



DATA SHEET
DS 110
Rev. 6 dd 14/05/2015
INETIG B9

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CLASSIFICATION

AWS SPECIFICATIONS	EN SPECIFICATIONS
AWS A 5.28: ER90S-B9	EN ISO 21952-A: W CrMo91
AWS A 5.28M: ER62S-B9	
ASME SFA 5.28: ER90S-B9	
ASME SFA 5.28M: ER62S-B9	

APPROVALS

TÜV		

ALLOY TYPE

9Cr1Mo modified for the welding of creep resistant steel (0,5Ni, Nb, V, N).

APPLICATIONS

Copper-free tig rod suitable for the welding of creep resistant steel. It will find applications in petro-chemical industry for welding P91 steels. Long term creep properties get improved thanks to small additions of niobium, vanadium and nitrogen. This rod is designed for elevated temperature service up to 650°C. It is used in fossil fuelled power generating plants for components such as headers, main steam piping and turbine casings.

MATERIALS TO BE WELDED

ASTM		EN		Others
A 199 Gr T91	A 387 Gr 91	10222-2 X10CrMoV 9-1		
A 200 Gr T91	A 182 Gr F91	(DIN X10CrMoVNb 9-1)		
A 213 Gr T91	A 217 C12A	(BS 1503 Gr 91)		
A 335 Gr P91	A 234 WP91			
A 336 Gr F91	A 369 FP91			

WELDING GUIDELINES

Preheat and interpass temperature 200 ÷ 300°C. PWHT at 760°C for two hours. In multipass welding it is recommended to clean accurately the surface of the material to be welded by grinding off the surface layer of chrome oxide.

TECHNICAL INFORMATION

Gas: Argon 100% (EN ISO 14175)
Welding positions: all positions



WELDING PARAMETERS

Current	DC - Straight polarity
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PACKAGING DATA

Diameter (mm)	1.2	1.6	2.0	2.4	3.2	4.0
Length (mm)	1000	1000	1000	1000	1000	1000
Carton	5/25 Kg	5/25 Kg	5/25 Kg	5/25 Kg	5/25 Kg	5/25 Kg

* tolerances according to EN ISO 544 specification.



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TYPICAL CHEMICAL COMPOSITION OF WIRE

C %	Mn %	Si %	S %	P %	Cr %	Ni %	Mo %	Cu %	V %	Nb %	N %
0.09	0.60	0.25	0.007	0.002	8.80	0.65	0.95	0.03	0.20	0.06	0.05

TYPICAL MECHANICAL PROPERTIES

GAS		Yield strength	Tensile strength	Elongation on % 5d	Impact energy (Charpy V)				
		Rs	Rm	A 5d	+ 20°C	0°C	-20°C	-40°C	-50°C
		(MPa)	(MPa)	%	(Joule)	(Joule)	(Joule)	(Joule)	(Joule)
I1	after PWHT	650	750	18	100	-	-	-	-

PRODUCTS AVAILABLE

Process	Product	Classification AWS	Classification EN
MIG/MAG Solid wire	INEFIL B9	AWS A 5.28: ER90S-B9	EN 21952-A: G CrMo91
	INEFIL B9LowNi	AWS A 5.28: ER90S-B9	
TIG Rods	INETIG B9LowNi	AWS A 5.28: ER90S-B9	
SAW Submerged arc	INESUB EB9	AWS A 5.23: EB9	EN 24598-A: S CrMo91
	INESUB EB9LowNi	AWS A 5.23: EB9	
FCAW Cored wire	INETUB M91TG-B9	AWS 5.28: E90C-B9	
SMAW Electrodes	INE B9	AWS A 5.5: E9015-B9	EN 3580-A: E CrMo91