

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

COMPLIANCE

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

Wire Sizes Availability

Cat No.	Std. Wire Gauge	Diameter		Packaging	Sizes
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

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

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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 ^{a)}

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> ^{a)}
Color	Silvery-white metal
Density @26 °C [78 °F]	8.50 g/cm ³
Tensile Strength	52 N/mm ² [7 500 lb/in ²]
Elongation	40%
Shear Strength	39 N/mm ² [5 700 lb/in ²]
Hardness	16 HB
<i>Electrical Properties</i>	<i>Value</i>
Volume Resistivity	15 $\mu\Omega \cdot \text{cm}$
Electrical Conductivity ^{b)}	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) ^{c)}	24 ppm/°C
Thermal Conductivity	50 W/(m·K)

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

a) N/mm² = mPa; lb/in² = psi;

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

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

Properties	Value	Properties	Value
MAIN INGREDIENTS		IMPURITIES ^{a)}	
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

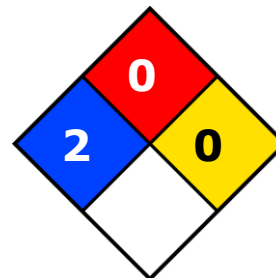
Please see the 4890–4898 **Safety Data Sheet** (SDS) for more details on transportation, storage, handling and other security guidelines.

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

HMIS® RATING

HEALTH:	* 2
FLAMMABILITY:	0
PHYSICAL HAZARD:	0
PERSONAL PROTECTION:	

NFPA® 704 CODES



Approximate HMIS and NFPA Risk Ratings Legend:

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

Packaging and Supporting Products

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

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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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