

LAMPIRAN





FAKULTAS TEKNIK – UNIVERSITAS INDONESIA
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LAPORAN PENGUJIAN KOMPOSISI KIMIA
CHEMICAL COMPOSITION TEST REPORT

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No Laporan <i>Report Nr</i>	M0317	Tanggal Terima <i>Receiving Date</i>	29 Juli 2019
No Kontrak <i>Contract Nr</i>	M0317/PT.02/FT04/P/2019	Tanggal Uji <i>Date of Test</i>	30 Juli 2019
Pemakai Jasa <i>Customer</i>	Ferry Budhi Susetyo	Standar <i>Standard</i>	ASTM A751 ASTM E415
Alamat <i>Address</i>	FMIPA Fisika UI	Metode Uji <i>Testing method</i>	Optical Emission Spectroscopy
Bahan <i>Material</i>	Fe Based	Mesin Uji <i>Testing machine</i>	WAS Foundry Master*

Kode Sampel Sample Code	C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Mo (%)
OES Fe Based	0.233	0.182	0.857	0.020	0.015	0.015	0.009
	< 0.005**	0.002	0.005	0.010	< 0.002**	< 0.002**	bal.

catatan

* ketidakpastian pengukuran di estimasi dengan tingkat kepercayaan 95% dengan faktor cakupan k=2

** (<) menunjukkan nilai berada di bawah quantitative limit dari alat uji

Depok, 31 Juli 2019

Manajer Teknik

(Ahmad Asfari, S.T., Ph.D.)

FF-25/ LU-DTMM Rev 4

Laporan hasil pengujian ini hanya berlaku untuk sample yang diuji di Laboratorium Uji-DTMM; publikasi serta penggunaan dokumen ini atau sebagian dari padanya harus dengan izin dari Laboratorium Uji-DTMM



MANUFACTURERS OF A DIVERSE RANGE OF
ADVANCED WELDING CONSUMABLES

SECTION
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WI-0304 DS113 HV-450, Rev. 2, Date 01.01.2011

HV-450	RUTILE - LOW ALLOY - HIGH EFFICIENCY HARDFACING ELECTRODE WITH EXCELLENT RESISTANCE TO IMPACT LOADING COMBINED WITH MEDIUM ABRASION RESISTANCE				DATA SHEET NO.					
					113					
SPECIFICATION	AWS A5.13	DIN 8555	JIS Z 3251							
CLASSIFICATION	EFe2	E1-UM-45-GP	DF2A - 450-R							
PRODUCT DESCRIPTION	<p>The design emphasis of the alloyed weld metal ensures the desired hardness level to the specification is readily achieved as is the deposits maximum resistance to impact loading combined with medium resistance to abrasion.</p> <p>The flux contains the appropriate alloying elements plus iron powder addition and is extruded onto a ferritic wire with a balance of silicates that ensures both coating strength and resistance to moisture absorption.</p>									
WELDING FEATURES OF THE ELECTRODE	<p>The electrode is suitable for both AC and DC and is used to best advantage in the flat and HV positions. The arc is smooth and stable weld beads are evenly rippled, of bright appearance and the slag readily detachable. The weld deposit is highly crack resistant under normal circumstances, but on high carbon cast steels or restrained sections of mild steel, a pre-heat of 150°C should be used.</p>									
APPLICATIONS AND MATERIALS TO BE WELDED	<p>The tough crack resistant weld deposit may be used as a buffer layer both on mild and high carbon steels prior to depositing harder alloys. Used in its own right, it provides an excellent combination of abrasion and impact resistance making it ideal for hardfacing gear wheels, rails, roller guides, slideways, track wheels, sprockets and similar.</p> <p>Machining is not possible but may be profile ground.</p>									
WELD METAL ANALYSIS COMPOSITION % BY WT.		C	Mn	Si	S	P	Cr	V	Mo	Fe
	MIN	0.1	0.5	-	-	-	2.0	-	0.5	
	MAX	0.3	1.2	0.8	0.03	0.03	3.0	0.3	0.8	
	TYPICAL	0.25	0.75	0.5	0.02	0.02	2.1	0.2	0.6	Bal.
WELD METAL HARDNESS (ALL WELD METAL)	AS WELDED 150°C PRE-HEAT	HRC			HV					
	1 st Layer	35			350					
	2 nd Layer	43			420					
	3 rd Layer	47			465					
	Heat input, cooling rate, and dilution will affect hardness in the first two layers but no significant affect in next layers									
WELDING AMPERAGE AC or DC+	Ø (mm)	2.6	3.2	4.0	5.0					
	MIN	65	90	140	190					
	MAX	90	130	180	240					
OTHER DATA	Electrodes that have become damp should be re-dried at 150°C for 1 hour.									
RELATED PRODUCTS	Please contact our Technical Department for detail.									



MANUFACTURERS OF A DIVERSE RANGE OF
ADVANCED WELDING CONSUMABLES

SECTION
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WI-0304 DS23 RD-718 Rev. 3, Date 01.07.2013

RD-718	LOW HYDROGEN - IRON POWDER ELECTRODE WITH OPTIMUM WELDABILITY FOR WORKSHOP AND SITE FABRICATIONAL WORK				DATA SHEET NO. 23						
SPECIFICATION	AWS A5.1		BS EN ISO 2560-B		JIS Z 3212						
CLASSIFICATION	E7018		E4918		D5016						
PRODUCT DESCRIPTION	<p>The design emphasis of the chemically basic flux is engineered to ensure the optimum weld metal properties demanded by the specification are fully met.</p> <p>The basic flux containing the appropriate alloying elements with a controlled balanced addition of iron powder, is extruded onto a high purity ferritic core wire with a blend of silicates that ensures both coating strength and a coating resistant to subsequent moisture absorption.</p>										
WELDING FEATURES OF THE ELECTRODE	<p>The chemical nature of the flux together with a significant proportion of iron powder ensures maximum deposition efficiency without detracting from its ability to be used in all positions except vertical down.</p> <p>Overall the arc is very stable, slag detachability is good and metal recovery is some 120% with respect to the core wire.</p>										
APPLICATIONS AND MATERIALS TO BE WELDED	<p>Medium and high tensile carbon-manganese steels with UTS of up to 510 N/mm² max. Typical grades :</p> <p>BS 1449 plate and sheet BS 4360 grades 43A and 43C Lloyds A & D ship steel BS 4360 grade 50B, Lloyds grades AH and DH BS 3059 and BS 3601 grade 320-410</p> <p>API 5L A-B and X42, BS 4360-50B-50C-50D, BS 1501-151 430-490, BS 3602-410-460.</p> <p>Such steels are used in ship construction, bridge building and pressure vessel work as well as general construction work.</p>										
WELD METAL ANALYSIS COMPOSITION % BY WL.		C	Mn	Si	S	P	Cr	Ni	Mo	V	Fe
MIN		-	-	-	-	-	-	-	-	-	-
MAX		0.15	1.6	0.75	0.035	0.035	0.2	0.3	0.3	0.08	
TYPICAL		0.1	1.0	0.35	0.01	0.01	0.1	0.01	0.02	0.02	Bal.
WELD METAL PROPERTIES (ALL WELD METAL)	PROPERTY	UNITS	MINIMUM	TYPICAL	OTHERS						
	Tensile strength	N/mm ²	490	600							
	0.2% Proof stress	N/mm ²	400	550							
	Elongation on 4d	%	22	28							
	Reduction of Area (RA)	%	-	70							
Impact energy -30°C	J	27	80								
WELDING AMPERAGE AC or DC+	Ø (mm)	2.5	3.2	4.0	5.0						
	MIN	50	90	130	170						
	MAX	100	140	180	220						
OTHER DATA	Electrodes that have become damp should be re-dried at 150°C for 1 hour										
APPROVED BY	LR; ABS; GL – Grade 3Y										

DAFTAR RIWAYAT HIDUP



Akmal Nashrullah, lahir di Jakarta pada tanggal 18 Oktober tahun 1996 merupakan anak ke dua dari empat bersaudara dari pasangan suami istri bernama Dasuki dan Muryanah. Tinggal di Jalan Basmol raya Nomor 8 RT: 06 RW: 02, Kelurahan Kembangan Utara, Kecamatan Kembangan, Jakarta Barat.

Pendidikan Formal yang pernah ditempuh : Sekolah Dasar Negeri (SDN) 04 Jakarta, lulus pada tahun 2009. Sekolah Menengah Pertama Negeri (SMPN) 105 Jakarta, lulus pada tahun 2012. Sekolah Menengah Atas Negeri (SMAN) 56 Jakarta, lulus pada tahun 2015. Dan diterima di Universitas Negeri Jakarta, Fakultas Teknik, Program Studi Pendidikan Teknik Mesin pada tahun 2015 melalui jalur SNMPTN. Kosentrasi yang diambil adalah bidang otomotif. Dan selama masa studi pernah aktif dalam bidang organisasi kemahasiswaan yaitu : ART (*Automotive Racing Team*) di bidang minat otomotif, sebagai manager team pada tahun 2018 - 2019.