

13.RMP

RUTILE MMA ELECTRODE FOR WELDING 410

PRODUCT DESCRIPTION

Rutile metal powder MMA electrode made on pure low carbon core wire.
Moisture resistant coating giving very low weld metal hydrogen levels.
Diameters above 3.2mm are not recommended for positional welding.
Recovery is about 130% with respect to core wire, 65% with respect to whole electrode.

SPECIFICATIONS

AWS A5.4M E410-26
BS EN ISO 3581 E 13 R 5 2

ASME IX QUALIFICATION

QW432 F-No 1
QW442 A-No 6

WELDING POSITIONS (ISO/ASME)



PA/1G



PB/2F



PC/2G



PF/3Gu



PE/4G

CHEMICAL COMPOSITION (WELD METAL WT %)

	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
min.	--	--	--	--	--	11.0	--	--	--
max.	0.08	1.0	0.90	0.025	0.030	13.5	0.60	0.5	0.50
Typical	0.06	0.5	0.30	0.010	0.015	11.5	0.4	0.2	0.05

ALL-WELD MECHANICAL PROPERTIES

After PWHT	850°C/2h *		745°C/1h **	
	Min.	Typical	Min.	Typical
Tensile strength (MPa)	480	520	520	700
0.2% proof strength (MPa)	250	270	--	610
Elongation (%) 4d	--	36	20	21
5d	20	34	--	18
Reduction of area %	--	52	--	59

* BS & BS EN PWHT: 840-870°C for 2 hours, furnace cool to 595°C at 55°C/h. max. Air cool to ambient. This gives a relatively low strength condition.

** AWS PWHT: 730-760°C for 1 hour, furnace cool to 315°C at 60°C/h max., air cool to ambient. This gives a higher strength tempered condition more representative of normal fabrication welds.

OPERATING PARAMETERS, DC +VE OR AC (OCV: 70V MIN)

Diameter (mm)	2.5	3.2	4.0	5.0
min. A	70	80	100	140
max. A	110	140	180	240

PACKAGING DATA

Diameter (mm)	2.5	3.2	4.0	5.0
Length (mm)	300	350	350	450
kg/carton	12.6	14.1	14.1	16.8
Pieces/carton	609	378	219	150

STORAGE

3 hermetically sealed ring-pull metal tins per carton, with unlimited shelf life. Direct use from tin is satisfactory for longer than a working shift of 8h. Excessive exposure of electrodes to humid conditions will cause some moisture pick-up and increase the risk of porosity.

For electrodes that have been exposed:

Redry 300 – 350°C/1-2h to restore to as-packed condition. Maximum 420° C, 3 cycles, 10h total.

Storage of redried electrodes at 100 – 200°C in holding oven or heated quiver: no limit, but maximum 6 weeks recommended. Recommended ambient storage conditions for opened tins (using plastic lid): < 60% RH, > 18°C.

FUME DATA

Fume composition, wt % typical:

Fe	Mn	Ni	Cr	Cu	Mo	V	F	OES (mg/m3)
20	2	<0.5	3	<0.2	<0.1	<0.1	18	1.7