Elex® RA 6013

Rutile electrode

Classification

AWS A5.1	:E6013
ISO 2560-A	:E 38 0 RA 12

General description

Thick coated rutile-acid type electrode for welding with increased efficiency of steels with tensile strength up to 510 N/mm2. High current-carrying capability and good slag detachability even in fillets and narrow angles.

Welding positions

ISO/ASME	PA/1G	PB/2F	PC/2G	PF/3G up	PE/4G

Current type

AC/DC electr.-

Approvals

ABS	BV	DNV	FORCE	GL	LR	TÜV
2	2	2	+	2	2	+

Chemical composition (w%), typical, all weld metal

C	Mn	Si
0.06	0.6	0.18

Mechanical properties,all weld metal

		Condition	Yield strength, (N/mm²)	Tensile strength (N/mm²)	Elongation (%)	Impact (ISO), J 0°C
Required	AWS A5.1		min.331	min.414	min.17	not required
	ISO 2560-A		min.380	470-600	min.24	min.47
Typical values after welding		AW	430	500	29	98

Packaging,available sizes and identification

	Diameter (mm)	2.5	3.2	3.2	4.0	4.0
	Length (mm)	350	350	450	350	450
Unit:	Pieces / unit (nominal)	145	155	150	110	95
Box	Net weight/unit (kg)	2.8	4.8	6.2	5.0	5.9

Identification	Imprint: **Elex® RA 6013**	Tip colour: green

Elex® RA 6013 :rev. EN 20

Materials to be welded

Steel	Code	Type
General structural steel	EN 10025	St 33 to St 52.3
Ship plates	ASTM A131	Grade A, B, D, E
Cast steel	EN 10213-2	GS-38, GS-45
Pipe material	EN 10208-1	L210, L240, L290
	EN 10208-2	L240, L290
	API 5LX	X42, X46
Boiler & pressure vessel steel	EN 10028-2	HI, HII, 17 Mn 4

Calculation data

Sizes Diam.x length (mm)	Current range (A)	Current type	Arc time - per electrode (s)*	Energy at max.current - E(kJ)	Dep.rate H(kg/h)	Weight/ 1000 pcs. (kg)	Electrodes/ kg weldmetal B	kg Electrodes/ 1 kg weldmetal (1/N)
2.5x350	70-90	AC	68	134	0.6	19.2	84	1.60
3.2x350	90-125	AC	80	220	0.9	30.3	50	1.51
3.2x450	100-135	AC	102	303	0.9	41.3	38	1.56
4.0x350	140-190	AC	74	323	1.5	45.5	33	1.49
4.0x450	150-200	AC	95	456	1.5	62.1	26	1.58

* stub end = 35 mm

Welding parameters,optimum fill passes

Welding position Diameter (mm)	PA/1G Current (A)	PB/2F	PC/2G	PG/3G down	PE/4G
2.5	70-90	75	80	80	75
3.2	90-160	115	120	130	130
4.0	130-220	165	160	170	150