



Smoothcor 81T1-A1

Classification:

E81T1-A1C per AWS A5.29, SFA 5.29.

Description:

Smoothcor 81T1-A1 is a low alloy steel electrode for flux cored arc welding with an external shielding gas. This electrode is intended for single and multiple pass welding, in all positions, of certain C-Mo steels, where the addition of ½% of molybdenum is required in the deposited weld metal. Carbon dioxide is the recommended shielding gas. Gas flow rate should be maintained at 35-50 cfh, and the dew point should be -40°F or above.

Characteristics:

Smoothcor 81T1-A1 is a premium, all position, flux cored electrode for welding C-Mo steels in certain applications. This electrode is developed for use with carbon dioxide shielding, however 75-80% of argon-balance carbon dioxide may also be employed. Using the argon-carbon dioxide mixture will increase tensile strength; therefore, care must be taken with procedures and parameters to stay within the mechanical properties requirements.

Arc transfer is smooth and stable, with low spatter. The quick freezing slag facilitates welding in all positions. This electrode provides deep penetrating welds, with no "cold-lap" and excellent tie-in. Weld deposits are sound, with minimal subsurface porosity, due to excellent fluxing action of the slag. Productivity is greatly enhanced, with up to three times the deposition rate of covered electrodes, and twice that of solid wire, in all position weldments. The latest manufacturing technology ensures the highest levels of quality, consistency, and weld performance.

Applications:

Smoothcor 81T1-A1 is an ideal choice for welding certain C-Mo steels used in the fabrication of boilers and pressure vessels, such as ASTM A161, A204, and A302 Gr. A plate, and A335-P1 pipe. The ½ % Mo in the weld deposit increases the strength of the weld metal at elevated temperatures, and imparts some corrosion resistance. It does, however, reduce notch toughness somewhat. The all position capabilities of the electrode facilitate welding of boilers, pressure vessels, and pipe, for both fabrication and repair.

Typical Mechanical Properties:

SR 1 Hr. at 1150° F

| | |
|----------------------------------|--------|
| Ultimate Tensile Strength | 93,300 |
| Yield Strength | 84,600 |
| Percent Elongation | 23.5 |

Typical Deposit Composition:

| | | | | | | |
|------------|----------|-----------|-----------|----------|----------|-----------|
| Wt% | C | Mn | Si | P | S | Mo |
| | 0.05 | 0.97 | 0.35 | .010 | .010 | 0.53 |

Typical Welding Parameters:

| Diameter | Position | Optimum | | | Range | |
|-----------------|-----------------|-----------------|------------|----------------|-----------------|----------------|
| | | Amperage | WFS | Voltage | Amperage | Voltage |
| 1/16" | Flat | 350 | 300 | 29 | 150-400 | 22-34 |
| | Overhead | 225 | 160 | 26 | 150-310 | 22-28 |
| | Vertical up | 225 | 160 | 25 | 150-280 | 22-27 |
| .052" | Flat | 300 | 360 | 28 | 100-330 | 19-32 |
| | Overhead | 225 | 245 | 26 | 150-310 | 21-28 |
| | Vertical up | 225 | 245 | 25 | 150-280 | 21-27 |
| .045" | Flat | 250 | 282 | 28 | 100-300 | 21-32 |
| | Overhead | 200 | 265 | 26 | 150-280 | 21-29 |
| | Vertical up | 200 | 265 | 25 | 100-230 | 21-28 |

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.