

"What brand / type / diameter solder should I use for building my Elecraft Kits?"

Compiled for Elecraft by Tom Hammond (NØSS)

We've all probably thought it to ourselves, and we've certainly seen it in print here on the Elecraft Reflector...

This question appears almost weekly on the Elecraft Reflector, and Elecraft Chief Tech, Gary Surrency (AB7MY) admits that he hears it almost every day.

In an effort to help answer the question and reduce concern by users, I have been asked by Elecraft to compile a document which, it is hoped, hoped you will refer to the following data when making your solder selection.

If you only want to know what solders to buy, you may jump right past the next section and go right to the 'meat' of the subject, to the section titled "ELECRAFT-RECOMMENDED SOLDERS". Also, BE SURE to read the section on what types of solder NOT to use!

73, and as a good friend often reminds us...

"Keep the rosin fumes aloft".

DEFINITIONS:

RESIN

A solid or semi-solid organic compound lacking a crystalline structure. Resins are characterized by not having definite and sharp melting points, are usually not conductors of electricity, and many are transparent or translucent. Natural resins usually originate in plants, such as pine sap, and are not water soluble. The rosin used in soldering fluxes is an example of a resin. Also used to describe fluxes based on synthetic resin rather than rosin.

ROSIN

A naturally occurring resin usually associated a component of pine sap. It is a mixture of several organic acids, of which abietic acid is the chief component. Available as gum, wood and Tall Oil Rosins, sometimes chemically modified. The most widely used material in the manufacture of soldering fluxes for the electronics industry is water white (ww) gum rosin.

R =Identity code for a flux which contains rosin without additional activators.

RA =Identity code for a flux which contains rosin with additional activators to enable soldering of difficult substrates. Although an RA-based material, the residues are not-corrosive if left uncleaned.

RMA = Identity code for a mildly activated rosin flux as used for much electronics work. Although an RMA-based material, the residues are not-corrosive if left uncleaned.

Solder Wire = Solder available in small wire gauges, as opposed to BAR solders.

Silver-Content Solder = A solder alloy which normally contains 2% silver along with 62% Tin and 36% Lead. While this type of solder WAS originally recommended by Elecraft, it has been determined that kits assembled with this type of solder can be more difficult to repair due to the higher melting point of the solder. As a result, there is an increased risk of lifting a PC board land while attempting to desolder or re-heat a plated-thru connection.

Elecraft no longer recommends using silver-content solder. However, rigs submitted for repair which were assembled using silver-content solder **will** be serviced without question.

(Elecraft-Recommended solders continue on the next page)

ELECRAFT-RECOMMENDED SOLDERS

NOTE - This list is **not** exhaustive. However these brands and fluxes **have** been tested and have been found to be acceptable. There are most certainly other brands, with equally acceptable flux cores also available.

The following brands and types of solder are *recommended* for use when building Elecraft kits. Below this section, I have included a listing of available solders from both Mouser and Digi-Key, just to give you at least two possible sources.

Note that **63/37 Sn/Pb content solders are recommended** since they go from liquid to solid more rapidly than do the 60/40 Sn/Pb content solders, thus reducing 'cold' solder joints.

The smaller diameters of solder are preferred because they allow the builder to more easily *limit* the amount of solder applied to each connection... more may **not be** better!

Kester Solders

RA (Activated Rosin) and RMA (Mildly Activated Rosin) type flux core types "44", "245", and "285", 63/37 or 60/40 Sn/Pb content, in diameters between 0.020" (0.5mm) and 0.035" (0.89mm), *with 0.020" to 0.030" being the preferred sizes.*

Multicore (previously Ersin-Multicore) Solders

RA (Activated Rosin) Type Flux Core

Multicore Part #	Content Sn/Pb	Diameter in/mm	Spool Weight
MM00979	63/37	0.022" (0.56mm)	1 lb (0.5kg)
MM00980	63/37	0.024" (0.61mm)	1 lb (0.5kg)
MM00981	63/37	0.032" (0.81mm)	1 lb (0.5kg)
MM00992	60/40	0.024" (0.61mm)	1 lb (0.5kg)
MM00993	60/40	0.032" (0.81mm)	1 lb (0.5kg)
MM01020	60/40	0.022" (0.56mm)	½ lb (0.25kg)
MM01021	60/40	0.022" (0.56mm)	1 lb (0.5kg)
MM01022	60/40	0.024" (0.61mm)	½ lb (0.25kg)
MM01023	60/40	0.024" (0.61mm)	1 lb (0.5kg)
MM01083	63/37	0.022" (0.56mm)	½ lb (0.25kg)
MM01084	63/37	0.024" (0.61mm)	½ lb (0.25kg)

RMA (Mildly Activated Rosin) Type Flux

MM01045	63/37	0.032" (0.81mm)	1 lb (0.5kg)
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Radio Shack Rosin Core Solders

R / S Part #	Content Sn/Pb	Diameter in/mm	Spool Weight
64-017	60/40	0.032" (0.81mm)	0.5 oz (14g)
64-005	60/40	0.032" (0.81mm)	2.5 oz (71g)
64-009	60/40	0.032" (0.81mm)	8.0 oz (0.25kg)
910-3836*	60/40	0.031" (0.81mm)	1 lb (0.25kg)

* Available through R/S Tech America

NOTE: There are *many* other manufacturers of good solder, **Alpha Metals** comes to mind as one. The *important* thing is to ensure that you are using a quality solder, with an Elecraft-Approved flux type, and in a diameter which allows you to have *fine control* of the amount of solder you can apply to the joint. Many of the larger-diameter solders apply too much solder the instant you hit them with the iron, resulting in an already too heavy application of solder.

WARNING

DO NOT build ELECRAFT kits using solders which contain WATER-SOLUBLE FLUXES, nor should you use NO-LEAD solders!

Kits submitted for repair which HAVE been assembled using Water-Soluble fluxes MAY be refused service..!

DO NOT USE SOLDERS WITH THESE TYPES OF FLUX CORE

Kester "331" Water-Soluble Solder

or ANY solder with "Water-Soluble" or acid flux core.

If you have ANY questions about what solder is appropriate to use **PLEASE ASK ELECRAFT BEFORE YOU USE IT.**

(Possible sources for solder continue on the next page)

Possible sources for solders. List is not nearly exhaustive.

MOUSER ELECTRONICS (<http://www.mouser.com>)

KESTER SOLDERS

"44" Rosin, (RA) Activated Rosin Core Solder

MOUSER STK NO.	Alloy	Dia (in.)	Weight (lb.)
533-24-6337-0100	63/37	0.020"	1
533-23-6337-18	63/37	0.025"	1/2
533-24-6337-18	63/37	0.025"	1
533-23-6337-27	63/37	0.031"	1/2
533-24-6337-27	63/37	0.031"	1
533-24-6040-0100	60/40	0.020"	1
533-23-6040-18	60/40	0.025"	1/2
533-24-6040-18	60/40	0.025"	1
533-23-6040-27	60/40	0.031"	1/2
533-24-6040-27	60/40	0.031"	1

"245" Rosin, (MA) Mildly Activated Core Solder

MOUSER STK NO.	Alloy	Dia (in.)	Weight (lb.)
533-24-6337-8834	63/37	0.020"	1
533-24-6337-8801	63/37	0.020"	1

"285" Rosin, (RMA) Mildly Activated Rosin Core Solder

MOUSER STK NO.	Alloy	Dia (in.)	Weight (lb.)
533-24-6337-9700	63/37	0.020"	1
533-24-6337-9718	63/37	0.025"	1
533-23-6337-9713	63/37	0.031"	1
533-24-6337-9710	63/37	0.031"	1

DIGI-KEY (<http://www.digikey.com>)

MULTICORE SOLDERS

RA (Activated Rosin) Core Solder

DIGI-KEY STK NO.	Alloy	Dia (in.)	Weight (lb.)
SN6324-ND	63/37	0.020"	1
SN6322-ND	63/37	0.025"	1
SN6321-ND	63/37	0.032"	1
SN6022-ND	60/40	0.028"	1

KESTER SOLDERS

"44" Rosin, (RA) Activated Rosin Core Solder

DIGI-KEY STK NO.	Alloy	Dia (in.)	Weight (lb.)
KE1103-ND	63/37	0.020"	1
KE1112-ND	63/37	0.025"	1/2
KE1109-ND	63/37	0.025"	1
KE1111-ND	63/37	0.031"	1/2
KE1102-ND	63/37	0.031"	1
KE1107-ND	60/40	0.020"	1
KE1118-ND	60/40	0.025"	1/2
KE1116-ND	60/40	0.025"	1
KE1117-ND	60/40	0.031"	1/2
KE1106-ND	60/40	0.031"	1

"245" Rosin, (MA) Mildly Activated Core Solder

KE1408-ND	63/37	0.031"	1
KE1409-ND	63/37	0.020"	1

"285" Rosin, (RMA) Mildly Activated Rosin Core Solder

KE1201-ND	63/37	0.020"	1
KE1202-ND	63/37	0.025"	1
KE1200-ND	63/37	0.031"	1

NOTE: Neither Elecraft nor Tom Hammond have any interest whatsoever in the Kester, Multicore, Mouser Electronics, Digi-Key, or Radio Shack companies.

Solder Availability List Compiled for Elecraft, 01/09/2007, by Tom Hammond