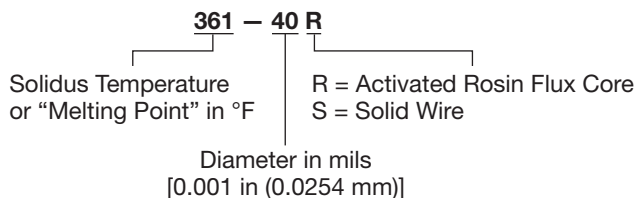


## Solders, Fluxes, Kits, and Soldering Unit

The quality of the solder joints is a critical element in the performance of any strain gage installation. Because of special requirements associated with strain gage circuitry, many commercial solders and fluxes are not satisfactory for this purpose. Micro-Measurements stocks and distributes a selection of solders and fluxes that have been carefully tested and qualified for use with strain gages.

applications. For ordering purposes, the solders are specified according to the coding system shown at right. All solders are supplied on spools, except for the 1240-FPA paste, which is supplied in a jar.



### SOLDERS

Strain gage solders are listed at right, along with their compositions, principal properties, and recommended

<b>SOLDER SELECTION CHART</b>							
Solder Type (See Note 1)	Packaging		Solidus/ Liquidus Temperature	Wetting and Flow	Mech. Strength	Electrical Conductivity	Corrosion Resistance
	Order No.	Unit Size					
361A-20R 63%Tin 36.65% Lead 0.35% Antimony	361A-20R-25	25 ft (7.6 m)	361°/361°F [183°/183°C]	Excellent	Very Good	High	Good
	361A-20R	1 lb (450 g)					
Best all-around solder for general use. Also capable of use at cryogenic temperature. Three-year shelf life.							
361-40R 63%Tin 37% Lead	361-40R-15	15 ft (4.6 m)	361°/361°F [183°/183°C]	Excellent	Very Good	High	Good
	361-40R	1 lb (450 g)					
General use with heavy leadwires. Not recommended for use at cryogenic temperatures. Three-year shelf life.							
<b>430-20S</b> 96.3% Tin 3.7% Silver	430-20S-25	25 ft (7.6 m)	430°/430°F [221°/221°C]	Excellent	Very Good	Best	Excellent
	430-20S	1 lb (450 g)					
Recommended for use where high electrical conductivity is required. Good mechanical fatigue properties. Do not use at cryogenic temperatures. Shelf life is indefinite.							
<b>450-20R</b> 95% Tin 5% Antimony	450-20R-25	25 ft (7.6 m)	450°/460°F [232°/238°C]	Excellent	Very Good	High	Good
	450-20R	1 lb (450 g)					
Higher temperature solder with very good handling properties. Can be used with M-Flux AR or M-Flux SS. Presence of antimony prevents "tin disease"; can be used in cryogenic environments, although quite brittle at low temperatures. Three-year shelf life.							
<b>450-20S</b> 95% Tin 5% Antimony	450-20S-25	25 ft (7.6 m)	450°/460°F [232°/238°C]	Excellent	Very Good, Hard	High	Good
	450-20S	1 lb (450 g)					
Higher temperature solder with very good handling properties. Can be used with M-Flux AR or M-Flux SS. Presence of antimony prevents "tin disease"; can be used in cryogenic environments, although quite brittle at low temperatures. Shelf life is indefinite.							
570-28R 93.5% Lead 5% Tin 1.5% Silver	570-28R-20	20 ft (6.1 m)	565°/574°F [296°/301°C]	Very Good	Very Good, Hard	Fair	Fair
	570-28R	1 lb (450 g)					
High-lead content. For high-temperature connections and long-term use at cryogenic temperature. Three-year shelf life.							
<b>1240-FPA</b> 40% Silver 28% Zinc 30% Copper 2% Nickel	1240-FPA	1 oz (28 g)	1220°/1435°F (660°/780°C)	Excellent	Excellent	High	Good
	For very-high-temperature solder joints, generally with WK-Series strain gages. The WRS-1 Resistance Soldering Unit is an ideal tool for use with this solder. Has a shelf life of 9 months.						

**Note 1:** Products shown in bold are RoHS compliant.

**Solders, Fluxes, Kits, and Soldering Unit**

**FLUXES**

With solid wire solders, it is necessary to use separate, externally applied fluxes. Even with rosin-core solders, flux may be helpful when soldering fine jumper wires to gage tabs or printed-circuit terminals, because not enough flux is released from the cored solder. It may also be necessary to supplement the cored flux in high-temperature solders such as Type 570.


Two fluxing compounds are available for strain gage soldering applications. M-Flux AR-2 is an active but noncorrosive rosin flux that is effective on constantan, copper, and nickel. M-Flux SS is a very active acid flux

that is used primarily with solid-wire solders applied to isoelastic and K-alloy gages, and to stainless steel. The two fluxes should never be mixed. Whether the rosin or acid flux is used, it must be completely removed immediately after soldering to prevent degradation of protective coatings and corrosion of the metals, and to eliminate conductive flux residues. Rosin residues are best removed with *M-LINE* Rosin Solvent. Removal of M-Flux SS requires two steps: liberal applications of M-Prep Conditioner A, which must be blotted dry; and then M-Prep Neutralizer 5A, also to be blotted dry.

<b>FLUX AND ROSIN SOLVENT KITS (See Note 1)</b>	
<b>M-Flux FAR-2 Kit, 2 Year Shelf Life</b>	Two 1-oz (30-ml) brush-cap bottles M-Flux AR-2 Two 1-oz (30-ml) brush-cap bottles <i>M-LINE</i> Rosin Solvent
<b>M-Flux AR-2 Bulk, 2 Year Shelf Life</b>	Twelve 1-oz (30-ml) brush-cap bottles M-Flux AR-2
<b>RSK-1 <i>M-LINE</i> Rosin Solvent Kit, 2 Year Shelf Life</b>	Twelve 1-oz (30-ml) brush-cap bottles
<b>RSK-2 <i>M-LINE</i> Rosin Solvent Bulk, 2 Year Shelf Life</b>	1-qt (960-ml) bottles
<b>RSK-4 <i>M-LINE</i> Rosin Solvent Kit, 2 Year Shelf Life</b>	Four 1-oz (30-ml) brush-cap bottles
<b>FSS-1 M-Flux SS Kit, 1 Year Shelf Life</b>	One 1-oz (30-ml) applicator cap bottle M-Flux SS One 1-oz (30-ml) brush-cap bottle M-Prep Conditioner A One 1-oz (30-ml) brush-cap bottle M-Prep Neutralizer 5A

**Note 1:** All products shown are RoHS compliant.

**SOLDERING UNIT**

<b>MARK X SOLDERING STATION</b>	
	<p>The Mark X is ideally suited for strain gage applications with its digitally controlled temperature range from 120 to 900 deg F (49 to 482 deg C). This unit incorporates a closed loop temperature control that provides excellent stability of 1.8 deg F (1 deg C) when used from 400 to 900 def F (204 to 482 deg C). High performance unit with replaceable ceramic heating element and comfortable cushioned handle at an affordable price. Three solder tips are supplied with this unit including 0.8, 1.2, and 1.6 mm (installed). In order to determine the appropriate tip, compare the tip size with the strain gage tab size and construction. Additional tips can be ordered separately.</p> <p><b>M10S-1-115 SOLDERING STATION</b>  <b>M10S-1-230 SOLDERING STATION</b>  <b>M10S-A WIDE TIP (1.2 MM)</b>  <b>M10S-B NARROW TIP (0.8 MM)</b></p>

**REFERENCES**

- Application Note TT-609, "Strain Gage Soldering Techniques."
- Application Note TT-606, "Soldering Techniques for Lead Attachment to Strain Gages with Solder Dots."
- Application Note TT-602, "Silver Soldering Technique for Attachment of Leads to Strain Gages."

## Solders, Fluxes, Kits, and Soldering Unit

### SOLDERING UNIT

#### RESISTANCE SOLDERING UNIT



Used in combination with 1240-FPA silver-solder paste, this unit makes an excellent lead attachment system for strain gage operation above +500°F (+260°C). The variable power control allows adjustment from zero to 100 watts and zero to 3 Vac. The power control is fused, and a pilot light is incorporated. The foot switch and tweezer soldering handpiece give excellent operator control over each solder joint. Includes power unit and foot switch, both with three-wire NEMA plugs, tweezer soldering handpiece, and replacement electrodes.

**WRS-1 Resistance Soldering Unit, 110 Vac**

**WRS-2 Resistance Soldering Unit, 220 Vac (not CE rated)**

**WRS-A Replacement Electrodes, package of 6**