

Piezotech Processing's guides

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How to connect

Piezotech films can be glued to a structural element using conductive or non-conductive adhesives:

- Non-conductive adhesives are used when the electrical connection is made directly to the piezoelectric film electrodes
- Conductive adhesives provide direct electrical contact between the metallized surfaces of the piezoelectric films, and the conductive structural elements to which the leads have been attached. Conductive elastomers can be applied to the interface of a conductive structural element, and the piezoelectric film surface to form a conductive bridge.

In all cases however, adhesives should be chosen among those of low polarity and having low dielectric constants. Liquid adhesives carried by toluene, xylene, or aliphatic hydrocarbons are suitable for piezoelectric films. Highly polar, high dielectric-constant adhesives such as those carried by acetone, ketones, and alcohol can attack (dissolve) the film, and therefore should be avoided.

Acrylics, urethanes and epoxies can be suitable nonconductive adhesives, although it is recommended to carry out beforehand, a compatibility test by exposing the films to the adhesive, and checking for the absence of dissolution or chemical incompatibility.

Leads can also be attached via low temperature soldering using Ostalloy 162 Silver Solder. Usually the leads should not be soldered directly to thin piezoelectric films (high temperature may damage the film and alter the piezoelectric properties). Different techniques can be used:

- Alligator clamps-conductive rubber. Insulate one Jaw of two alligator clamp. Sandwich a small-diameter tab of conductive rubber between the uninsulated jaw and the piezoelectric film. The conductive rubber protects the film from puncture
- Solderable copper-foil tab with conductive adhesive. Solder each lead to a small copper foil, peel off the protective paper and adhere each copper tab to the piezoelectric film with hard finger pressure to assure intimate electrical contact
- Solderable copper-foil tab with conductive epoxy. Solder each lead wire to a small-diameter solderable copper-foil tab. Apply a small dab of conductive epoxy to the underside of each copper-foil tab. Mount the copper tabs by attaching them to the piezoelectric film and let the epoxy cure

How to cut

Piezoelectric films can be cut with a razor blade or sharp shears or can be die-cut to any desired dimension. Care should be taken to prevent the edges of very thin films (6-10 μ m) from curling and thereby short circuiting the top and bottom electrodes. Metal fillings from the cutting process can become a conductive bridge between top and bottom metallization. Lightly brush or wipe the edges to dislodge the metal fillings.

Control the resistivity and the absence of short circuits between the two electrodes using a voltmeter. In some cases metal fillings can be made non-conductive by applying an electric potential between the two sides of the film. Metal fillings will then heat and oxidize.

Safety and Storage

Please refer to the safety datasheet

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