

## Repair electrode

### Classification

AWS A5.4-92 : E316L-16  
EN 1600-97 : E 19 12 3 L R 12

### Temperature range

pressurized parts: -120 ... +350°C  
scaling resistance: n.a.

### General description

Rutile-basic all position stainless steel electrode for 316L or equivalent steels

Molybdenum level min. 2.7%

High resistance to general and intergranular corrosion

Smooth weld appearance

Easy slag release

Strong electrode coating

Weldable on AC and DC

### Welding positions



ISO/ASME PA/1G PB/2F PC/2G PF/3G up PE/4G PF/5G up

### Current type

AC / DC electr. + / -

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

C	Mn	Si	Cr	Ni	Mo
0.020	0.8	0.8	18.0	11.5	2.85

### Mechanical properties, all weld metal

Condition	Condition	0.2% Proof strength (N/mm <sup>2</sup> )	Tensile strength (N/mm <sup>2</sup> )	Elongation (%)	Impact ISO-V(J)	
					-20°C	-120°C
Required: AWS A5.4-92		not required	min. 490	min. 30	not required	
EN 1600-97		min. 320	min. 510	min. 25	not required	
Typical values	AW	450	580	39	60	40

### Packaging, available sizes and identification

	Diameter (mm)	2.5	3.2	4.0	5.0
Length (mm)		350	350	350	350
Unit: PE tube	Pieces / unit (nominal)	125	77	50	33
	Net weight unit (kg)	2.5	2.5	2.5	2.5

### Identification

Imprint: RepTec 210

Tip colour: pink

RepTec 210: rev. EN 15

## Materials to be welded

Material grades	EN 10088-1/-2	EN 102 13-4	W.Nr.	ASTM/ACI A240/A312/A351	UNS
Extra low carbon C <0.03%	X2 CrNiMo 17-12-2		1.4404	(TP)316L CF-3M	S31603 J92800
	X2 CrNiMo 18-14-3		1.4435	(TP)316L	S31603
	X2 CrNiMoN 17-11-2		1.4406	(TP)316LN	S31653
	X2 CrNiMoN 17-13-3		1.4429		
Medium carbon C >0.03%	X4 CrNiMo 17-12-2		1.4401	(TP)316	S31600
	X4 CrNiMo 17-13-3		1.4436		
Ti-, Nb stabilized		GX5 CrNiMo 19-11	1.4408	CF 8M	J92900
	X6 CrNiMoTi 17-12-2		1.4571	316Ti	S31635
	X6 CrNiMoNb 17-12-2 S31640		1.4580	316Cb	
	X6 CrNiNb 18-10		1.4550	(TP)347	S34700
		GX5 CrNiNb 19-10	1.4552	CF-8C	J92710

## Calculation data

Sizes Diam. x length (mm)	Current range (A)	Current type	Arc time - per electrode at max. current - (s)*	Energy E(kJ)	Dep.rate H(kg/h)	Weight/ 1000 pcs. (kg)	Electrodes/ kg weldmetal B	kg Electrodes/ kg weldmetal 1/N
2.5 x 350	40 - 75	DC+	50	86	0.88	19.9	82	1.61
3.2 x 350	60 - 110	DC+	57	157	1.3	32.9	49	1.61
4.0 x 350	80 - 150	DC+	64	240	1.7	49.2	32	1.59
5.0 x 350	140 - 220	DC+	67	396	2.6	77.1	20	1.59

\* stub end 35mm

## Welding parameters, optimum fill passes

Welding positions Diameter (mm)	PA/1G Current (A)	PB/2F	PC/2G	PF/3G up	PE/4G	PF/5G up
2.5	70	70	70	60	60	60
3.2	100	100	100	70	70	70
4.0	140	140	140	80		
5.0	180	180	180			

For root passes DC- is recommended.