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TECHNICAL BULLETIN

ALLOY M ARC SPRAY WIRE

(MTI Part No. WA-ALLOYM-4)

A. Description

ALLOY M is ideally suited to high temperature, low stress abrasion applications, providing excellent erosion resistance with moderate corrosion protection.

ALLOY M employs a new metallurgical design using an iron-chromium-boron based alloy. Under surface friction the alloy transforms from a crystalline to an amorphous/nanocrystalline structure to a depth of 2 to 5 microns creating a metallurgical structure very similar to that of glass. The glass-like surface has no grain boundaries, providing a very low coefficient of friction and significantly increased hardness. This metamorphic transformation continues throughout the life of the material.

Uses for ALLOY M wire include:

- Erosion & corrosion protection
- Low coefficient of friction
- Excellent thermal conductivity
- Superior bond strengths
- Withstands repeated thermal cycling
- High hardness at elevated temperature
- Anti-galling

B. Application

Apply ALLOY M by two-wire arc spray. The wire exhibits exceptional ability to adhere, without bond coat, to a variety of substrates. The material has been successfully applied to a multitude of shapes over aluminum, titanium, cast iron, stainless and carbon steel.

C. Deposit Guidelines

- Spray Rates: 20-25 lbs./hr.
- Thickness: 0.125" (3.18 mm) max
- One Pound Coverage: 1 sq. ft. (304.8 sq. mm) @ 0.20" (5.08 mm) thickness
- Finish RMS: 15
- Efficiency: 70%

- Coefficient of Friction: Dynamic 0.09, Static 0.11
- Vickers/Rc: 950-1300/68-73
- G-65 (PRACTICE B): Wt. Loss in g 0.196; Vol. Loss in mm^3 27

HOT HARDNESS

TEMP°F	HV/Rc
400°F	740/62
1000°F	500/49
1300°F	190/19

D. Performance Data

ALLOY M is 65% amorphous as applied by twin wire arc spray. The bond strength of the material as applied is superior to standard materials utilizing a bond coat.

ALLOY M maintains high hardness at elevated temperatures. The very low coefficient of friction inhibits erosive action on the surface of the material.