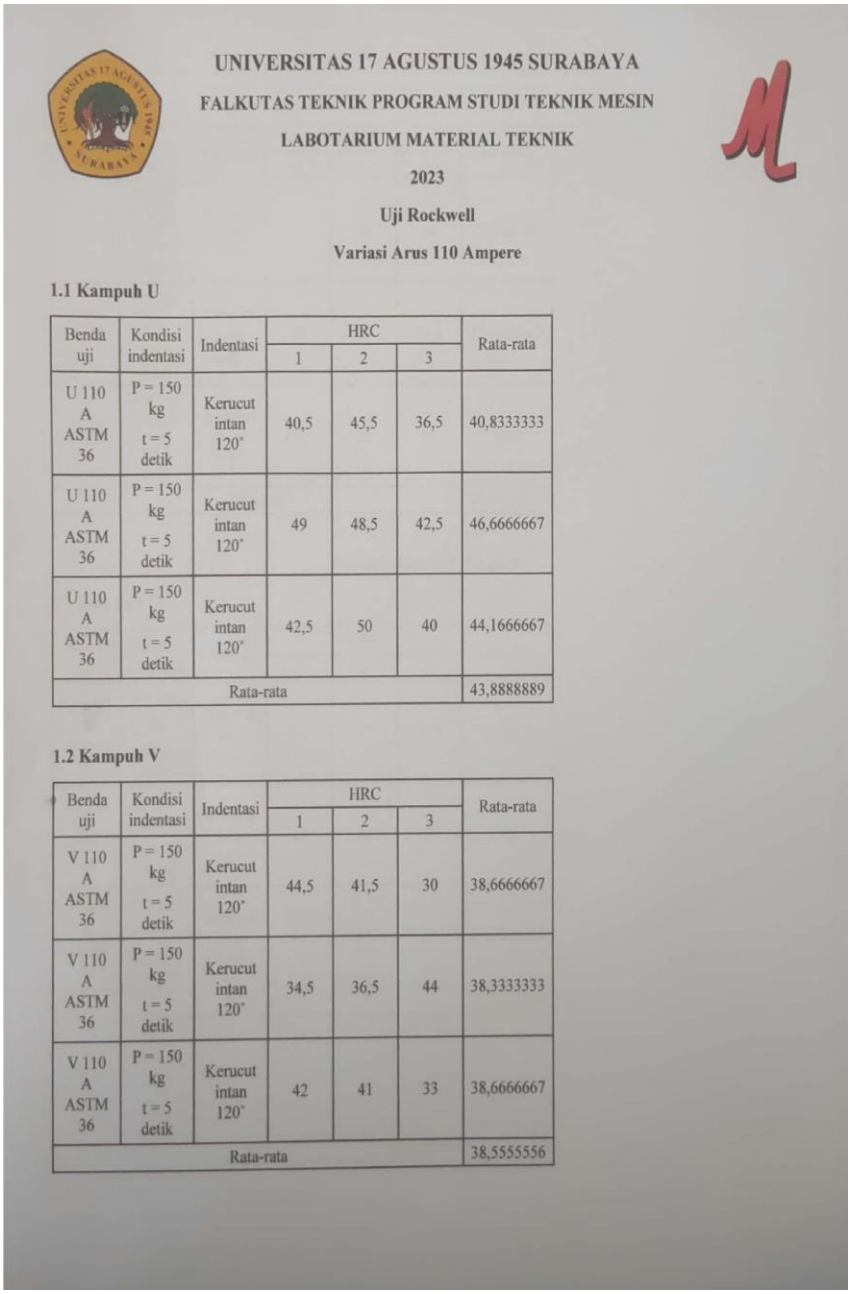
Certified by O. Y. Cho
Manager of Quality Assurance Dept

4. Website Resmi Dari Universitas Indonesia Untuk Konversi Pengujian Rockwell.



5. Kawat Las atau Elektroda yang digunakan LB 52 (3,2 mm)

6. Hasil Pengujian Dilab Material Teknik Untag Surabaya



UNIVERSITAS 17 AGUSTUS 1945 SURABAYA

FALKUTAS TEKNIK PROGRAM STUDI TEKNIK MESIN

LABOTARIUM MATERIAL TEKNIK

2023

Uji Rockwell

Variasi Arus 110 Ampere

1.1 Kampuh U

Benda uji	Kondisi indentasi	Indentasi	HRC			Rata-rata
			1	2	3	
U 110 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	40,5	45,5	36,5	40,8333333
U 110 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	49	48,5	42,5	46,6666667
U 110 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	42,5	50	40	44,1666667
Rata-rata						43,8888889

1.2 Kampuh V

Benda uji	Kondisi indentasi	Indentasi	HRC			Rata-rata
			1	2	3	
V 110 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	44,5	41,5	30	38,6666667
V 110 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	34,5	36,5	44	38,3333333
V 110 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	42	41	33	38,6666667
Rata-rata						38,5555556

1.3 Kampuh I

Benda uji	Kondisi indentasi	Indentasi	HRC			Rata-rata
			1	2	3	
I 110 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	43,5	39	44	42,1666667
I 110 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	45	43	53,5	47,1666667
I 110 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	43,5	33	30	35,5
Rata-rata						41,6111111

Variasi Arus 115 Ampere

2.1 Kampuh U

Benda uji	Kondisi indentasi	Indentasi	HRC			Rata-rata
			1	2	3	
U 115 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	32	47	38,5	39,1666667
U 115 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	45	46	38	43
U 115 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	41	48	42	43,6666667
Rata-rata						41,9444444

2.2 Kampuh V

Benda uji	Kondisi indentasi	Indentasi	HRC			Rata-rata
			1	2	3	
V 115 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	35	47	47	43
V 115 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	50	39	36	41,6666667
V 115 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	43,5	56	46	48,5
Rata-rata						44,3888889

2.3 Kampuh I

Benda uji	Kondisi indentasi	Indentasi	HRC			Rata-rata
			1	2	3	
I 115 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	39	31	43	37,6666667
I 115 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	25	30	42	32,3333333
I 115 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	40,5	48	52	46,8333333
Rata-rata						38,9444444

Variasi Arus 115 Ampere

3.1 Kampuh U

Benda uji	Kondisi indentasi	Indentasi	HRC			Rata-rata
			1	2	3	
U 120 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	41	42	47	43,3333333
U 120 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	43,5	46,5	45,5	45,1666667
U 120 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	52	42	45	46,3333333
Rata-rata						45,333333

3.2 Kampuh V

Benda uji	Kondisi indentasi	Indentasi	HRC			Rata-rata
			1	2	3	
V 120 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	46	45	52	47,6666667
V 120 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	47	49	48	48
V 120 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	46	44	31	40,3333333
Rata-rata						45,333333

3.3 Variasi Kampuh I

Benda uji	Kondisi indentasi	Indentasi	HRC			Rata-rata
			1	2	3	
I 120 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	47	44	43	44,6666667
I 120 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	40	38	35	37,6666667
I 120 A ASTM 36	P = 150 kg t = 5 detik	Kerucut intan 120°	32	43	42	39
Rata-rata						40,4444444

Surabaya, 29 Mei 2023

Labotarium Material Untag Surabaya

LAB. LOGAM
UNTAG 45
SURABAYA

UNIVERSITAS 17 AGUSTUS 1945 SURABAYA

FALKUTAS TEKNIK PROGRAM STUDI TEKNIK MESIN

LABOTARIUM MATERIAL TEKNIK

2023

Uji Impact

Variasi Arus 110 Ampere

1.1 Kampuh U

NO	T (C)	a (mm)	b (mm)	A (mm)	α^1 (Sudut)	α^2 (Sudut)
1	Suhu Ruang	8	20	160	110	65
2	Suhu Ruang	8	20	160	110	31
3	Suhu Ruang	8	20	160	110	83

2.1 Kampuh V

NO	T (C)	a (mm)	b (mm)	A (mm)	α^1 (Sudut)	α^2 (Sudut)
1	Suhu Ruang	8	20	160	110	38
2	Suhu Ruang	8	20	160	110	30
3	Suhu Ruang	8	20	160	110	68

3.1 Kampuh I

NO	T (C)	a (mm)	b (mm)	A (mm)	α^1 (Sudut)	α^2 (Sudut)
1	Suhu Ruang	8	20	160	110	42
2	Suhu Ruang	8	20	160	110	59
3	Suhu Ruang	8	20	160	110	95

Variasi Arus 115 Ampere

2.1 Kampuh U

NO	T (C)	a (mm)	b (mm)	A (mm)	α^1 (Sudut)	α^2 (Sudut)
1	Suhu Ruang	8	20	160	110	85
2	Suhu Ruang	8	20	160	110	31
3	Suhu Ruang	8	20	160	110	30

2.2 Kampuh V

NO	T (C)	a (mm)	b (mm)	A (mm)	α^1 (Sudut)	α^2 (Sudut)
1	Suhu Ruang	8	20	160	110	83
2	Suhu Ruang	8	20	160	110	85
3	Suhu Ruang	8	20	160	110	31

2.3 Kampuh I

NO	T (C)	a (mm)	b (mm)	A (mm)	α^1 (Sudut)	α^2 (Sudut)
1	Suhu Ruang	8	20	160	110	71
2	Suhu Ruang	8	20	160	110	53
3	Suhu Ruang	8	20	160	110	53

Variasi Arus 120 Ampere

3.1 Kampuh U

NO	T (C)	a (mm)	b (mm)	A (mm)	α^1 (Sudut)	α^2 (Sudut)
1	Suhu Ruang	8	20	160	110	30
2	Suhu Ruang	8	20	160	110	30
3	Suhu Ruang	8	20	160	110	31

3.2 Kampuh V

NO	T (C)	a (mm)	b (mm)	A (mm)	α^1 (Sudut)	α^2 (Sudut)
1	Suhu Ruang	8	20	160	110	32
2	Suhu Ruang	8	20	160	110	36
3	Suhu Ruang	8	20	160	110	30

3.3 Kampuh I

NO	T (C)	a (mm)	b (mm)	A (mm)	α^1 (Sudut)	α^2 (Sudut)
1	Suhu Ruang	8	20	160	110	39
2	Suhu Ruang	8	20	160	110	37
3	Suhu Ruang	8	20	160	110	30

Surabaya, 29 Mei 2023

Labotarium Material Untag Surabaya

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