

### Description

The 4890–4898 *Sn60Pb40 RA Solder Wire* is an electronic grade solder wire. It uses a classical tin-to-lead alloy ratio, which is complemented with a RA-like flux core. The solder wires meet J-STD-004B, ASTM B 32, and exceeds J-STD-006C specifications. It melts at a slightly higher temperature and over a wider range than the 63/37 solder. It results in robust and reliable joints that are highly resistant to whisker formation.

The 489x leaded solders achieve a consistent solder and flux percentage through a state-of-the-art, extrusion, wire-drawing machine. This machine continually monitors the wire to prevent voids and ensure consistency, providing a top-grade solder wire.

### Benefits & Features

- Alloy exceeds J-STD-006C and meets ASTM B 32 purity requirements
- Flux meets J-STD-004B
- Rosin-activated flux
- Fast wetting
- Fast flowing
- Non-corrosive
- Non-conductive residue

#### COMPLIANCE

- ✓ Dobb-Frank ([DRC conflict free](#))
- ✓ REACH ([compliant](#))
- ✗ RoHS ([non-compliant](#))

### Wire Sizes Availability

<i>Cat No.</i>	<i>Std. Wire Gauge</i>	<i>Diameter</i>		<i>Packaging</i>	<i>Sizes</i>
4890	21	0.81 mm	0.032 in	Pocket Pack	0.6 oz
4898	16	1.57 mm	0.062 in	Spool	½ or 1 lb
4897	18	1.27 mm	0.050 in	Spool	½ or 1 lb
4896	19	1.01 mm	0.040 in	Spool	½ or 1 lb
4895	21	0.81 mm	0.032 in	Spool	½ or 1 lb
4894	23	0.63 mm	0.025 in	Spool	½ or 1 lb

### General Flux Parameters

<i>Properties</i>	<i>Value</i>
Residue Removal	Not required
Flux Percentage	2.2%
Flux Feature	Fast wetting, fast flowing, non-conductive
Shelf Life	5 y

*Continued on the next page*

### Flux Core Properties

The rosin activated flux wets rapidly and is fast flowing. It is also non-conductive and non-corrosive.

<i>Physical Properties</i>	<i>Method</i>	<i>Value</i>
Flux Classification	J-STD-004B MIL-F-14256F	ROM1 RA
Flux Type		Rosin
%Halides		0.5–2.0%
Color	—	Amber solid
Softening Point of Flux Extract		80 °C [176 °F]
Acid Number (mgKOH/g sample)	IPC-TM-650 2.3.13	150–160
Silver Chromate—Chlorides + Bromides	IPC-TM-650 2.3.33	Detection
Surface Insulation Resistance (SIR)	IPC-TM-650 2.6.3.3	$>1.0 \times 10^9 \Omega$
Corrosion Test	IPC-TM-650 2.6.15	Non-corrosive
Cleaning Requirements	—	Application dependent <sup>a)</sup>

a) Since there is only 2.2% flux, removal of residue can be considered optional for some applications.

### Sn60/Pb40 Alloy Typical Literature Properties

<i>Physical Properties</i>	<i>Value</i> <sup>a)</sup>
Color	Silvery-white metal
Density @26 °C [78 °F]	8.50 g/cm <sup>3</sup>
Tensile Strength	52 N/mm <sup>2</sup> [7 500 lb/in <sup>2</sup> ]
Elongation	40%
Shear Strength	39 N/mm <sup>2</sup> [5 700 lb/in <sup>2</sup> ]
Hardness	16 HB
<i>Electrical Properties</i>	<i>Value</i>
Volume Resistivity	15 $\mu\Omega \cdot \text{cm}$
Electrical Conductivity <sup>b)</sup>	11.3% IACS
<i>Thermal Properties</i>	<i>Value</i>
Melting Point, Solidus	183 °C [361 °F]
Melting Point, Liquidus	191 °C [376 °F]
Tip Temperature Upper Limit	Do not exceed 260 °C [500 °F]
Coefficient of Thermal Expansion (CTE) <sup>c)</sup>	24 ppm/°C
Thermal Conductivity	50 W/(m·K)

Note: This table present typical literature values for 60/40 alloys.

a) N/mm<sup>2</sup> = mPa; lb/in<sup>2</sup> = psi;

b) International Annealed Copper Standard: 100% give  $5.8 \times 10^7$  S/m.

c) Unit conversions: ppm/°C =  $\mu\text{m}/(\text{m} \cdot \text{K}) = \text{in}/\text{in}/^\circ\text{C} \times 10^{-6} = \text{unit}/\text{unit}/^\circ\text{C} \times 10^{-6}$

### Solder Alloy Composition

<i>Properties</i>	<i>Value</i>	<i>Properties</i>	<i>Value</i>
<i>MAIN INGREDIENTS</i>		<i>IMPURITIES</i> <sup>a)</sup>	
Sn	59.5 to 60.5%	Sb	≤0.20% Max
Pb	39.5 to 40.5%	Ag	≤0.10% Max
Because this product contains lead, it is not RoHS compliant. The following RoHS exemptions are applicable 7(b), 15, 24, 31, 33.		Bi	≤0.10% Max
		In	≤0.10% Max
		Cu	≤0.08% Max
		Au	≤0.05% Max
		As	≤0.03% Max
		Fe	≤0.02% Max
		Ni	≤0.01% Max
		Al	≤0.005% Max
		Zn	≤0.003% Max
		Cd	≤0.002% Max

a) Exceeds the requirements of J-STD-006C and meets ASTM B 32.

### Storage

Protect from direct heat or sunlight.

### Cleaning

The flux residue does not need to be removed for typical applications. If removal is desired, a solvent system like the *MG 4140* can be used. For best results, warm the cleaning solution to about 40 °C [104 °F].

### Health and Safety

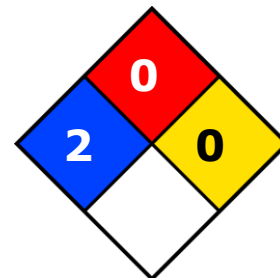
Please see the 4890–4898 **Safety Data Sheet** (SDS) for more details on transportation, storage, handling and other security guidelines.

**Health and Safety:** Avoid breathing fumes. Wash hands thoroughly after use. Do not ingest.

#### HMIS® RATING

<b>HEALTH:</b>	<b>*</b>	<b>2</b>
<b>FLAMMABILITY:</b>		<b>0</b>
<b>PHYSICAL HAZARD:</b>		<b>0</b>
<b>PERSONAL PROTECTION:</b>		

#### NFPA® 704 CODES



*Approximate HMIS and NFPA Risk Ratings Legend:*

0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)



# Sn60Pb40 RA Solder Wire 4890–4898 Technical Data Sheet

ISO 9001:2008 Registered Quality System. Burlington, Ontario, CANADA SAI Global File: 004008

4890–4898

## Packaging and Supporting Products

<i>Cat. No.</i>	<i>Form</i>	<i>Packaging</i>	<i>Net Weight</i>	
<b>4890-18G</b>	Solid wire	Pocket Pack <sup>a)</sup>	18 g	0.6 oz
<b>4894-227G</b>	Solid wire	Spool	227 g	0.5 lb
<b>4894-454G</b>	Solid wire	Spool	454 g	1.0 lb
<b>4895-227G</b>	Solid wire	Spool	227 g	0.5 lb
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<b>4898-227G</b>	Solid wire	Spool	227 g	0.5 lb
<b>4898-454G</b>	Solid wire	Spool	454 g	1.0 lb

a) Box of 25 pocket packs

## Technical Support

Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at [www.mgchemicals.com](http://www.mgchemicals.com).

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## Warranty

*M.G. Chemicals Ltd.* warrants this product for 12 months from the date of purchase by the end user. *M.G. Chemicals Ltd.* makes no claims as to shelf life of this product for the warranty. The liability of *M.G. Chemicals Ltd.* whether based on its warranty, contracts, or otherwise shall in no case include incidental or consequential damage.

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