Universalis®

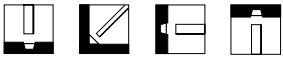
CLASSIFICATION

AWS A5.1	E6013	**A-Nr**	1
ISO 2560-A	E 42 0 RR 1 2	**F-Nr**	2
		9606 FM	1

GENERAL DESCRIPTION

Rutile electrode, especially for down hand welding in structural steel
Smaller sizes (2.0 & 2.5 mm) most versatile for thin plate material
Very smooth appearance
Self releasing slag

WELDING POSITIONS (ISO/ASME)



PA/1G **PB/2F** **PC/2G** **PE/4G**

CURRENT TYPE

AC / DC -

APPROVALS

ABS	BV	DNV	GL	LR	TÜV
2Y	2Y	2Y	2Y	2Y	+

CHEMICAL COMPOSITION (W%), TYPICAL, ALL WELD METAL

C	Mn	Si
0.1	0.6	0.4

MECHANICAL PROPERTIES, TYPICAL, ALL WELD METAL

	Condition	Yield strength (N/mm²)	Tensile strength (N/mm²)	Elongation (%)	Impact ISO-V(J) 0°C
Required: AWS A5.1		min. 330	min. 430	min. 17	not required
ISO 2560-A		min. 420	500-640	min. 20	min. 47
Typical values	AW	480	560	26	50

PACKAGING AND AVAILABLE SIZES

	Diameter (mm)	2.0	2.5	3.2	3.2	4.0
	Length (mm)	300	350	350	450	450
Carton + PE foil	**Pieces / unit**	200	130	140	125	80
	Net weight/unit (kg)	2.4	2.8	4.8	5.8	5.9

Identification Imprint: 6013 / UNIVERSALIS Tip Color: none

Universalis®: rev. C-EN25-01/02/16

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EXAMPLES OF MATERIALS TO BE WELDED

Steel grades/Code	Type
General structural steels	
EN 10025	S185, S235, S275, S355
Ship plates	
ASTM A 131	Grade A, B, D, AH32 to DH36
Cast steels	
EN 10213-2	GP240R
Pipe material	
EN 10208-1	L210, L240, L290, L360
EN 10208-2	L240, L290, L360
API 5LX	X42, X46, X52, X60
EN 10216-1/EN10217-1	P235, P275, P355
Boiler & pressure vessel steels	
EN 10028-2	P235, P265, P295, P355
Fine grained steels	
EN 10025 part 3	S275, S355
EN 10025 part 4	S275, S355

CALCULATION DATA

Sizes Diam. x length (mm)	Current range (A)	Current type	Arc time - per electrode at max. current - (S)*	Energy - per electrode at max. current - E(kJ)	Dep. rate - per electrode at max. current - H(kg/h)	Weight/ 1000 pcs (kg)	Electrodes/ kg weldmetal B	kg electrodes/ kg weldmetal 1/N
2.0x300	40-65	AC	41	58	0.5	11.4	178	2.0
2.5x350	70-100	AC	51	134	0.8	21.1	93	1.96
3.2x350	100-140	AC	57	281	1.3	39.3	47	1.85
3.2x450	100-140	AC	69	341	1.5	49.6	36	1.79
4.0x450	150-200	AC	69	483	2.1	66.9	25	1.67

*Stub end 35mm

WELDING PARAMETERS, OPTIMUM FILL PASSES

Diameter (mm)	Welding positions PA/1G	PB/2F	PC/2G	PE/4G
2.0	50A			
2.5	100A	95A	85A	85A
3.2	130A	120A	115A	105A
4.0	185A	185A	160A	130A

REMARKS / APPLICATION ADVICE

Best choice for welding thin plates.
High yield strength steels such as S355, L360, P355 and X60 preheat according EN 1011-1