

## M-Coat F Application Instructions

### INTRODUCTION

The M-Coat F Protective Coating Kit is designed to fit a wide variety of both bondable and weldable strain gage application requirements. Because M-Coat F is easily applied and requires no mixing or curing, it is particularly suited for use where working conditions are not ideal. Typical applications include pipelines, tunnels, bridges, reinforcement bars in concrete, heavy machinery, ships, aircraft, motor vehicles, and pressure vessels.

This kit contains all materials necessary for installation under general laboratory conditions or in hostile field environments. Contents include self-adhering Teflon® tape; a soft, pliable butyl rubber sealant; neoprene rubber sheets; aluminum foil tape; and M-Coat B (an air-drying nitrile rubber coating). These materials can be applied to vertical and inverted surfaces without flowing.

Application of M-Coat F consists of pressing a small piece of Teflon tape onto the exposed gage foil and lead connections. This is followed by a layer of M-Coat FB butyl rubber to immediately seal against moisture. For mechanical protection, a layer of M-Coat FN neoprene rubber is pressed onto the layer of FB sealant. In applications exposed to solvents, petroleum products, or flowing air or water, FA aluminum tape is installed over the entire installation and sealed with M-Coat B. This forms a smooth contour and provides additional protection against moisture and solvents.

The normal operating temperature range of M-Coat F is -20° to +175°F [-30° to +80°C]. Operation in an extended range of -70° to +250°F [-55° to +120°C] will not damage the coating, but may result in softening or reduction in bond strength. All kit components have flash points above +110°F [+45°C]. Shelf life is a minimum of one year.

### HANDLING PRECAUTIONS

All components of the M-Coat F Kit are safe to use when reasonable care is observed; however, the user is cautioned to: (1) Avoid direct contact with M-Coat B; (2) Avoid prolonged or repeated breathing of its vapors; (3) Use M-Coat B only in well-ventilated areas. If skin contact with M-Coat B does occur, thoroughly flush the contaminated area with warm water. Obtain medical attention in cases of ingestion or extreme exposure. For additional health and safety information, consult the safety data sheet.

### INSTALLATION PROCEDURES

#### *Leadwire Preparation and Priming*

##### Step 1

Using the brush provided, prime vinyl-insulated leadwires with a layer of M-Coat B and allow to air dry. It may be desirable to thin the M-Coat B by mixing it 50:50 with methyl ethyl ketone (MEK). Etch untreated Teflon-insulated leadwires with a Teflon etchant such as Micro-Measurements TEC-1 Tetra-Etch® compound. Separate the individual conductors of flat multi-conductor cables prior to priming or etching.

##### Step 2

Strip and tin each leadwire. Stripping and tinning after priming or etching prevents the primer/etchant from touching bare conductors.

##### Step 3

Attach the leadwires and remove all soldering fluxes according to recommended procedures for the materials used. (Refer to Micro-Measurements Strain Gage Accessories Data Book.)

**Note:** When splicing lengths of leadwire, protect and water proof the splice joints with a heat-shrinkable sealant (Micro-Measurements HST-1).

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**Application of M-Coat FT Teflon Tape,  
FB Butyl Rubber, and FN Neoprene Rubber**

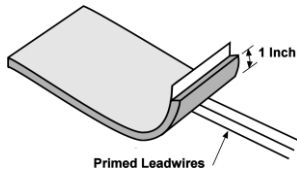
**Step 1**

Clean the gage installation area with a suitable degreasing agent to ensure a tenacious bond of the coating. The cleaned area should be slightly larger than the space to be covered with M-Coat F. If the surface of the specimen is below +40°F [+5°C], warm with a heat gun, heat lamp, etc., for best results.

**Step 2**

Cut a piece of M-Coat FT Teflon tape large enough to cover all exposed electrical surfaces on the gage installation. On open-faced gages this would include all foil areas and solder connections. On encapsulated gages, only the solder connections need to be covered. The tape should extend 1/16 in [1.5 mm] beyond bare foil and electrical connections. Press in place.

**Step 3**

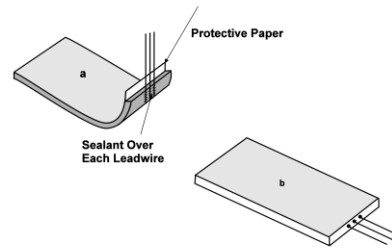


Cut a patch of M-Coat FB butyl rubber sealant large enough to extend 1/2 in [13 mm] beyond the three open sides of the gage (or Teflon tape), and at least 1-1/4 in [30 mm] beyond the end of the gage or terminal strip from which the leadwires exit. If the gage-bonding adhesive extends beyond this area, increase the size of the patch accordingly. This is particularly important with M-Bond 200 cyanoacrylate adhesive.

**Step 4**

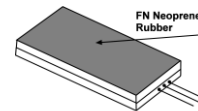
Remove the protective paper from one side of the M-Coat FB patch. Press this exposed area to the surface of the installation, beginning at the end opposite the leadwires and stopping 1/4 in [6 mm] past the solder connections. Leave 1 in [25 mm] of the sealant exposed as shown above.

**Step 5**



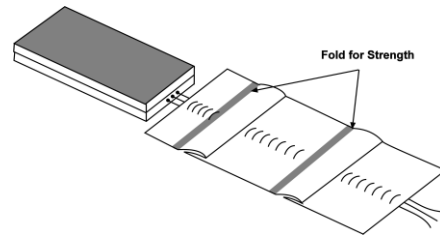
Using tweezers, raise each lead and tack to the coating. Use a dental probe to form the sealant around each lead, being careful not to puncture the sealant. Firmly press the remainder of the patch onto the specimen surface.

**Step 6**



For mechanical protection, cut a patch of M-Coat FN neoprene rubber to the same size as the butyl rubber sealant. Remove the protective paper from the butyl rubber, and press the neoprene in place.

**Step 7**



M-Coat FA aluminum tape can serve as a convenient leadwire restraint. For maximum strength, fold as shown above.

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Tetra-Etch is a registered trademark of W.L. Gore.

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### ***M-Coat F Installation with Aluminum Tape***

In applications exposed to solvents, petroleum products, flowing water or air, installation of aluminum tape and sealing with M-Coat B offers increased protection. The aluminum tape contours the installation and leadwire routing; application of M-Coat B seals the edges.

#### **Steps 1 through 5**

Follow procedures in Steps 1 through 5 for M-Coats FT, FB, and FN.

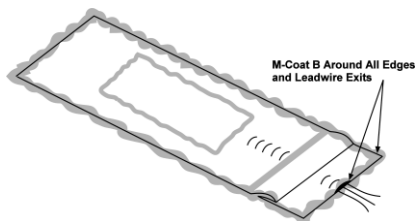
#### **Step 6**

For mechanical protection, cut a patch of M-Coat FN neoprene rubber approximately 1/4 in [6 mm] smaller (on all sides) than the butyl rubber. This technique minimizes the otherwise steep edge over which the aluminum tape is installed.

#### **Step 7**

Cut the aluminum tape to a length at least 1 in [25 mm] longer than the installation, and long enough to cover the desired length of leadwire. Press the foil firmly into place around the installation and leadwires. Smooth the tape edges with a blunt instrument.

#### **Step 8**



Apply two coats of M-Coat B to the tape edges paying particular attention to the lead exit area. Allow the first coat to dry to the touch before applying the second. A completed installation is shown above.

Note: When a low-profile installation is desired, the FN neoprene sheet can be eliminated from the assembly. However, caution must be exercised with this method since it provides less mechanical protection.

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