

## Endurance

### Description:

**Endurance** is a specially manufactured carbon steel, composite metal cored electrode for gas-shielded arc welding. This electrode provides unsurpassed feedability and arc starting capability, low residual slag and excellent operating characteristics. It is intended for single and multiple pass welding of carbon and certain low alloy steels, where a minimum tensile strength of 70,000 psi is required in the deposited weld metal. Recommended shielding gases are mixtures of argon/carbon dioxide, with 75-95 percent argon. Dew points should be at least -40 degrees F., and flow rates should be maintained at 35-50 cfh.

### Classification:

- E70C-6M-H4 per AWS A5.18, SFA 5.18
- CWB E419C-6M-H4; ABS 3YSA

### Characteristics:

**Endurance** has been manufactured to produce a unique, consistent wire surface that results in continuous, uninterrupted feeding and consistent arc starts even under the most difficult of conditions. This combined with a unique formulation, results in beads that are smooth and well washed, with even edges and minimal silicon islands. The use of **Endurance** offers many advantages over solid wires, such as faster travel speeds, increased productivity, better sidewall fusion on heavy plate, and greater tolerance to rust and millscale. Smaller diameter electrodes can be used in all position welding by utilizing pulsed arc or short circuit arc transfer (short arc).

### Applications:

**Endurance** is ideally suited for robotic and other automated applications where consistency of feeding, arc starting and bead appearance are of primary importance. It is used for general purpose welding, but excels in higher demand situations such as in heavier sheet metal fabrication, automotive applications, structural work, pipe welding and the welding of water heaters.

### Typical Mechanical Properties:

	75%Ar/25% CO <sub>2</sub>	95%Ar/5% CO <sub>2</sub>
Ultimate Tensile Strength (psi)	79,000	87,000
Yield Strength (psi)	66,000	76,000
Percent Elongation	27	25
CVN (ft•lb f) @-20°F	55	50
@-40°F	30	25

### Typical Chemical Composition:

Shielding Gas	C	Mn	P	S	Si
75% Ar/25% CO <sub>2</sub>	.06	1.30	.010	.010	.50
95% Ar/5% CO <sub>2</sub>	.05	1.44	.010	.010	.55

### Typical Welding Parameters\*:

Diam. (in.)	Optimum			Range			CTWD
	Amperage	WFS	Voltage	Amperage	WFS	Voltage	
.045	255	410	29-30	180-330	240-600	27-33	¾"-1"
.052	300	350	29-30	220-460	220-620	25-35	½"-1"
1/16	360	300	29-30	240-520	175-500	26-37	¾"-1¼"

### Typical Short Arc Parameters (for out of position welding):

	Amperage	WFS	Voltage
.045	140	150	16-17
.052	125	120	17-18

\* Welding parameters are for 75% Ar/25% CO<sub>2</sub>. At higher levels of argon the voltage should be gradually decreased; ½-1 volt for 85% Ar/15% CO<sub>2</sub>, 1-11/2 volts for 90% Ar/10% CO<sub>2</sub> and 1-2 volts for 95% Ar/5% CO<sub>2</sub>.

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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. The manufacturer disclaims any warranty of merchantability or fitness for any particular purpose with respect to its products.