



# TM-770

**GAS-SHIELDED FLUX-CORED WIRE**  
**AWS E71T-1M, E71T-12MJ H8**  
**EN758, T 42 2 P M 2 H10**

100202 (replaces 100120)

**TM-770** combines superior welding performance with outstanding mechanical properties. TM-770 has exceptional operator appeal for a wire with such superb physical properties, an arc that is soft and stable, and low fume levels with virtually no spatter. Even in the vertical-up position, the welds produced with TM-770 will have a flat bead profile. This wire is designed for both single and multiple-pass welding in all positions, using a shielding gas of 75-85% Ar/15-25% CO<sub>2</sub>. Diffusible hydrogen levels typically are less than 5ml.100 g required by MIL-E-24403/1. Typical applications include shipbuilding, offshore structures, and general fabrication where high impact properties, ease of operation and high productivity are required.

### PRODUCT CHARACTERISTICS:

- Low fume levels with virtually no spatter.
- Good CVN toughness at sub-zero temperatures.
- Meets MIL specifications for mechanical properties and diffusible hydrogen levels.
- NOT TO BE USED WITH 100% CO<sub>2</sub>.

### SPECIFICATIONS:

E71T-1M, E71T-12MJ H8 per AWS A5.20, E71T-1M, E71T-12MJ H8 per ASME SFA 5.20 F-6, A-1  
ABS Grade 3SA, 3YSA  
Bureau Veritas S3YM  
CWB 75-85% Ar/Bal CO<sub>2</sub> E491T-12MJ-H4  
DNV Grade III Y40MS  
Lloyd's Register of Shipping, Grade 3S, 3YS H15  
Military Spec MIL-E-24403/1 Class MIL-71T-1M, MIL-71T-1-HYM  
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### SHIELDING GAS:

75-85% Ar/Bal CO<sub>2</sub>, 35-50 cfh

### WELDING POSITIONS:

All positions

### STANDARD DIAMETERS:

.035", .045", .052", 1/16"

### WELD TEST PARAMETERS:

TM-770 1/16" diameter electrode was welded using 80% Ar/20%CO<sub>2</sub> shielding gas with flow rate of 40 cfh, 275 amps (241 ipm), DCEP, and 26 volts with 3/4" electric stick-out and 300± 25°F interpass temperature. A total of six layers were welded, two passes each for Layers 1 through 6. The direction of travel was reversed for each layer.

### TYPICAL UNDILUTED WELD METAL CHEMISTRY\*:

|                            | C    | Mn   | Si   | P     | S     | Ni   |
|----------------------------|------|------|------|-------|-------|------|
| 80% Ar/20% CO <sub>2</sub> | 0.03 | 1.14 | 0.29 | 0.009 | 0.003 | 0.34 |

### TYPICAL MECHANICAL PROPERTIES\*:

|                     |                      |
|---------------------|----------------------|
| Tensile Strength    | 81,000 psi (560 MPa) |
| Yield Strength      | 77,000 psi (528 MPa) |
| Elongation          | 27%                  |
| CVN @ 0°F (-18°C)   | 176 ft•lbs (239 J)   |
| CVN @ -40°F (-40°C) | 131 ft•lbs (178 J)   |

\*The information contained or otherwise referenced herein is presented only as "typical" without guarantee or warranty, and Hobart Brothers Company expressly disclaims any liability incurred from any reliance thereon. Typical data is obtained when welded and tested in accordance with AWS A5.20 specification. Other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by Hobart Brothers Company.

www.hobartbrothers.com  
400 Trade Square East  
Troy, OH 45373  
PH: 1-800-424-1543  
FX: 1-800-541-6607



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## RECOMMENDED OPERATING PARAMETERS:

The information below was determined by welding performed with 75 Ar/25% CO<sub>2</sub> shielding gas at a flow rate of 35 cfh.

| Diameter,<br>Electrical Stickout<br>(ES) Position | Arc<br>Voltage<br>(volts) | Current<br>DCEP (+)<br>(amps) | Approx.<br>Wire Feed Speed<br>(in/min) | Deposition<br>Rate<br>(lbs/hr) |
|---------------------------------------------------|---------------------------|-------------------------------|----------------------------------------|--------------------------------|
| .045"<br>1/2 to 3/4"<br>Flat and Horizontal       | 24                        | 100                           | 220                                    | 4.6                            |
|                                                   | <b>31</b>                 | <b>275</b>                    | <b>630</b>                             | to                             |
|                                                   | 33                        | 300                           | 730                                    | 15.4                           |
| Vertical                                          | 24                        | 150                           | 220                                    | 4.6                            |
|                                                   | <b>26</b>                 | <b>190</b>                    | <b>335</b>                             | to                             |
|                                                   | 27                        | 220                           | 430                                    | 8.4                            |
| Overhead                                          | 24                        | 150                           | 220                                    | 4.8                            |
|                                                   | <b>26</b>                 | <b>200</b>                    | <b>370</b>                             | to                             |
|                                                   | 29                        | 250                           | 530                                    | 10.3                           |
| .052"<br>1/2" to 3/4"<br>Flat and Horizontal      | 23                        | 150                           | 160                                    | 4.2                            |
|                                                   | <b>29</b>                 | <b>300</b>                    | <b>435</b>                             | to                             |
|                                                   | 35                        | 350                           | 585                                    | 15.0                           |
| Vertical                                          | 24                        | 150                           | 160                                    | 4.2                            |
|                                                   | <b>26</b>                 | <b>200</b>                    | <b>225</b>                             | to                             |
|                                                   | 28                        | 250                           | 320                                    | 8.4                            |
| Overhead                                          | 24                        | 150                           | 160                                    | 4.2                            |
|                                                   | <b>27</b>                 | <b>225</b>                    | <b>290</b>                             | to                             |
|                                                   | 28                        | 250                           | 320                                    | 8.4                            |
| 1/16"<br>1/2" to 3/4"<br>Flat and Horizontal      | 24                        | 200                           | 180                                    | 6.3                            |
|                                                   | <b>27</b>                 | <b>350</b>                    | <b>410</b>                             | to                             |
|                                                   | 28                        | 450                           | 580                                    | 22.6                           |
| Vertical                                          | 24                        | 200                           | 180                                    | 6.3                            |
|                                                   | <b>25</b>                 | <b>220</b>                    | <b>210</b>                             | to                             |
|                                                   | 27                        | 275                           | 290                                    | 10.4                           |
| Overhead                                          | 26                        | 200                           | 180                                    | 6.3                            |
|                                                   | <b>27</b>                 | <b>250</b>                    | <b>210</b>                             | to                             |
|                                                   | 28                        | 275                           | 290                                    | 10.4                           |

**Bold:** Optimum parameters for welder appeal.

### Notice:

Actual use of the product may produce varying results due to conditions and welding techniques over which Tri-Mark has no control, including, but not limited to, plate chemistry, weldment design, fabrication methods, electrode size, welding procedure, service requirements and environment. The purchaser is solely responsible for determining the suitability of Tri-Mark products for the purchaser's own use. Any prior representations shall not be binding. Tri-Mark disclaims any warranty of merchantability or fitness for any particular purpose with respect to its products.

### Caution:

Consumers should be thoroughly familiar with the safety precautions shown on the Warning Label posted on each shipment in and in American National Standard Z49.1, "Safety in Welding and Cutting," published by the American Welding Society, 550 NW LeJeune Road, Miami, FL 33126, and OSHA Safety and Health Standards 29 CFR 1910, available from the U.S. Department of Labor, Washington, D.C. 20210.