



MIG F691

Old reference: MIG 90SB9

Classification

AWS A5.28 : ER90S-B9

ISO 21952-A : G CrMo91

Description & Applications

GMAW wire for welding creep resisting steels of similar chemical composition (known as P91) used at service temperatures up to 650°C. Deposit resisting to temperature and creep up to 620°C. Highly resistant to hot gas and overheated steam.

Main applications: For power plants, heat exchangers, tubes, steam boilers...

Base materials

Construction and Creep resisting steels:

Mat. N°	EN	ASTM
1.7386	X12CrMo9-1	A187 Gr F9; A336 Gr F9; A335 Gr P9
1.7389	GX12CrMo10-1	A217 C12
1.4903	X10CrMoVNb9-1	A199 gr. T91; A335 gr. P91; A213 gr T91

Typical Chemical Composition (%)

C	Si	Mn	Cr	Ni	Mo	Cu	V	Nb	N	P	S
0.09	0.25	0.6	8.8	0.65	0.95	0.03	0.2	0.06	0.05	0.007	0.002

All Weld Metal Mechanical Properties

$R_{p0.2}$ (MPa)	R_m (MPa)	A_5 (%)	KV (J)
630	720	18	+20°C 60
After PWHT 760°C/2h			

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters		Shielding gas
		Current (A)	Voltage (V)	
GMAW = +	0.8	60-200	16-28	ISO 14175: 95% Ar + 5% CO ₂ 12-15 l/min
	1.0	80-260	17-32	
	1.2	100-360	18-34	
	1.6	130-450	19-38	

Preheating of joints to weld and interpass temperature: 200-300°C. Slow air cooling to a temperature below 80°C followed by an annealing at 760°C/2-6h with slow cooling.

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