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Sandvik 29.9.R (Covered electrodes)

Sandvik 29.9.R is a covered electrode with rutile-basic coating and about 110% metal recovery giving a duplex (ferritic-austenitic) all weld metal. It is used for welding of dissimilar materials, high carbon and manganese steels like tool steels as well as surfacing. Sandvik 29.9 R is also used for overlays on hot forming steels and as a universal electrode for repair and maintenance work.

Scaling resistant up to 1150°C (2100°F). Spray transfer gives a bead with a finely rippled surface. Little spatter and very good slag removal.

Standards

- AWS E312-16
- EN number E 29 9 R

Product standards

- EN ISO 1600
- ASME/AWS SFA5.4

Chemical composition - weld metal

The following data are valid for non heat-treated all-weld metal.

Chemical composition, wt%						
C	Si	Mn	P	S	Cr	Ni
<0.10	0.8	1.5	<0.04	<0.025	28.5	10

Microstructure - weld metal

Austenitic matrix with a ferrite content of about 30%.

Mechanical properties - weld metal

Temperature	°C	20
Proof strength, R _{p0.2} ^a	MPa	600
Tensile strength, R _m	MPa	720
Elongation, A	%	25
Reduction of area	%	25
Impact strength, Charpy V	J	50
Hardness, Vickers		220

^a R_{p0.2} corresponds to 0.2% offset yield strength

Corrosion properties - weld metal

Sandvik 29.9.R is resistant to intercrystalline corrosion according to DIN 50914 in the as-welded and quench-annealed condition.

Deposition data

Electrode data			
Electrode diameter, mm	2.5	3.25	4.0
Length, mm	300	350	350
Weights, kg/100 pcs	2.0	4.0	5.9
kg/box	1.6	2.0	1.9
Electrodes/box	79	50	52
Max deposition rate, kg weld metal/h, approx.	0.9	1.3	2.0
Effective value kg weld metal/kg electrodes	0.64	0.62	0.65
Change value Electrodes/kg weld metal	79	48.5	26
Burn-off time per electrode at max current, s	48	56	66
Working data			
Welding positions	diameter <=3.25 mm	all except vertical down	
	diameter >=4.0 mm	preferably flat position	
Current/polarity	direct current/electrode positive or alternating current at an open circuit voltage of at least 50V		

Further information

Diameter, mm	2.5	3.25	4.0
Current, A	50-85	80-125	110-175
Fume classification ^{*)}	R4	R5	R6

^{*)}According to Swedish standard (SS) 06 28 01 Redrying of the electrodes when necessary: 2h/300 °C