

**Applications**

Welding of martensite stainless alloys of 13 % Cr type. It is used for surfacing of seraling faces of valves for gas, water & steam piping. Hard surfacing of continuous casting roll of steel plants, valves etc.

**Characteristics on Usage**

Royal Fil GS - 413 is a martensitic type Gas Shielded flux cored welding wire with 100% Co<sub>2</sub> which are commonly used for hard surfacing of steel mill rolls, valve component of similar alloys. The weld metal is resist to corrosion, erosion or abrasion & resist to high temperature microstructure stability, thermal fatigue & cracking, eliminate ferrite in the microstructure.

**Welding Positions**

1G 2F

**Recommended Stick Out**

15-20mm

**Shielding Gas**

Carbon Dioxide (CO<sub>2</sub>) shielding  
Gas Flow :15-20 Lit / Min

**Chemical Composition Of Weld Metal**

Element	C%	Mn%	Si%	S%	P%	Cr %	Ni %	Mo %	Cu %
Typical Values	0.045	0.55	0.35	0.009	0.020	11.75	0.55	0.010	0.040
Spec. Reqd.	0.12 Max	1.20 Max	1.00 Max	0.030 Max	0.04 Max	11.00-13.50	0.60 Max	0.75 Max	0.75 Max

**Mechanical Properties Of Weld Metal**

(After PWHT at 732-760°C for 1 Hr), Hardness on 2nd layer is 28-32 HRC.

Property	U.T.S. (N/mm <sup>2</sup> )	ELONGATION ( L = 4d ) %
Typical Values	575	24.5
Spec. Reqd.	520 Min	20 Min

**Welding Parameters (DC + VE)**

Diameter (mm)	Flat & Horizontal	
	(A)	(V)
1.20	160-210	26-30
1.60	190-250	26-30

**Packing**

12.5 kgs. vaccum packed plastic spool.