



Unibraze 12018-M (E12018-M)

DESCRIPTION:

UNIBRAZE 12018M is a high quality electrode for high tensile steels where welds of 120,000 psi tensile strengths are required. The coating is specially formulated to resist conditions of high heat and humidity. The electrode offers resistance to moisture reabsorption which helps retard hydrogen cracking and aids in eliminating starting porosity.

APPLICATIONS:

UNIBRAZE 12018M is designed for applications requiring at least 120,000 psi tensile strength. Typical applications include low alloy steels, forgings, castings, plate and pressure vessels.

FEATURES:

- Good arc characteristics
- Good ductility
- Low spatter level
- Quick and easy slag removal
- Low moisture reabsorption
- Low smoke level
- Low hydrogen, less than 4 ml/100 g

BENEFITS:

- Stable, easy to control arc
- High impact resistance
- Improves weld bead appearance, higher deposition
- Reduces clean-up time
- Prevents starting porosity
- Welder safety and comfort
- Resistant to hydrogen-induced cracking

TYPICAL WELD METAL PROPERTIES (Chem Pad):

Weld Metal Analysis

Carbon (C)	0.06	AWS Spec	0.10 max
Manganese (Mn)	1.91		1.30 - 2.25
Phosphorus (P)	0.016		0.03 max
Sulphur (S)	0.011		0.03 max
Silicon (Si)	0.32		0.60 max
Chromium (Cr)	0.66		0.30 - 1.50
Nickel (Ni)	2.34		1.75 - 2.50
Molybdenum (Mo)	0.46		0.30 - 0.55
Vanadium (V)	0.01		

TYPICAL MECHANICAL PROPERTIES (AW):

Tensile Strength	138,000 psi (949 MPa)	AWS Spec	120,000 psi
Yield Strength	116,000 psi (802 MPa)		108,000 - 120,000 psi
Elongation % in 2"	20%		18%

TYPICAL CHARPY V-NOTCH IMPACT VALUES (AW):

Avg. at -60°F	47 ft•lbs	AWS Spec	20 ft•lbs
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DIFFUSIBLE HYDROGEN: 2.3 ml/100 gr

CONFORMANCES AND APPROVALS:

- AWS A5.5, E12018M H4R • ASME SFA 5.5, E12018M H4R
- ABS

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 product.



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RECOMMENDED WELDING PROCEDURES:

- GENERAL:** Electrode positive, work negative (DCEP) or AC
ARC LENGTH: Very short arc
FLAT: Angle electrode 10-15° from 90°
VERTICAL-UP: Use weaving techniques
VERTICAL-DOWN: Not recommended
OVERHEAD: Use slight weaving motion within the puddle
STORAGE: After opening, store in holding oven (250°F to 400°F) until used.
RECONDITIONING: If exposed to atmosphere for extended periods, reconditioned for one (1) hour at 600°F.

RECOMMENDED OPERATING PARAMETERS:

Diameter		Type of Power	Minimum Amps	Optimum* Amps	Maximum Amps
Inches	mm				
3/32	2.4	DCEP or AC	70	100	110
1/8	3.2	DCEP or AC	90	135	160
5/32	4.0	DCEP or AC	130	170	220
3/16	4.8	DCEP or AC	200	250	300

*For out of position welding, reduce amperages shown by 15%.

TYPICAL DEPOSITION RATES (at Optimum):

Diameter		Type of Power	Amperage	Deposition Rate Lbs/Hr.
Inches	mm			
3/32	2.4	DCEP	100	2.50
1/8	3.2	DCEP	135	3.00
5/32	4.0	DCEP	175	4.00
3/16	4.8	DCEP	250	5.50

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