

Tensile Bond Test on SIFCO DALIC AeroNikl®250 Code 7280 Deposits

A tensile bond test was run on SIFCO DALIC AeroNikl®250 Code 7280 deposits plated on SAE 4130 Steel. The test was run in accordance with ASTM C 633-79 entitled the "Standard Test Method for Adhesion or Cohesive Strength of Flame-Sprayed Coatings". The end faces of the two samples, made from 1 in. diameter stock, were plated using the standard SIFCO DALIC Process preparatory procedure. The plating was carried out as follows:

1. Plate 0.020 in. of AeroNikl® 250
2. Sand plating to improve surface condition so that additional plating could be applied. This left 0.017 in. of plating remaining.
3. Plate 0.012 in. of additional AeroNikl® 250.
4. Grind surfaces until any surface imperfections were removed and the plated surface was perpendicular to the center-line of the samples. Deposit thicknesses of 0.022 and 0.026 in. were left on the surfaces.

The plated samples were then cemented together and tested in a tensile test machine. The sample failed in the cement joint at 7920 lb. or 10,090 psi. Therefore, the adhesion of an AeroNikl®250 deposit to steel, the cohesion of an AeroNikl®250 deposit, and the adhesion of a second layer of an AeroNikl®250 deposit to a first, exceeded 10,090 psi.