

### SOLDER & FLUX KIT



#### KIT INCLUDES:

- Solder** ■ Lead free solder for nickel electrodes, 12" length.
- Flux** ■ Liquid Flux for soldering to nickel electrodes, and brass & stainless steel center shims, 7 ml.
- Wires** ■ Red wires, #32 Gauge, Stripped & tinned 5" length, 5 pieces.  
■ Black wires, #32 Gauge, Stripped & tinned, 5" length, 5 pieces.
- Small Piezoceramic Sheet**
  - Piezoceramic sheet with nickel electrode to practice technique, 1 piece.
- RoHS Compliant**
  - The materials in the kit are RoHS compliant.

#### PURPOSE OF THE KIT

Soldering wires to the electrodes of piezoceramic sheet and/or the center shim of a 2-layer bending element can be difficult if the proper materials are not used. There is a vast array materials to choose from. The solder & flux kit offers the right materials to get started at once and provides information to procure materials directly from the manufacturer later. Recommended procedure is described. Materials in the kit are for soldering to nickel electrodes.

#### DESCRIPTION OF ELECTRODES

Typically, piezoceramic electrodes are either nickel or fired silver. Nickel electrodes are grey, whereas silver electrodes are flat white in color while

Nickel has good corrosion resistance and is a good choice for both AC and DC applications. It can usually be soldered to easily with lead free solder. Electroless nickel, used for plating piezoceramic, contains phosphor. Sometimes the phosphor content in a plating run can make it hard to solder. Vacuum deposited nickel electrodes are usually very thin, making soldering tricky.

Silver electrodes are not recommended for high electric field DC applications where the silver is likely to migrate and bridge the two electrodes. It is often used in non-magnetic and AC applications. Silver used as an electrode is in the form of flakes suspended in a glass frit. It is generally screened onto the ceramic and fired. The glass makes the bond between the ceramic and the silver particles. Silver is soluble in tin and a silver loaded solder should be used to prevent scavenging of silver in the electrode.

Choice of the correct flux (to remove surface oxidation) generally makes soldering to electrode surfaces easy even under adverse conditions.

#### DESCRIPTION OF CENTER SHIMS

Generally, the center shim layer of a 2-Layer piezoelectric bending element is either brass or stainless steel. A wire is attached to the center shim if the element is used in parallel operation. Shims are soldered in the same way as the nickel electrode. The proper liquid flux choice must be made depending on the shim material.

#### ORDERING INFORMATION

Solder & Flux Kit (For Nickel Electrodes)

#### PART NO.

MSF-003-NI

#### 1 pc.

\$49