

Brazing Carbide to Steel for a Surgical Device

- Objective:** To braze a carbide wear pad to steel for automated surgical forceps.
- Equipment:** Ambrell EASYHEAT™ 1.2 kW, 150-400 kHz solid state induction power supply with a workhead and coil specifically designed for this application.
- Frequency:** 313 kHz
- Material:**
- Steel assembly 1/2" (127 mm) long, with a 1/8" (3.175 mm) cross section
 - Carbide wear pad
 - Braze alloy
- Temperature:** 1350-1400 °F (732-760 °C)
- Testing:** A two-turn helical coil is used to heat these small parts. The parts are placed inside the coil and heated to a temperature of 1350-1400 °F. The application is dependent on the fixturing setup. A simple setup as seen in the picture on the next page makes high quality 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 the coil. The brazing temperature of 1400 °F is reached in approximately 8-10 seconds.
- Benefits:**
- Compared to stick-fed flame braze heating, induction heating provides consistently higher quality joints. This is critical for medical applications.
 - The use of braze shim preforms 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.

