



Brazing carbide to steel for a surgical device

Objective Braze a carbide wear pad to steel for automated surgical forceps

- Material**
- Steel assembly 1/2" (127 mm) long, 1/8 " (3.175 mm) cross section
 - Carbide wear pad
 - Braze alloy

Temperature 1350-1400 °F (732- 760 °C)

Frequency 313 kHz

Equipment Ameritherm 1 kW, induction heating system, equipped with a remote heat station containing one 0.66 μ F capacitor. An induction heating coil designed and developed specifically for this application.

Process A two-turn helical coil is used to heat these very small parts. The parts are placed inside the coil and heated to a temperature of 1350-1400 F. The application depends entirely on the fixturing setup. A simple setup as seen in the attached picture makes good looking joints. Braze shim preforms are cut to size and sandwiched between the carbide and the steel and white flux is used on the samples. The sample assembly is then heated in coil. The brazing temperature of 1400F is reached in approximately 8-10 seconds.

- Results/Benefits**
- Compared to a stick-fed flame braze heating, induction heating provides consistently higher quality joints. This is critical for medical applications.

The use of a braze shim preform ensures the same amount of braze alloy in every joint and that the braze alloy is spread evenly throughout the joint area for optimum strength.

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