

## MMA Electrodes Stainless and Heat resistant steels

Rutile coated MMA electrode for joining dissimilar steels (austenitic steels to ferritic steels) and for austenitic claddings. Weld metal consists of austenite with approx. 15 % delta-ferrite. Cladding on unalloyed and low-alloy steels is already corrosion resistant in the first layer. Highest operating temperature for joints between dissimilar steels is +300 °C. In case of higher temperatures, use Supranel 600 electrodes. Fine metal droplet transfer, good fusion of joint faces, finely rippled bead surface, easy slag removal, good striking and restriking.

Classification	
AWS	A5.4: E309L-17
EN	1600: E 23 12 L R 12

Approvals	Grades
DB	
GL	
TÜV	

see Appendix, Classification Society Approvals, for details pag. 521

### Analysis of all-weld metal (Typical values in %)

C	Mn	Si	P	S	Cr	Ni	Mo	Nb	Cu	N	Ferrite
≤ 0.03	0.70	0.90	≤ 0.025	≤ 0.020	24	13	-	-	-	-	12-20

### All-weld metal Mechanical Properties

Heat Treatment	Yield Strength N/mm <sup>2</sup>	Tensile Strength N/mm <sup>2</sup>	Elongation A5 (%)	Impact Energy ISO - V (J) + 20 °C	Hardness
As Welded	≥ 320	≥ 520	≥ 30	≥ 50	-

### Materials

A312 TP309S; carbon steel to stainless steels joint

### Storage and redrying

Keep dry and avoid condensation.

Re-drying not generally required

If necessary: 300-350 °C for 2 hours, 5 times max

### Current condition and welding position

DC+; AC



### Packaging data

Diameter (mm)	Length (mm)	Current (A)	Electrode average weight (g)	Weld metal weight per electrode (g)
2,0	300	35-65	11,5	7,0
2,5	300	60-90	18,5	11,1
3,2	350	90-120	37,0	22,2
4,0	350	100-160	54,0	32,4