SAC305 RA Solder Wire
4925–4926 Technical Data Sheet

Description

The 4925–4926 *SAC305 RA Solder Wire* is an electronic grade, lead-free solder wire.
It uses the predominant lead-free alloy composition and exceeds J-STD-006C and meets ASTM B 32 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**
- **Alloy exceeds J-STD-006C and meets ASTM B 32 purity requirements**
- **Flux meets J-STD-004B**
- **Fast wetting**
- **Fast flowing**
- **Non-corrosive**
- **Non-conductive**

COMPLIANCE
✓ Dobb-Frank (DRC conflict free)
✓ 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	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.

Physical Properties	*Method*	*Value*
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.

SAC305 Alloy Typical Literature Properties

Physical Properties	*Value* [a)]
Color	Silvery-white metal
Density @26 °C [78 °F]	7.49 g/cm^3
Tensile Strength	29.7 N/mm^2 [4 310 lb/in^2]
Tensile Yield	25.7 N/mm^2 [3 720 lb/in^2]
Elongation	27%
Shear Strength @20 °C and 0.1 mm/min	27 N/mm^2 [3 900 lb/in^2]
@100 °C and 0.1 mm/min	17 N/mm^2 [2 500 lb/in^2]
Creep Strength @20 °C and 0.1 mm/min	13 N/mm^2 [1 900 lb/in^2]
@100 °C and 0.1 mm/min	5.0 N/mm^2 [730 lb/in^2]
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)

NOTE: This table present typical literature values for SAC305 alloys.
a) N/mm^2 = mPa; lb/in^2 = psi;
b) International Annealed Copper Standard: 100% give 5.8×10^7 S/m.
c) CTE unit conversions: ppm/°C = μm/(m·K) = in/in/°C × 10^{-6} = unit/unit/°C × 10^{-6}

Solder Alloy Composition

Properties	*Value*
MAIN INGREDIENTS	
Sn	96.2 to 96.8%
Ag	2.8 to 3.2%
Cu	0.4 to 0.6%

Properties	*J-STD-006C*	*4925–4926*
IMPURITIES a)	*REQUIREMENTS*	*SPECIFICATIONS*
Sb	≤0.20% Max	≤0.05% Max
Bi	≤0.10% Max	≤0.05% Max
In	≤0.10% Max	≤0.05% Max
Pb	≤0.07% Max	≤0.05% Max
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-006C and meets ASTM B 32.

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 °C [104 °F].

Health and Safety

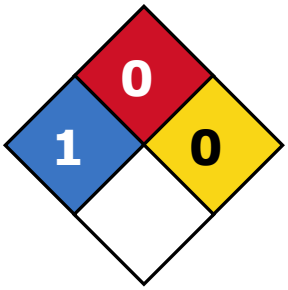
Please see the 4925x (where x = 5, 6) **Safety Data Sheet** (SDS) for more details on transportation, storage, handling and other security guidelines.

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	Solid wire	Spool	113 g	0.25 lb
4926-454G	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.

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