Sn63/Pb37 Leaded Solder
488x (*x = 0, 4, 5, 6, 7, 8*) Technical Data Sheet

Description

The 488x [where x =0, 4, 5, 6, 7, 8] series of *Sn63/Pb37 Leaded Solder* is an electronic grade solder wire. It uses the eutectic tin-to-lead alloy ratio, which is complemented with a RA-like flux core. The 488x series generally exceeds J-STD-004 and J-STD-006 specifications. It is one of the easiest solders to work with because it offers a low-melting temperature with a sharp melting/solidification point, which results in robust and reliable joints that are highly resistant to whisker formation.

The 488x 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

- **Eutectic alloy** (liquidus = solidus temperature)
- **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*
4880	21	0.81 mm	0.032 in	Pocket Pack	0.6 oz
4884	23	0.63 mm	0.025 in	Spool	½ or 1 lb
4885	21	0.81 mm	0.032 in	Spool	½ or 1 lb
4886	19	1.01 mm	0.040 in	Spool	½ or 1 lb
4887	18	1.27 mm	0.050 in	Spool	½ or 1 lb
4888	16	1.57 mm	0.062 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.

Physical Properties	*Method*	*Value*
Flux Classification	J-STD-004 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 × 10^9 Ω
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.

Sn63/Pb37 Alloy Typical Literature Properties

Physical Properties	*Value* [a]
Color	Silvery-white metal
Density @26 °C [78 °F]	8.40 g/cm^3
Tensile Strength	54 N/mm^2 [7 800 lb/in^2]
Elongation	37%
Hardness	14 HB
Shear Strength	37 N/mm^2 [5 400 lb/in^2]

Electrical Properties	*Value*
Volume Resistivity	14.5 μΩ·cm
Electrical Conductivity [b]	11.9% IACS

Thermal Properties	*Value*
Melting Point, Solidus	183 °C [361 °F]
Melting Point, Liquidus	183 °C [361 °F]
Tip Temperature Upper Limit	Do not exceed 260 °C [500 °F]
Coefficient of Thermal Expansion (CTE) [c]	24.7 ppm/°C
Thermal Conductivity	50 W/(m·K)

NOTE: This table present typical literature values for 63/37 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 for pure tin; unit conversions: ppm/°C = μm/(m·K) = in/in/°C × 10^{-6} = unit/unit/°C × 10^{-6}

Solder Alloy Composition

Properties	*Value*	*Properties*	*Value*
MAIN INGREDIENTS		*IMPURITIES* [a]	
Sn	63.5 to 63.5%	Sb	≤0.20% Max
Pb	36.5 to 37.5%	Ag	≤0.10% Max
		Bi	≤0.10% Max
		In	≤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.		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) Meets the requirements of J-STD-006

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

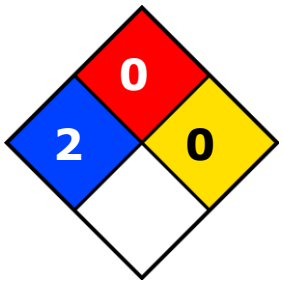
Please see the 488x (where x = 0, 4, 5, 6, 7, 8) **Safety Data Sheet** (SDS) for more details on transportation, storage, handling and other security guidelines.

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

Cat. No.	*Form*	*Packaging*	*Net Weight*	
4880-18G	Solid wire	Pocket Pack [a)]	18 g	0.6 oz
4884-227G	Solid wire	Spool	227 g	0.5 lb
4884-454G	Solid wire	Spool	454 g	1.0 lb
4885-227G	Solid wire	Spool	227 g	0.5 lb
4885-454G	Solid wire	Spool	454 g	1.0 lb
4886-227G	Solid wire	Spool	227 g	0.5 lb
4886-454G	Solid wire	Spool	454 g	1.0 lb
4887-227G	Solid wire	Spool	227 g	0.5 lb
4887-454G	Solid wire	Spool	454 g	1.0 lb
4888-227G	Solid wire	Spool	227 g	0.5 lb
4888-454G	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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