

4925-4926

### **Description**

The 4925–4926 SAC305 Lead Free Solder (RA) is an electronic grade, lead-free solder wire. It uses the predominant lead-free alloy composition and exceeds J-STD-006 purity specifications. It is complemented with a rosin activated, medium activity flux that is classified as ROM1 according to J-STD-004B. This solder is a great alternative to leaded solders.

The 4925–4926 non-leaded solder series 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**

- Lead free & Rosin Activated flux
- Exceeds J-STD-006 impurity requirements
- Fast wetting
- Fast Flowing
- Non-corrosive
- Non-conductive

#### COMPLIANCE

- ✓ Dobb-Frank (<u>DRC conflict free</u>)
- ✓ REACH (compliant)
- √ RoHS (compliant)

#### Wire Sizes Availability

Cat No.	Std. Wire Gauge	Diameter		Packaging	Sizes
4925	21	0.81 mm	0.032 in	Spool	¼ or 1 lb
4926	19	1.02 mm	0.040 in	Spool	¼ or 1 lb

#### **General Flux Parameters**

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

Physical Properties	Method	Value
Flux Classification	J-STD-004	ROM1
	MIL-F-14256F	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.

## **SAC305 Alloy Typical Literature Properties**

Physical Properties	Value a)
Color	Silvery-white metal
Density @26 °C [78 °F]	7.49 g/cm <sup>3</sup>
Tensile Strength	29.7 N/mm <sup>2</sup> [4 310 lb/in <sup>2</sup> ]
Tensile Yield	25.7 N/mm <sup>2</sup> [3 720 lb/in <sup>2</sup> ]
Elongation	27%
Shear Strength @20 °C and 0.1 mm/min	27 N/mm <sup>2</sup> [3 900 lb/in <sup>2</sup> ]
@100 °C and 0.1 mm/min	17 N/mm <sup>2</sup> [2 500 lb/in <sup>2</sup> ]
Creep Strength @20 °C and 0.1 mm/min	13 N/mm <sup>2</sup> [1 900 lb/in <sup>2</sup> ]
@100 °C and 0.1 mm/min	5.0 N/mm <sup>2</sup> [730 lb/in <sup>2</sup> ]
Hardness	15 HB
Electric Properties	Value
Volume Resistivity	13 μΩ·cm
Electrical Conductivity b)	16.6% IACS
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Thermal Properties	Value
Melting Point, Solidus	217 °C [423 °F]
Melting Point, Liquidus	221 °C [430 °F]
Tip Temperature Upper Limit	Do not exceed 350 °C [662 °F]
Coefficient of Thermal Expansion (CTE) c)	23.5 ppm/°C
Thermal Conductivity	58.7 W/(m·K)
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NOTE: This table present typical literature values for SAC305 alloys.

- a)  $N/mm^2 = mPa$ ;  $Ib/in^2 = psi$ ;
- b) International Annealed Copper Standard: 100% give  $5.8 \times 10^7$  S/m.
- c) CTE unit conversions: ppm/°C =  $\mu$ m/(m·K) = in/in/°C × 10<sup>-6</sup> = unit/unit/°C × 10<sup>-6</sup>

## **Solder Alloy Composition**

<b>Properties</b>	Value	<b>Properties</b>	J-STD-006C	4925-4926
MAIN INGREDIENTS		IMPURITIES a)	REQUIREMENTS	SPECIFICATIONS
Sn 96.2 to 96.8%		Sb	≤0.20% Max	≤0.05% Max
Ag	2.8 to 3.2%	Bi	≤0.10% Max	≤0.05% Max
Cu 0.4 to 0.6%		In	≤0.10% Max	≤0.05% Max
		Pb	≤0.07% Max	≤0.05% Max
RoHS		Au	≤0.05% Max	≤0.002% Max
		As	≤0.03% Max	≤0.01% Max
		Fe	≤0.02% Max	≤0.01% Max
		Ni	≤0.01% Max	≤0.005% Max
		Al	≤0.005% Max	≤0.001% Max
		Zn	≤0.003% Max	≤0.001% Max
		Cd	≤0.002% Max	≤0.001% Max

a) Exceeds the requirements of J-STD-006

### **Storage**

Protect from direct heat or sunlight. Store between 18 to 27 °C [65 to 80 °F].

## 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  $40~^{\circ}C$  [ $104~^{\circ}F$ ].



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## **Health and Safety**

Please see the 4925x (where x = 5, 6) **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:	*	1
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**

Cat. No.	Form	Package	Net Weight	
4925-112G	Solid wire	Spool	113 g	0.25 lb
4925-454G	Solid wire	Spool	454 g	1.0 lb
4926-112G 4926-454G	Solid wire Solid wire	Spool Spool	113 g   454 g	0.25 lb 1.0 lb

a) Box of 25 pocket packs

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## **Technical Support**

Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at <a href="https://www.mgchemicals.com">www.mgchemicals.com</a>.

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#### **Warranty**

M.G. Chemicals Ltd. warranties 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.
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