



Select 90C-B9

Description:

Select 90C-B9 is a low alloy steel, composite metal cored electrode for gas- shielded arc welding. This product is intended for single and multiple pass welding of 9Cr-1Mo steels, in the flat and horizontal positions. It contains small additions of niobium, vanadium and nitrogen to improve long term creep properties. The recommended shielding gas is 95% Ar, balance CO₂. Other argon-carbon dioxide mixtures may also be used, with a minimum of 75-80% argon. The suggested flow rate is 40-50 cfh, with a minimum dew point of -40° F.

Classification:

- E90C-G per AWS A5.28, ASME SFA 5.28

Characteristics:

Select 90C-B9 is a premium, composite metal cored electrode with excellent welder appeal and superior mechanical properties. The arc transfer is a smooth, stable spray with minimal spatter. The deposited weld beads are uniform with good tie-in. It offers increased deposition rates compared to covered and solid electrodes, and eliminates lack of fusion defects associated with solid wire.

Applications:

Select 90C-B9 is used to weld 9Cr-1Mo creep resistant steels, such as A387 Gr 91 plate; A335-P91 and A369-FP91 piping; A199-T91, A200-T91 and A213-T91 tubing; A182-F91 forgings; fittings and castings of similar composition. Typical applications include power plant turbine casings, valves, headers and piping.

Typical Deposit Composition:

| Wt% | C | Cr | Mo | Mn | Ni | Si | P | S | Nb | V | Al | N |
|-----|-----|------|------|-----|-----|-----|------|------|-----|-----|------|-----|
| | .10 | 9.00 | 1.00 | .65 | .35 | .35 | .010 | .009 | .04 | .20 | <.01 | .04 |

Typical Mechanical Properties :

The **Select 90C-B9** weldments below were made with 95% argon, balance CO₂ shielding gas. The use of Ar-CO₂ shielding gas mixtures with lower percentages of argon will result in loss of strength.

95% Ar / 5% CO₂

| | SR @ 1375°F-1 hr | SR @ 1375°F-3 hrs |
|--------------------|------------------|-------------------|
| UTS (psi) | 105,400 | 103,200 |
| YS (psi) | 88,400 | 84,100 |
| Percent Elongation | 18.4 | 18.2 |

Suggested Parameters (95% Ar, balance CO₂ Shielding Gas):

| Diameter | Amperage | Optimum | | Amperage | Range | |
|----------|----------|----------|---------|----------|---------|-----------|
| | | WFS(ipm) | Voltage | | Voltage | ESO (in.) |
| .045" | 250 | 400 | 27 | 180-330 | 25-32 | ½"-1" |
| .052" | 300 | 350 | 27 | 220-460 | 24-33 | ½"-1" |
| 1/16" | 360 | 300 | 28 | 230-520 | 24-34 | ¾"-1" |

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Notice: The results reported are based upon testing of the product under controlled laboratory conditions in accordance with American Welding Society Standards. Actual use of the product may produce different results due to varying conditions. An example of such conditions would be electrode size, plate chemistry, environment, weldment design, fabrication methods, welding procedure and service requirements. Thus the results are not guarantees for use in the field.