



T H E H A R R I S P R O D U C T S G R O U P
A L I N C O L N E L E C T R I C C O M P A N Y
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TECHNICAL SPECIFICATION SHEET

ER90S-B3 CR-MO WELDING WIRE

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APPLICATION:

90S-B3 is used to weld such alloys as 2 1/4% Cr-1% Mo steels, which are found in high temperature and high pressure piping and vessels. May also be used on carbon steels to Cr-Mo steels but should always have careful control of preheat, inter-pass and post-heat to avoid cracking. Use with a pre-heat and inter-pass temperature of 375°f minimum.

NOMINAL CHEMICAL COMPOSITION:

Phosphorus	.025% max	Carbon	.07-.12%
Copper	.50% max	Manganese	.40-.70%
Other Totals	.50 % max	Sulfur	.025% max
Nickel	.20% max	Silicon	.40-70%
Iron	Balance	Molybdenum	.90-1.20%
Chromium	2.30-2.70%		

TYPICAL MECHANICAL PROPERTIES AS WELDED:

(Post weld heat treatment 1250—1300°f for 1 hour)

Tensile Strength (psi)	94,000
Elongation % in 2"	19%
Yield Strength (psi)	80,500

* RECOMMENDED WELDING PARAMETERS:

GMAW(MIG) Parameters (DC Reverse Polarity) Electrode Positive Spray transfer

<u>Wire Diameter</u>	<u>AMPS</u>	<u>VOLTS</u>	<u>Argon/ 2% O₂</u>	<u>Wire Feed imp</u>
.030	135-230	24-28	25	390-670
.035	165-300	24-28	30	360-520
.045	200-375	24-30	30-35	210-390
1/16	275-500	24-32	40	150-360
3/32	300-600	24-33	50	75-125

GMAW(MIG) Parameters(DC Reverse Polarity) Electrode Positive short-circuiting

<u>Wire Diameter</u>	<u>AMPS</u>	<u>VOLTS</u>	<u>(3) CO₂/ Ar-CO₂ (cfh)</u>	<u>Wire Feed imp</u>
.023	30-90	14-19	20-25	100-400
.030	40-145	15-21	20-25	160-380
.035	50-180	16-22	20-25	150-340
.045	75-250	17-22	20-25	100-220

⁽³⁾ Setting based on CO₂ for mild steel, Ar-CO₂ for low alloy steel

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GTAW (Tig) Parameters (DCSP) 2 %Thoriated Tungsten Electrode negative (1)

<u>Material</u>	<u>Tungsten dia. (1)</u>	<u>Filler Wire Size</u>	<u>Amps</u>	<u>Gas Cup</u>	<u>Argon (cfh)</u>
1/16"	1/16"	1/16"	100-140	3/8	20
3/32"	1/16"	1/16"	100-160	3/8	20
1/8"	3/32"	1/16"	125-200	7/16	20
3/16"	3/32"	3/32"	150-250	7/16	25
¼"	1/8"	1/8"	150-250	½	25
3/8"	1/8"	1/8"	150-275	½	25
½"	1/8"	1/8"	150-300	½	25

* All parameters are suggested as basic guidelines and will vary depending on joint design number of passes , and other factors .

SPECIFICATION COMPLIANCE : AISI/AWS A5.28 & ASME SFA 5.28 ER 90S-B3

WARNING: PROTECT yourself and others. Read and understand this information.

FUMES AND GASES can be hazardous to your health.

ARC RAYS can injure eyes and burn skin.

ELECTRIC SHOCK can KILL.

- Before use, read and understand the manufacturer's instructions, Material Safety Data Sheets (MSDS), and your employer's safety practices.
- Keep your head out of fumes.
- Use enough ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area.
- Wear correct eye, ear, and body protection.
- Do not touch live electrical parts.
- See American National Standard Z49.1, *Safety in Welding, Cutting, and Allied Processes*, published by the American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126; OSHA Safety and Health Standards, available from the U.S. Government Office, Washington, DC 20402.

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