

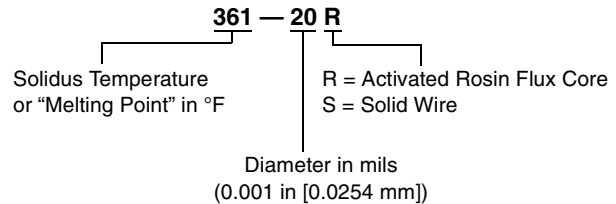
Solders, Fluxes, Kits, and Soldering Units

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.

SOLDERS

Strain gage solders are listed below, along with their compositions, principal properties, and recommended 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.



SOLDER SELECTION CHART							
Solder Type	Packaging		Solidus/ Liquidus- Temperature	Wetting & 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.						
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.						
430-20S 96% Tin 4% 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.						
450-20R 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.						
450-20S 95% Tin 5% Antimony	450-20S-25	25 ft [7.6m]	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.						
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.						
1240-FPA 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.						



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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 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.

FLUX AND ROSIN SOLVENT KITS

FAR-1 M-Flux AR Kit:

Two 1-oz [30-ml] brush-cap bottles M-Flux AR.
Two 1-oz [30-ml] brush-cap bottles M-LINE Rosin Solvent.

RSK-2 Rosin Solvent Bulk:

One quart (960-ml) bottle M-LINE Rosin Solvent.

RSK-4 Rosin Solvent Kit:

Four 1-oz [30-ml] bottles M-LINE Rosin Solvent.

FSS-1 M-Flux SS Kit:

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.

MARK V SOLDERING STATION



A time-proven precision soldering instrument for miniature and/or delicate soldering applications. Full 25-watt rating in 17 selector positions to handle all M-LINE solder alloys except 1240-FPA. Magnetic solder pencil holder and flexible, burn-resistant cord. Lightweight soldering pencil (1.1 oz [31 g]). Specify 115 or 220 Vac, 50 or 60 Hz operation.

M5S-1 Mark V Soldering Station,

Complete with A and B tips

M5S-2 Mark V Control Unit Only.

M5S-3 Mark V Soldering Pencil Only.

SOLDERING TIPS FOR MARK V

Types A, B, and C tips are pretinned, ironclad copper, over-plated with nickel/chromium to retard oxidation. Type D is nickel-plated copper, particularly suited to high-temperature soldering.

M5S-A Type A, general-purpose 1/16 in [1.5 mm] screwdriver.

M5S-B Type B, miniature 1/16 in [1.5 mm] chisel.

M5S-C Type C, heavy duty 1/8 in [3 mm] screwdriver.

M5S-D Type D, high-temperature 3/32 in [2.5 mm] chisel.

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MARK VIII SOLDERING STATION



Manufactured for Vishay Micro-Measurements, the Mark VIII is a compact soldering unit with a lightweight soldering pencil. The modular design of the pencil allows for easy changing of tips, and heating element replacement. Includes both the M8S-A and M8S-B soldering tips, selected for ease of use with strain gages. The Mark VIII incorporates closed-loop control technology for precise tip temperature management. Tip temperature range of +500° to +800°F [+260° to +425°C] is ideal for most laboratory and field strain gage applications. The temperature control is color-coded for proper tip temperatures for all Micro-Measurements soft solders. Not for use with Type 1240-FPA solder.

M8S-1-XXX Mark VIII Soldering Unit, Complete,
XXX = Voltage 115 or 230 (Vac).

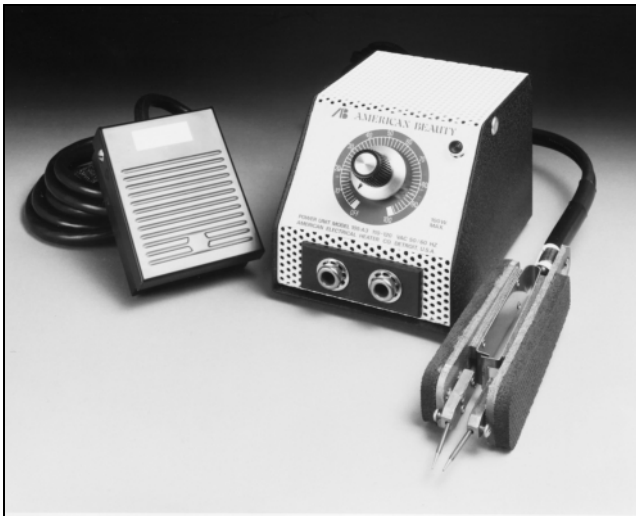
SOLDERING TIPS FOR MARK VIII

M8S-A Narrow tip 0.047 in [1.2 mm] screwdriver.

M8S-B Wide tip 0.062 in [1.6 mm] screwdriver.

M8S-RS Replacement Sponge, package of 1.

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: 110 Vac.

WRS-2: 220 Vac.

WRS-A Replacement Electrodes: Package of 6.

References: 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."
Application Note TT-609, "Strain Gage Soldering Techniques."