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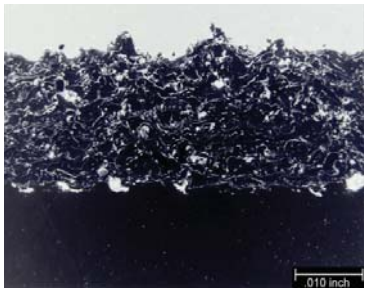
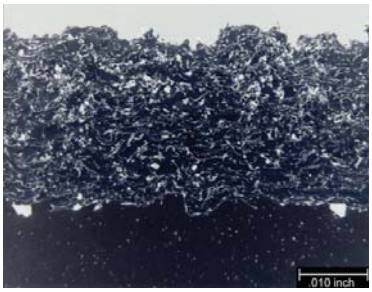
ArcMelt® 4302

A patent pending Nickel/Aluminum hard composite alloy wire, made exclusively for the Twin Wire Arc Spray (TWAS) process.

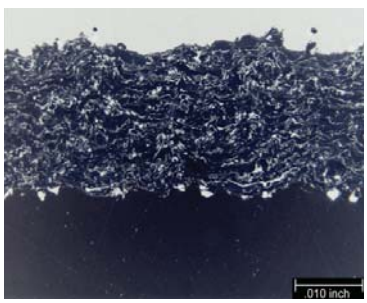
ArcMelt's® 4302 self-bonding composite wire generates an exothermic reaction during the application process, resulting in the production of aluminides. The coating provides a significant improvement in machinability, corrosion and oxidation resistance up to 1800° F (982.2°C). The heat generated from this reaction provides high bond strengths and produces better inter-particle fluxing and uniform structure. The coating can be applied thick, without cracking, with minimum dependence on technique and temperature control.



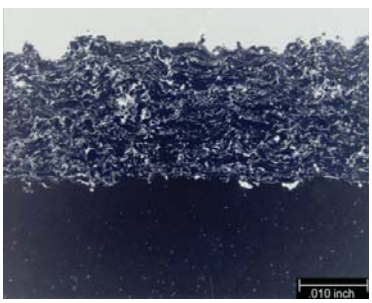
Air Pressure at 65 psi



Air Pressure at 80 psi



Air Pressure at 100 psi



Air Pressure at 120 psi

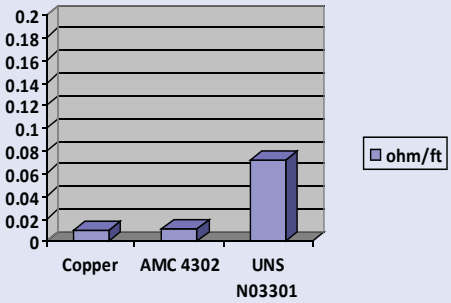
- **Wire Characteristics**

  Wire Size - 1/16" (1.5mm) dia.

  Cast/Helix - meets AWS C2.25

  Lube Free

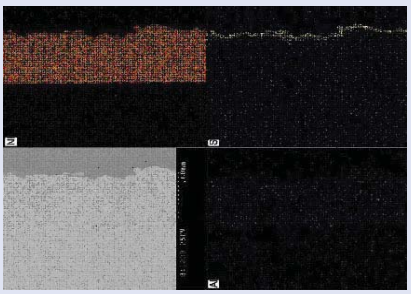
- **Resistivity**



* Copper = 1/16" (.16 cm) dia., AMC 4302 = 1/16" (.16 cm) dia. and UNS N03301 = 1/16" (.16 cm) dia.

- **Average Coating Chemistry***

Ni	< 100%
Al	< 8%
Si/Ti	Trace Elements



ArcMelt® 4302

- **Bond Strength (ASTM-C-633)**[1]

  > 6,000 psi @ .040” (1.02mm)

- **Coating Texture**

  < 150 µin @ .150” (3.81mm) thick

- **Coating Hardness**

  45 HRB

- **Finish (Ground)**

  Excellent

- **Thickness Limitation**[2]

  > .150” (3.81mm)

- **Spray Rate**

  1/16” (1.5mm) >20 lbs/hr (9.07 kg/hr)

- **Deposit Efficiency**

  > 90 %

- **Porosity**

  < 3%

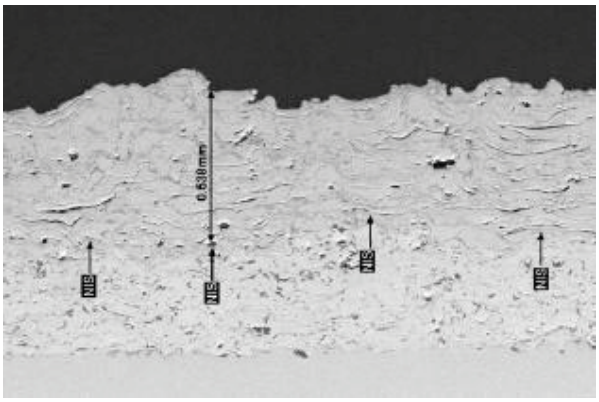
* Based on multiple samplings and parameter configurations.

1 Bond strength measured using 3M™ Scotch Weld Epoxy Adhesive 2214 High Density

2 Prepared using 24 Grit Aluminum Oxide at 80 psi

Coating Performance

ArcMelt’s® 4302 has proven to be a beneficial base coat for other composite coatings used in aqueous corrosion environments. The photomicrograph below shows a conventional Fe/Cr TWAS coating applied over AMC 4302. The base coat’s unique structure and chemistry has prevented the Nickel Sulfide from reaching the substrate.



Nickel Sulfide Penetration Halted at Base Coat/Coating Interface

Safety Recommendations

For general spray practices, see AWS publications AWS C2.1-73, “Recommended Safe Practices for Thermal Spraying” and AWS TSS-85, “Thermal Spraying Practice, Theory and Application. Thermal spraying is a completely safe process when performed in accordance with proper safety measures. Become familiar with OSHA safety regulations before starting a spray operation.

ArcMelt® Certified Applicator:

Rev. 02/11

Results confirmed through third-party testing. Individual results may vary.