2010 RECOMMENDED
Electronics Assembly Materials



kester®

In A Class By Itself

Kester's EnviroMark® 828 Lead-Free Water-Soluble Paste

Best in class features:

- Ultra Low BGA Voiding
- Excellent Solderability
- Easy Residue Removal
- Excellent Printability
- Minimizes Slump Defects



kester®

EM828 Product Benefits

Kester's EnviroMark® 828 lead-free water-soluble solder paste represents a break-through in water-soluble technology with the combination of low voiding, excellent wetting behavior, and ease of cleaning. Backed by our world renowned customer service, technical service expertise, and 100 plus years of experience in soldering technology, EnviroMark® 828 is the only lead-free water-soluble solder paste that satisfies all your assembly needs.

Key Characteristics:

- **Ultra Low BGA Voiding:** Best in class BGA voiding performance...period! Low void performance is a must for most assemblies today reducing rework costs and improving first pass yields.
- **Excellent Solderability:** Best in class solderability, joint appearance and shininess. The first and only lead free water-soluble solder paste to produce joints that closely resemble those achieved with SnPb solder paste. This characteristic will make the transition to lead-free easier on OEMs and contract manufacturers alike by making the change to lead-free appear seamless.
- **Easy Residue Removal:** Post soldering residues are easily removed in a standard DI aqueous cleaning process. Cleanability demands are more stringent today than ever with higher reflow temperatures and lower profile components. EM828 creates no foam in in-line washers minimizing equipment maintenance and down time.
- **Excellent Printability:** Consistent solder paste volume deposits regardless of idle time, stencil life and print speed. This is the most important characteristic of any solder paste, as print volume inconsistency is the top cause of defects in electronic assembly.
- **Minimizes Slump Defects:** Excellent print definition and bridging prevention due to its non-slumping chemistry. The solder brick maintains its shape without variation over time. This attribute avoids bridging especially in fine pitch components, saving the customer from wasting time and money on rework.
- **Advanced Technologies:** Offers 0201 print and reflow capabilities with standard type 3 (-325/+500 mesh) powder. Because of print limitations of other lead-free solder pastes on the market, competing products typically require a more costly finer mesh powder size for these miniature components.

Contact Kester today to learn more about EnviroMark® 828 lead-free water-soluble paste.

kester®

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Lead-Free Solder Pastes

Formula	EnviroMark™ 907	EnviroMark™ 828
Application	No-Clean Stencil Printing	Water-Soluble Stencil Printing
Alloys	Sn96.5Ag3.0Cu0.5	Sn96.5Ag3.0Cu0.5
Product Characteristics	Designed to exceed customers' expectations for high yield lead-free manufacturing. EM907 is engineered for the high thermal demands of assembling with lead-free alloys such as the family of SnAgCu (SAC). Joints are cosmetically bright as SnPb joints. Prints down to 0201 pad sites. Designed to be reflowable in air as well as nitrogen.	Kester EM828 provides excellent printability, activity, cleanability and low-voiding behavior. EM828 is very robust and can tolerate a wide variety of printing and reflow conditions. EM828 is first to market with a water-soluable lead-free paste that combines superior activity, cleanability and low-voiding.
Residue Characteristics	Light colored	Cleanable in warm water
Typical Metal Percentage	88.5%, -325/+500 (Type 3)	89.5%, -325/+500 (Type 3)
Compliant Specifications	Telcordia Issue 1 GR-78-CORE IPC/J-STD-004 Flux Designator ROL0	IPC/J-STD-004 Flux Designator ORH1
Suggested Packaging Style	500g jar, 600g, 1400g cartridges	500g jar, 600g, 1400g cartridges



Kester Part #	Description	Alloy	Packaging
7006050810	EM907 No-Clean, Type 3, 88.5% metal	Sn96.5Ag3.0Cu0.5	500g jar
7006050811	EM907 No-Clean, Type 3, 88.5% metal	Sn96.5Ag3.0Cu0.5	600g cartridge
7004030810	EM828 Water-Soluble, Type 3, 89.5% metal	Sn96.5Ag3.0Cu0.5	500g jar
7004030811	EM828 Water-Soluble, Type 3, 89.5% metal	Sn96.5Ag3.0Cu0.5	600g cartridge

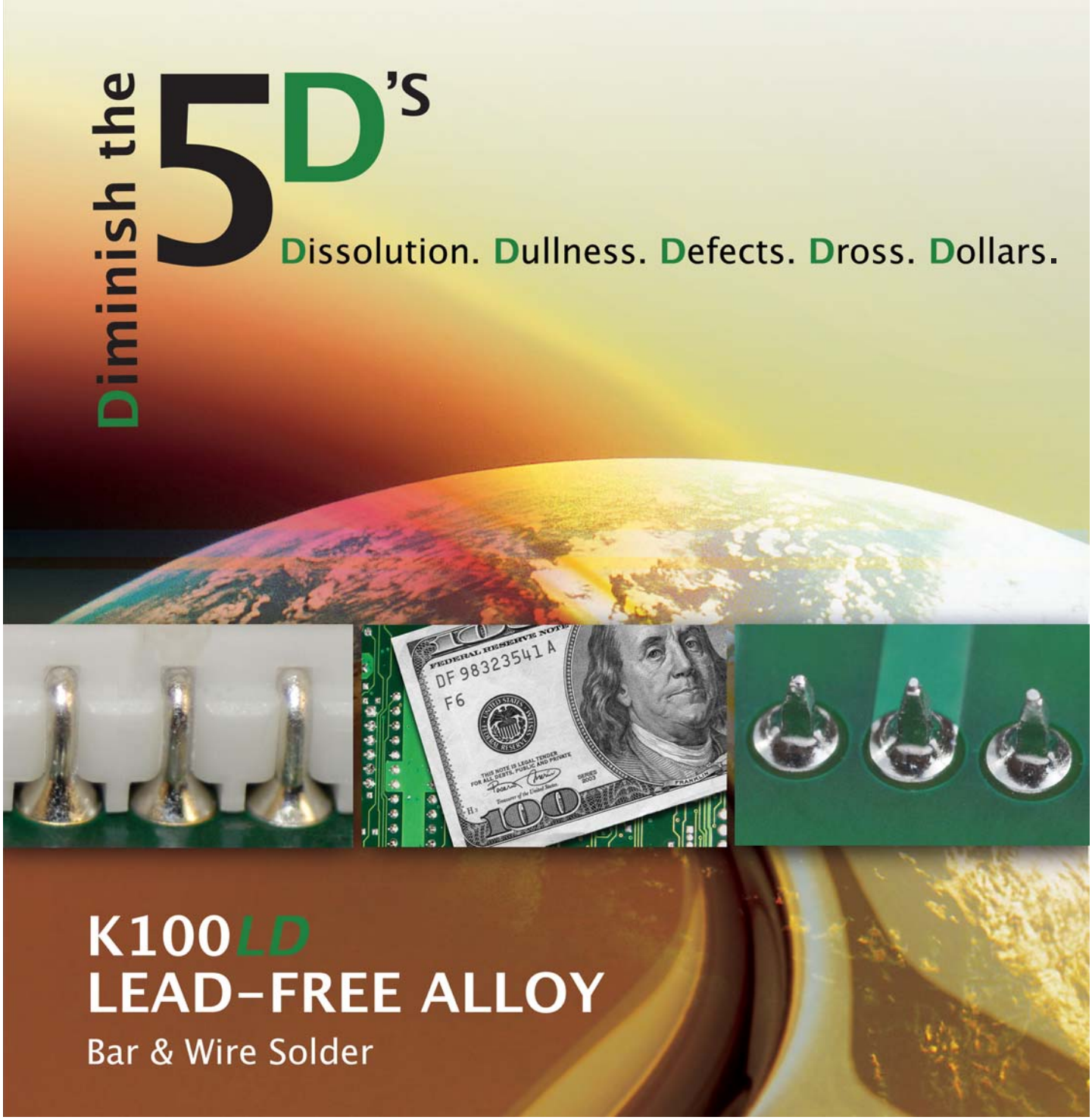
Liquid Soldering Fluxes for Lead-Free Wave Soldering

Lead-free wave and selective soldering require exposing the flux to slightly higher soldering temperatures. Lead-free alloys traditionally wet metal surfaces more slowly than tin-lead. Kester liquid fluxes for lead-free assembly have new activator packages to enable rapid wetting and hole-filling, ensuring reliable product output.

Kester Part #	Description	Packaging
63-0004-0985	985M No-Clean	1 gallon
64-0004-0985	985M No-Clean	5 gallon
65-0004-0985	985M No-Clean	53 gallon drum
63-0020-0959	959T No-Clean	1 gallon
64-0020-0959	959T No-Clean	5 gallon
65-0020-0959	959T No-Clean	53 gallon drum
63-0056-2220	2220-VF VOC-Free Water-Soluble	1 gallon
64-0056-2220	2220-VF VOC-Free Water-Soluble	5 gallon
65-0056-2220	2220-VF VOC-Free Water-Soluble	53 gallon drum
63-0000-2235	2235 Water-Soluble	1 gallon
64-0000-2235	2235 Water-Soluble	5 gallon
65-0000-2235	2235 Water-Soluble	53 gallon drum

*Formula	985M	959T	2220-VF VOC-Free	2235
	No-Clean	No-Clean	Water-Soluble	Water-Soluble
Application	Spray or Wave Fluxer	Spray or Foam	Spray, Wave or Foam	Spray or Foam
Halide Content %	Halide - free	Halide - free	1.6	1.6
Specific Gravity	0.805	0.794	1.055	0.856
Solids %	3.6	2.9	7	11
Compliant	IPC/J-STD-004 Flux Designator ROL0	IPC/J-STD-004 Flux Designator	IPC/J-STD-004 Flux Designator ORH1	IPC/J-STD-004 Flux Designator

*These products are designed specifically for high performance lead-free applications.



Kester Part #	Alloy	Each Bar	Sold As
04-9574-0050	K100LD	1 2/3 lbs.	25 lbs.
04-7068-0000	Sn96.5Ag3.0Cu0.5	1 2/3 lbs.	25 lbs.

Ultrapure® K100LD Lead-Free Solder Bar

K100LD is a new patent-pending low-cost lead-free solder alloy for use in wave soldering, selective soldering, and tip tinning operations. K100LD has the Lowest Copper Dissolution amongst all common solder alloys, including SN63, SAC305, and other lead-free options. Kester K100LD provides the lowest cost for wave soldering operations. It also provides solder joints with no shrinkage effects, excellent through-hole penetration and topside fillet, and provides a low dross rate.

Common Lead-Free Alloys		
*Alloys	Melt Temperature	Application
K100LD	~227°C/441°F	Wave/Hand Soldering
Sn96.5Ag3.0Cu0.5	217°C/423°F	SMT/Hand/Wave
Sn96.5Ag3.5	221°C/430°F	SMT/Hand Soldering

* These are the most common lead-free alloys used in the industry. Kester can also produce a multitude of lead-free alloys as specified by individual requirements.

Solder Wires for Lead-Free Assembly

Formula	275	48	331
	No-Clean	Activated Rosin	Water-Soluble
Halide Percentage	< 0.05%	1.0%	1.25%
Flux Content Availability	See Below	66 core (3.3%)	66 core (3.3%)
Compliant Specifications	Telcordia Issue 1 GR-78-CORE & IPC/J-STD-004 Flux designator ROL0	IPC/J-STD-004 Flux Designator ROM1	IPC/J-STD-004 Flux designator ORH1



"275" No-Clean Core 1 lb. with K100LD			
Part #	Alloy	Diameter	Core Size
24-9574-7610	K100*LD*	.020	66
24-9574-7619	K100*LD*	.025	66
24-9574-7618	K100*LD*	.031	66
24-9574-7613	K100*LD*	.050	66
24-9574-7615	K100*LD*	.062	66

"275" No-Clean Core 1 lb. with SAC305			
Part #	Alloy	Diameter	Core Size
24-7068-7603	Sn96.5Ag3.0Cu0.5	.020	58
24-7068-7617	Sn96.5Ag3.0Cu0.5	.025	58
24-7068-7601	Sn96.5Ag3.0Cu0.5	.031	58
24-7068-7606	Sn96.5Ag3.0Cu0.5	.050	58
24-7068-7607	Sn96.5Ag3.0Cu0.5	.062	58

"48" Activated Rosin 1 lb. with K100*LD*			
Part #	Alloy	Diameter	Core Size
24-9574-1401	K100*LD*	.020	66
24-9574-1406	K100*LD*	.025	66
24-9574-1402	K100*LD*	.031	66
24-9574-1404	K100*LD*	.050	66
24-9574-1400	K100*LD*	.062	66

"48" Activated Rosin 1 lb. with SAC305			
Part #	Alloy	Diameter	Core Size
24-7068-1401	Sn96.5Ag3.0Cu0.5	.020	66
24-7068-1406	Sn96.5Ag3.0Cu0.5	.025	66
24-7068-1402	Sn96.5Ag3.0Cu0.5	.031	66
24-7068-1404	Sn96.5Ag3.0Cu0.5	.050	66
24-7068-1400	Sn96.5Ag3.0Cu0.5	.062	66

"331" Water-Soluble Core 1 lb. with K100*LD*			
Part #	Alloy	Diameter	Core Size
24-9574-6401	K100*LD*	.020	66
24-9574-6417	K100*LD*	.025	66
24-9574-6403	K100*LD*	.031	66
24-9574-6409	K100*LD*	.050	66
24-9574-6411	K100*LD*	.062	66

"331" Water-Soluble Core 1 lb. with SAC305			
Part #	Alloy	Diameter	Core Size
24-7068-6401	Sn96.5Ag3.0Cu0.5	.020	66
24-7068-6417	Sn96.5Ag3.0Cu0.5	.025	66
24-7068-6403	Sn96.5Ag3.0Cu0.5	.031	66
24-7068-6409	Sn96.5Ag3.0Cu0.5	.050	66
24-7068-6411	Sn96.5Ag3.0Cu0.5	.062	66





	No-Clean				Water-Soluble			
	Solder Paste for Stencil Printing Applications							
Formula Type	Easy Profile 256HA		Easy Profile® 256		HydroMark 531		R562	
Alloy	Sn63Pb37	Sn62Pb36Ag2	Sn63Pb37	Sn62Pb36Ag2	Sn63Pb37	Sn62Pb36Ag2	Sn63Pb37	Sn62Pb36Ag2
Product Characteristics	High activity no-clean paste specifically engineered to provide excellent solderability to lead free component and board finishes. Consistent print volume regardless of process parameters and 0201 application capable. Wide reflow process window. Compatible with enclosed print head systems.		Standard no-clean paste for a wide variety of reflow profiles and printing conditions. Industry standard formula that performs well in a variety of applications. Compatible with enclosed print head systems.		This highly-active, anti-slump paste is produced consistently so that every batch results in high yield manufacturing. HydroMark 531 also offers extremely robust printing, even with idle time up to 1 hour and print speeds of up to 6 in/sec. This very active formula is effective on a wide variety of metallizations, including palladium. Compatible with enclosed print head systems.		Designed for maximum environmental robustness and minimal void production, R562 has a stencil life of over 8 hours and may be used in a wide range of humidities (10 - 85% RH). Compatible with enclosed print head systems.	
Residue Removal	Not normally required.		Not normally required.		Use de-ionized or soft tap water at 120-140°F.		Use de-ionized or soft tap water at 120-140°F.	
Compliant Specifications	Telcordia Issue 1GR-78-CORE, IPC/J-STD-004 Classification ROL0		Telcordia Issue 1GR-78-CORE, IPC/J-STD-004 Classification ROL0		IPC/J-STD-004 Classification ORM0		IPC/J-STD-004 Classification ORH0	
Powder Mesh Size	-325/+500 (Type 3)		-325/+500 (Type 3)		-325/+500 (Type 3)		-325/+500 (Type 3)	
Metal %	90%		90%		90%		90%	
Suggested Packaging Style	500g jar, 600g, 1400g cartridges		500g jar, 600g, 1400g cartridges		500g jar, 600g, 1400g cartridges		500g jar, 600g, 1400g cartridges	
	Solder Paste for Syringe Dispensing Applications							
Formula Type	R276				R500			
Alloy	Sn63Pb37				Sn63Pb37			
Product Characteristics	Provides optimal performance in all types of dispensing applications. R276 is packaged void-free to ensure consistent dispensing in high speed automated processes. Exhibits excellent dispensing characteristics with a wide range of needle diameters.				The activator package in this formula is aggressive enough to remove tenacious oxide layers or solder to OSP coated boards. R500 delivers excellent wetting characteristics.			
Residue Removal	Not normally required.				Use de-ionized or soft tap water at 120-140°F.			
Compliant Specifications	Telcordia Issue 1GR-78-CORE, IPC/J-STD-004 Classification ROL0				IPC/J-STD-004 Classification ORH0			
Powder Mesh Size	-325/+500 (Type 3)				-325/+500 (Type 3)			
Metal %	87%				86%			
Suggested Packaging Style	35g and 100g syringes				35g and 100g syringes			

***For lead based products, Kester produces solder powder to J-STD-006B for alloy purity and particle distribution, except for Antimony, which is specified to a maximum of 0.2%.**

Solder Paste

Kester Part #	Description	Alloy	Packaging
7002020510	Easy Profile® 256HA No-Clean, Type 3, 90% metal	Sn63Pb37	500g jar
7002020310	Easy Profile® 256HA No-Clean, Type 3, 90% metal	Sn62Pb36Ag2	500g jar
7002020511	Easy Profile® 256HA No-Clean, Type 3, 90% metal	Sn63Pb37	600g cartridge
7002020311	Easy Profile® 256HA No-Clean, Type 3, 90% metal	Sn62Pb36Ag2	600g cartridge
7001020510	Easy Profile® 256 No-Clean, Type 3, 90% metal	Sn63Pb37	500g jar
7001020310	Easy Profile® 256 No-Clean, Type 3, 90% metal	Sn62Pb36Ag2	500g jar
7001020511	Easy Profile® 256 No-Clean, Type 3, 90% metal	Sn63Pb37	600g cartridge
7001020311	Easy Profile® 256 No-Clean, Type 3, 90% metal	Sn62Pb36Ag2	600g cartridge
7010020510	HydroMark 531 Water Soluble, Type 3, 90% metal	Sn63Pb37	500g jar
7010020310	HydroMark 531 Water Soluble, Type 3, 90% metal	Sn62Pb36Ag2	500g jar
7010020511	HydroMark 531 Water Soluble, Type 3, 90% metal	Sn63Pb37	600g cartridge
7010020311	HydroMark 531 Water Soluble, Type 3, 90% metal	Sn62Pb36Ag2	600g cartridge
7021020510	R562 Water Soluble, Type 3, 90% metal	Sn63Pb37	500g jar
7021020310	R562 Water Soluble, Type 3, 90% metal	Sn62Pb36Ag2	500g jar
7021020511	R562 Water Soluble, Type 3, 90% metal	Sn63Pb37	600g cartridge
7021020311	R562 Water Soluble, Type 3, 90% metal	Sn62Pb36Ag2	600g cartridge
7016070520	R276 No-Clean, Type 3, 87% metal	Sn63Pb37	35g syringe
7016070504	R276 No-Clean, Type 3, 87% metal	Sn63Pb37	100g syringe
7017080520	R500 Water Soluble, Type 3, 86% metal	Sn63Pb37	35g syringe
7017080504	R500 Water Soluble, Type 3, 86% metal	Sn63Pb37	100g syringe



Kester ULTRAPURE®

Manufactured by a special process that controls the inclusions of oxides and metallic and non-metallic impurities, Kester Ultrapure® is the industry standard bar solder for use high tech electronic applications where lower surface tension and hole filling ability are essential. The purity of Kester Ultrapure® far exceeds the requirements of ASTM B32, and IPC/J-STD-006A.

Kester Part #	Alloy	Each Bar	Sold As
04-6337-0050	Sn63Pb37	1 2/3 lbs.	25 lbs.
04-6040-0050	Sn60Pb40	1 2/3 lbs.	25 lbs.

Kester Solder Analysis Program

Kester's Solder Analysis Program is a prepaid method for rapid response solder sample analysis. It allows customers to document solder pot impurities for conformance to Federal Specifications or ISO quality requirements.

Option C: This option includes monitoring tin, antimony, copper, gold, lead, cadmium, aluminum, zinc, iron, arsenic, bismuth, silver, and nickel.

Kester Part #	Description
53-0000-0041	Option C



Kester Ultra Low Dross

This bar solder is manufactured using the Ultrapure® process and containing the same metal purity as Kester Ultrapure®. Kester Ultra Low Dross is formulated with a special low dross additive that dramatically decreases dross formation on the solder pot.

Kester Part #	Alloy	Each Bar	Sold As
04-6337-0030	Sn63Pb37	1 2/3 lbs.	25 lbs.



Kester Flo-Bar

Flo-Bar is an extruded 8.5 or 10 lb. bar manufactured specifically for situations where a larger size is more conveniently managed on certain automatic solder feeding systems. Flo-Bar is available in Ultrapure® and Ultra Low Dross grade solder.

Kester Part #	Alloy	Each Bar	Sold As
07-6337-1950	Ultrapure® Sn63Pb37	8.5 lbs.	42.5 lbs.
07-6337-0050	Ultrapure® Sn63Pb37	10 lbs.	50 lbs.
07-6337-1930	Ultra Low Dross Sn63Pb37	8.5 lbs.	42.5 lbs.
07-6337-0030	Ultra Low Dross Sn63Pb37	10 lbs.	50 lbs.



#5744 Solder Saver®

A chloride-free, inorganic white powder formulated to remove dross, which is the oxide of solder, from still solder pots and wave soldering machines. It does not decompose to sticky residues that are harder to remove than the original dross. The product is low fuming and is stable at molten solder temperatures.

Kester Part #	Description
56-0002-5744	5744 Solder Saver 2 lb.
56-0005-5744	5744 Solder Saver 5 lb.
56-0025-5744	5744 Solder Saver 25 lb.



Solder Wire

"245" No-Clean

"245" is a halide-free; rosin based no-clean core flux that provides excellent wetting combined with optimal reliability and cosmetics. "245" is compliant to Bellcore GR-78-CORE and is classified as ROL0 per J-STD-004.

"245" No-Clean Core 1 lb.			
Part #	Alloy	Diameter	Core Size
24-6337-8806	Sn63Pb37	.015	50
24-6337-8807	Sn63Pb37	.020	50
24-6337-8834	Sn63Pb37	.020	58
24-6337-8809	Sn63Pb37	.025	50
24-6337-8800	Sn63Pb37	.031	50
24-6337-8801	Sn63Pb37	.031	58
24-6337-8802	Sn63Pb37	.031	66
24-6337-8813	Sn63Pb37	.040	50
24-6337-8814	Sn63Pb37	.050	50
24-6337-8817	Sn63Pb37	.062	50

"331" Water Soluble

"331" is a high-activity water-soluble core flux for soldering difficult metals. "331" is designed for optimal cleanability, along with minimal smoke and odor. The residues from "331" must be removed. "331" is classified as ORH1 per J-STD-004.

"331" Water-Soluble Core 1 lb.			
Part #	Alloy	Diameter	Core Size
24-6337-6422	Sn63Pb37	.015	66
24-6337-6401	Sn63Pb37	.020	66
24-6337-6417	Sn63Pb37	.025	66
24-6337-6403	Sn63Pb37	.031	66
24-6337-6411	Sn63Pb37	.062	66

"285" RMA

"285" is an RMA based core flux that provides wetting action comparable to that of typical RA fluxes. Although "285" is an RMA-based material, the residues are non-corrosive if not cleaned. "285" is categorized as ROL0 per J-STD-004.

"285" RMA Core 1 lb.			
Part #	Alloy	Diameter	Core Size
24-6337-9703	Sn63Pb37	.015	66
24-6337-9702	Sn63Pb37	.020	66
24-6337-9718	Sn63Pb37	.025	66
24-6337-9710	Sn63Pb37	.031	66
24-6337-9713	Sn63Pb37	.031	58







"275" No-Clean

"275" provides superior wetting performance leaving an extremely clear post-soldering residue. "275" is designed to be a low splattering core flux. "275" is classified as ROL0 per J-STD-004.

"275" No-Clean Core 1 lb.			
Part #	Alloy	Diameter	Core Size
24-6337-7604	Sn63Pb37	.015	50
24-6337-7602	Sn63Pb37	.020	50
24-6337-7616	Sn63Pb37	.025	50
24-6337-7600	Sn63Pb37	.031	50
24-6337-7612	Sn63Pb37	.050	50
24-6337-7614	Sn63Pb37	.062	50

Kester "44"®

Rosin "44"® is a high activity RA core flux designed for excellent instant wetting action, even on Nickel surfaces. Although "44"® is a RA-based material, the residues are non-corrosive if not cleaned. Per J-STD-004, "44"® is classified as ROM1 flux.

"44"® RA Core 1 lb.			
Part #	Alloy	Diameter	Core Size
24-6337-0007	Sn63Pb37	.015	66
24-6337-0010	Sn63Pb37	.020	66
24-6337-0018	Sn63Pb37	.025	66
24-6337-0027	Sn63Pb37	.031	66
24-6337-0039	Sn63Pb37	.040	66
24-6337-0053	Sn63Pb37	.050	66
24-6337-0061	Sn63Pb37	.062	66
24-6040-0010	Sn60Pb40	.020	66
24-6040-0018	Sn60Pb40	.025	66
24-6040-0027	Sn60Pb40	.031	66
24-6040-0039	Sn60Pb40	.040	66
24-6040-0053	Sn60Pb40	.050	66
24-6040-0061	Sn60Pb40	.062	66
24-6040-0066	Sn60Pb40	.093	66

Kester Solid Wire

Kester's solid wire solder, without flux core, is manufactured using virgin metals and strict quality control standards. Conforming to IPC/J-STD-006A and ASTM B32.

Solid Wire 5 lbs.		
Part #	Alloy	Diameter
16-6337-0062	Sn63Pb37	.062
16-6337-0125	Sn63Pb37	.125
16-6040-0031	Sn63Pb37	.031
16-6040-0050	Sn63Pb37	.050
16-6040-0125	Sn63Pb37	.125

Solid Wire 1 lb.		
Part #	Alloy	Diameter
14-6337-0015	Sn63Pb37	.015
14-6337-0031	Sn63Pb37	.031
14-6337-0062	Sn63Pb37	.062
14-6337-0125	Sn63Pb37	.125
14-6040-0031	Sn60Pb40	.031
14-6040-0062	Sn60Pb40	.062
14-6040-0125	Sn60Pb40	.125

No-Clean Fluxes						
	Alcohol Based			VOC-Free		
Formula	**985M**	**959T**	**951**	**979T**	**977**	**971M**
Flux Type	Low Solids No-Clean	Low Solids No-Clean	Rosin-Free Low Solids, No-Clean	VOC-Free No-Clean	VOC-Free No-Clean	VOC-Free No-Clean
Percent Solids	3.6	2.9	2.0	4.2	3.25	2.8
VOCs (g/liter)	776	770	792	0	0	0
Specific Gravity	0.805	0.794	0.813	1.015	1.012	1.007
Product Characteristics	Designed for the wave soldering applications and gives excellent hole fill on thick board assemblies.	Designed for the wave soldering of conventional and SMT board assemblies. Developed to minimize the formation of micro-solderballs.	Very low solids, rosin free, foam and spray application flux. Practically no residue after the soldering process.	Developed to reduce bottomside micro-solder balling and bridging on glossy laminates and between connector pins. Designed as a spray flux, 979's activation system provides excellent wetting producing complete and consistent hole-fill.	Developed to reduce bottomside micro-solder balling and bridging. The wetting system is designed to allow for a larger process window and can survive the longer dwell times in extremely turbulent chip waves. Designed for spray applications.	Designed for foam applications. VOC-Free, no clean flux that is water based, water soluble, halide free, non-flammable and eliminates the need for a flux thinner.
Compliant Specifications	Telcordia Issue 1 GR-78-CORE & IPC/J-STD-004 Flux designator ORL0	Telcordia Issue 1 GR-78-CORE & IPC/J-STD-004 Flux designator ORL0	Telcordia Issue 1 GR-78-CORE & IPC/J-STD-004 Flux designator ORL0	Telcordia Issue 1 GR-78-CORE & IPC/J-STD-004 Flux designator ORL0	Telcordia Issue 1 GR-78-CORE & IPC/J-STD-004 Flux designator ORL0	Telcordia Issue 1 GR-78-CORE & ANSI/J-STD-004 Flux designator ORL0
Residue Removal (not normally required)	Wash with Kester's #5768 Bio-Kleen® saponifier at 2% concentration.	Wash with Kester's #5768 Bio-Kleen® saponifier at 2% concentration.	Wash with Kester's #5768 Bio-Kleen® saponifier at 2% concentration.	Wash with hot de-ionized water at 140-160°F or use 1% solution of Kester's #5768 Bio-Kleen® saponifier in water.	Wash with hot de-ionized water at 140-160°F or use 1% solution of Kester's #5768 Bio-Kleen® saponifier in water.	Wash with hot de-ionized water at 140-160°F or use 1% solution of Kester's #5768 Bio-Kleen® saponifier in water.
Thinner	108-S	#4662	110	De-ionized Water	De-ionized Water	De-ionized Water
Flux Test Kit	PS-20 or PS-22	PS-20 or PS-22	PS-22	PS-20 or PS-22	PS-20 or PS-22	PS-20



Kester Part #	Description	Packaging
63-0000-0951	951 No-Clean	1 gallon
64-0000-0951	951 No-Clean	5 gallon
65-0000-0951	951 No-Clean	53 gallon drum
63-0000-0985	985M No-Clean	1 gallon
64-0000-0985	985M No-Clean	5 gallon
65-0000-0985	985M No-Clean	53 gallon drum
63-0020-0959	959T No-Clean	1 gallon
64-0020-0959	959T No-Clean	5 gallon
65-0020-0959	959T No-Clean	53 gallon drum
63-0004-0971	971M VOC-Free No-Clean	1 gallon
64-0004-0971	971M VOC-Free No-Clean	5 gallon
65-0004-0971	971M VOC-Free No-Clean	53 gallon drum
63-0000-0977	977 VOC-Free No-Clean	1 gallon
64-0000-0977	977 VOC-Free No-Clean	5 gallon
65-0000-0977	977 VOC-Free No-Clean	53 gallon drum
63-0020-0979	979T VOC-Free No-Clean	1 gallon
64-0020-0979	979T VOC-Free No-Clean	5 gallon
65-0020-0979	979T VOC-Free No-Clean	53 gallon drum

Water-Soluble Fluxes

Water-Soluble Fluxes			
Formula	**2331-ZX**	**2235**	**2120**
Flux Type	Neutral pH Organic Water-Soluble	Organic Water-Soluble	Organic Water-Soluble
Percent Solids	33	11	24
VOCs (g/liter)	729	763	670
Specific Gravity	0.899 ± 0.005	0.856 ± 0.005	0.862 ± 0.005
Percent Halides	2.2	1.5	Halide-Free
Product Characteristics	Original pH neutral organic flux for automated wave and drag soldering processes.	Very active flux for surface mount assemblies designed to help reduce skips on bottom side surface mount pads.	Highly active, organic flux designed for automated wave soldering applications. This halide-free formula produces bright, shiny joints and high ionic cleanliness after water cleaning
Compliant Specifications	IPC/J-STD-004 Flux designator ORH1	IPC/J-STD-004 Flux designator ORH1	IPC/J-STD-004 Flux designator ORH0
Residue Removal	Residue removal is required. Use soft or de-ionized water at temperatures of 120-150°F.	Residue removal is required. Use soft or de-ionized water at temperatures of 120-150°F.	Residue removal is required. Use soft or de-ionized water at temperatures of 120-150°F.
Thinner	4662	4662	4662

Kester Part #	Description	Packaging
63-0097-2331	2331-ZX Water-Soluble	1 gallon
64-0097-2331	2331-ZX Water-Soluble	5 gallon
65-0097-2331	2331-ZX Water-Soluble	53 gallon drum
63-0000-2235	2235 Water-Soluble	1 gallon
64-0000-2235	2235 Water-Soluble	5 gallon
65-0000-2235	2235 Water-Soluble	53 gallon drum
63-0000-2120	2120 Water-Soluble	1 gallon
64-0000-2120	2120 Water-Soluble	5 gallon
65-0000-2120	2120 Water-Soluble	53 gallon drum



Rosin Based Fluxes		
Formula	**186**	**1544**
Flux Type	Rosin Mildly Activated (RMA)	Activated Rosin (RA)
Percent Solids	36	50
Specific Gravity	0.879 ± 0.005	0.929 ± 0.005
Percent Halides	0.02	0.44
Product Characteristics	Designed for high thermal stability and superior solderability.	Kester's active, Non-corrosive rosin type flux. Used on surfaces that are more difficult to solder.
Compliant Specifications	IPC/J-STD-004 Flux designator ROL0	IPC/J-STD-004 Flux designator ROM1
Residue Removal	Residue is non-corrosive, but may be removed with solvent or with Kester's 5768 Bio-Kleen® saponifier at 7-10% solution in de-ionized or soft water at temperatures of 120-140°F.	Residue is non-corrosive, but may be removed with solvent or with Kester's 5768 Bio-Kleen® saponifier at 7-10% solution in de-ionized or soft water at temperatures of 120-140°F.
Thinner	120	104



Kester Part #	Description	Packaging
63-0000-0186	186 RMA	1 gallon
64-0000-0186	186 RMA	5 gallon
65-0000-0186	186 RMA	53 gallon drum
63-0000-1544	1544 RA	1 gallon
64-0000-1544	1544 RA	5 gallon
65-0000-1544	1544 RA	53 gallon drum

Kester Flux-Pen®

The Kester Flux-Pen® is a unique tool for rework and touch-up soldering. It allows controlled application of flux, eliminating the mess from flux bottles. Flux-Pens are ideally suited for typical hand-soldering applications. The five available formulas are listed below.

RoHS Ready

Kester Part #	Description
83-1020-0959	959T Low Solids No-Clean (20 pens/carton)
83-1000-0951	951 Low Solids No-Clean (20 pens/carton)
83-1018-0186	186-18 RMA No-Clean (20 pens/carton)
83-1000-0186	186 RMA No-Clean (20 pens/carton)
83-1097-2331	2331-ZX Neutral pH Water-Soluble (20pens/carton)
53-0000-0225	Flux-Pen® Replacement Tips (25 tips/bag)



Additional Flux Materials

Kester Rework Fluxes

Kester's two rework formulas are specifically formulated for PCB rework operations. Kester's No-Clean RF-741 and Water Soluble RF-771 rework fluxes are all that's needed to handle any surface mount or through-hole rework applications. Available only in 30 gram syringe packaging.

Kester Part #	Description	Packaging
57-0000-5025	RF-741 No-Clean	30g syringe
55-0000-0225	RF-771 Water-Soluble	30g syringe

Kester Flux Thinners

Selecting the correct thinner for reducing solids or replacing evaporated solvent will result in maximum efficiency of the flux. To select a thinner, find the flux you are using from the chart below:

Thinner	Use with Soldering Flux
104	1544 Activated Rosin Flux
110	951 No-Clean Flux
120	186 Series Rosin Mildly Activated Flux
4662	959 No-Clean Flux 958 No-Clean Flux
4662	2331-ZX Organic Water-Soluble Flux 2235 Organic Water-Soluble Flux 2120 Organic Water-Soluble Flux

Kester Part #	Description	Packaging
63-0000-0104	104 Flux Thinner	1 gallon
64-0000-0104	104 Flux Thinner	5 gallon
65-0000-0104	104 Flux Thinner	53 gallon drum
63-0000-0110	110 Flux Thinner	1 gallon
64-0000-0110	110 Flux Thinner	5 gallon
65-0000-0110	110 Flux Thinner	53 gallon drum
63-0000-0120	120 Flux Thinner	1 gallon
64-0000-0120	120 Flux Thinner	5 gallon
65-0000-0120	120 Flux Thinner	53 gallon drum
63-0000-4662	4662 Flux Thinner	1 gallon
64-0000-4662	4662 Flux Thinner	5 gallon
65-0000-4662	4662 Flux Thinner	53 gallon drum
63-0000-4662	4662 Flux Thinner	1 gallon
64-0000-4662	4662 Flux Thinner	5 gallon
65-0000-4662	4662 Flux Thinner	53 gallon drum

Kester Flux Test Kits

Control of the flux concentration in the flux becomes more critical when using a low solids flux. The accuracy problems encountered with automatic specific gravity controllers in conjunction with low-solids "no-clean" fluxes make the flux kit a better alternative for process control. Good control is necessary to assure a consistent amount of flux is applied to the circuit boards, consistent soldering results are obtained, and the least amount of flux residue remains after soldering. Kester PS-20 and PS-22 flux kits provide a simple method for process control.

Flux Test Kit	Use With Soldering Flux
PS-20	959 No-Clean Flux 959T No-Clean Flux 958 No-Clean Flux 979 VOC-Free No-Clean Flux 977 VOC-Free No-Clean Flux 971M VOC-Free No-Clean Flux
PS-22	951No-Clean Flux 959 No-Clean Flux 979 VOC-Free No-Clean Flux 977 VOC-Free No-Clean Flux



Kester Part #	Description
53-0000-0200	PS-20 Flux Test Kit
53-0000-0220	PS-22 Flux Test Kit

Kester Tacky Soldering Fluxes

Kester's TSFs are the industry standard for attachment of spheres to BGA and μBGA packages. The TSFs are also used in electronics assembly operations to solder flip chip components to PWB substrates. Kester's TSF portfolio includes a complete line of no clean and water-soluble products capable of being screen and stencil printed, dot dispensed, or thin film transfer processed.

TSF-6592LV Lead-Free No-Clean (For Screen Printing/Stencil Printing/Pin Transfer)

TSF-6592LV is compatible with lead and lead-free solder alloys such as SnAg, SnCu, SnAgCu, SnAgBi, and can be reflowed in nitrogen or air with peak temperatures up to 270ºC. The residues are clear, non-conductive, and non-corrosive.

Kester Part #	Description	Packaging
300303	TSF-6592LV No-Clean	30g syringe
300304	TSF-6592LV No-Clean	100g jar
300305	TSF-6592LV No-Clean	150g cartridge

TSF-6852 Lead-Free Water Soluble (For Screen or Stencil Printing)

TSF-6850 is an aggressive synthetic flux with residues that are easily and completely cleaned with water temperatures ranging from 20-65ºC yielding bright, shiny joints. TSF-6852 is a drop-in solution for solder alloys that will have a liquidus up to 300ºC. TSF-6852 also has a 6 month shelf life when stored between 0-25ºC (refrigerated or room temperature).

Kester Part #	Description	Packaging
300203	TSF-6852 Water-Soluble	30g syringe
300204	TSF-6852 Water-Soluble	100g jar
300206	TSF-6852 Water-Soluble	165g cartridge

TSF-6502 No-Clean (Lower Viscosity for Screen Printing/Thin Film Deposition)

TSF-6502 is a no-clean tacky soldering flux formula designed for BGA/CSP/PGA screen printing, sphere/pin processing or for repair and reballing/repinning. It possesses a high activity level, allowing it to solder nickel surfaces. The robust wetting action of the TSF-6502 will allow OSP treated copper, as well as heavily oxidized copper, surfaces to exhibit good soldering properties, even after 2 or 3 thermal cycles. TSF-6502 is designed for a wide range of temperature and humid conditions.

Kester Part #	Description	Packaging
300103	TSF-6502 No-Clean	30g syringe
300104	TSF-6502 No-Clean	100g jar
300105	TSF-6502 No-Clean	150g cartridge



Kester Solder Masks

TC-530 Peelable De-Ammoniated Solder Mask

This high-temperature flexible solder masking compound can be applied to areas of printed circuit boards, which require masking during wave soldering processes. It can also be used on bare copper without causing oxidation. TC-530 is popular because of its low odor characteristics and can be used as a mold seal and conformal coat mask.

TC-533 Peelable Solder Mask

This is a high-temperature flexible solder masking compound specially formulated of natural latex rubber. It is extremely versatile as it can be used as a temporary solder mask, conformal coating maskant, and a potting compound mold seal.

TC-527 Hi-Temp Flexible Solder Mask

TC-527 is a high-temperature flexible solder masking compound formulated of natural latex rubber to protect delicate components. The latex is heat stable and tacky enough to be applied to those areas of circuit boards that require masking during a wave soldering process. Can be applied by automatic dip, brush or flow methods, direct from applicator bottle or by automated dispensing machines. It can easily be peeled away without leaving a residue.

TC-564-1 Water Soluble Temporary Solder Mask

Kester's best selling temporary solder mask specially designed to effectively protect printed circuit boards that require masking during wave soldering operations. TC-564-1 can be used with any type of flux: rosin, organic or inorganic and can also be washed away in any appropriate cleaning equipment.

Kester Part #	Description	Packaging
53-4000-0530	TC-530	½ pint
53-4001-0530	TC-530	1 pint
53-4003-0530	TC-530	1 gallon
53-4000-0533	TC-533	½ pint
53-4001-0533	TC-533	1 pint
53-4003-0533	TC-533	1 gallon
53-4001-0564	TC-564-1	1 pint
53-4003-0564	TC-564-1	1 gallon
53-4000-0527	TC-527	½ pint
53-4001-0527	TC-527	1 pint
53-4003-0527	TC-527	1 gallon



Solderform®		Minimum (mm)	Maximum (mm)
Ribbons	Width	0.50 ± 0.13	76.20 ± 0.75
	Thickness	0.0762 ± 0.03	3.18 ± 0.13
Cut-Offs	Width	0.50 ± 0.13	76.20 ± 0.75
	Thickness	0.0762 ± 0.03	3.18 ± 0.13
	Length	0.762 ± 0.25	500 ± 1.25
Washers	Outside Diameter	0.889 ± 0.05	63.5 ± 0.13
	Inside Diameter	0.38 ± 0.05	58.42 ± 0.13
	Thickness	0.0762 ± 0.03	6.35 ± 0.25
Discs	Outside Diameter	0.41 ± 0.05	65 ± 0.05
	Thickness	0.0762 ± 0.03	6.35 ± 0.25
Pellets	Diameter	0.254 ± 0.03	12.7 ± 0.13
	Length	0.50 ± 0.13	152.4 ± 0.76
Stampings	Description	Stampings use special dies that are customer specific and require a customer's engineering drawing and specification.	

Kester Solderforms®

Kester Solderforms® are stamped, extruded, compacted or formed pieces of pure soft solder alloys manufactured with strict known tolerances to customer specifications. Kester also creates other preforms such as collars, ribbon forms, rings, and wireforms.

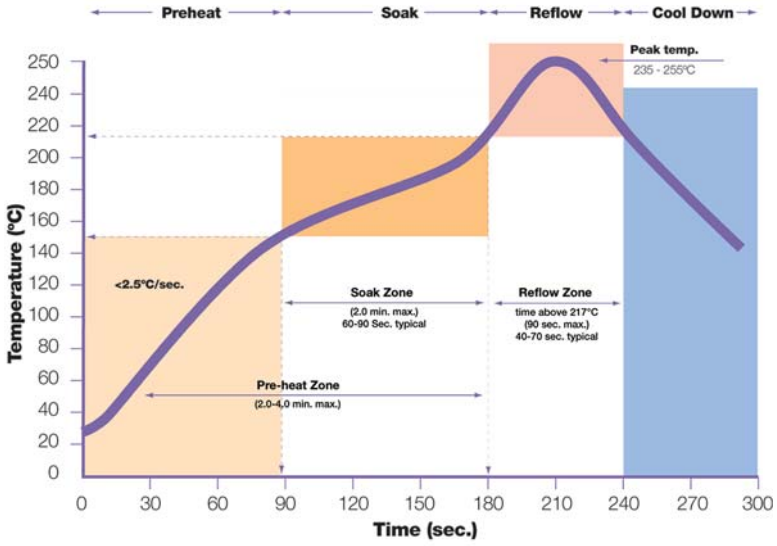
Solderforms® may be produced as flux cored, solid metal, and with or without a flux coating.

Fluxes available are no-clean, water soluble, RMA, and RA chemistries. External dyes are also available for identification or to aid in determining the solder melt point.



Table 1 Metal Solderability Chart				
Category	If trying to solder to this metal surface:	Solder Paste and Tacky Soldering Fluxes	Liquid Fluxes and Flux-Pen® Formulas	Cored Wire
1	Platinum, Gold, Copper, Tin, Solder, Silver	All products can solder these metal surfaces.	All products can solder these metal surfaces.	All products can solder these metal surfaces.
2	Nickel, Cadmium, Brass, Lead, Bronze, Rhodium, Beryllium Copper, Palladium, Immersion Tin, Immersion Silver	EniviroMark™ 907, EnviroMark™ 828 Easy Profile® 256 & 256HA HydroMark 531, TSF 6592LV, TSF 6800 Series	186, 1544, 2120, 2331-ZX, 2235, 2224-25, 2222, 2220-VF	44, 48, 331, OR-421
3	Nickel-Iron, Kovar	Base metal must be plated.	2222, 2220-VF	48, 331, OR-421
4	Zinc, Mild Steel, Chromium, Inconel, Monel, Stainless Steel	Base metal must be plated.	Call Kester's Customer Service Department	48
EXAMPLE 1: When soldering Beryllium Copper to Tin, you could use any of the products listed in Category 2, 3, or 4 since Beryllium Copper requires more active products than Tin. EXAMPLE 2: If you were soldering Solder coated leads to a Copper surface, you could use any of Kester's products (Category 1, 2, 3, or 4).				

STANDARD SOLDER PASTE REFLOW PROFILE FOR KESTER PASTE CONTAINING ALLOYS: Sn96.5Ag3.0Cu0.5 or Sn96.5Ag3.5



Stage 1- Preheat Zone
(Rapid Heating Stage)
The purpose of this zone is to quickly bring the assembly up to a temperature where solder paste can become highly chemically active.

Stage 2- Soak Zone
(Temperature Equalization Stage)
The purpose of this stage is for the thermal mass of the assembly to reach a uniform temperature plateau so that there is a very small differential between the hottest and coldest soldering locations on the assembly.

Stage 3- Reflow Zone
(Rapid Heating and Cooling)
The purpose of this stage is to rapidly heat the assembly above the melting (liquidus) temperature of the solder and subsequently cool the assembly down quickly to solidify the solder. Wetting of solder onto substrates occurs in the reflow zone.

WEIGHTS AND MEASURES COMMON CONVERSIONS		
To Change	To	Multiply By:
Gallons (US)	Liters	3.7853
Quarts (liquid)	Liters	0.9463
Pounds (avdp.)	Grams	453.592
Pounds (avdp.)	Kilograms	0.4536
Pounds (avdp.)	Ounce (troy)	14.5833
Ounces (avdp.)	Grams	28.3495
Celsius = 5/9 (F-32)	Fahrenheit = 9/5 (C) + 32	

FORMULA FOR ADDING TIN TO TIN-LEAD SOLDER POTS

Tin can be added to solder to replace tin lost by oxidation. The pot temperature should be at least 460°F. Tin bars should be added slowly and the solder should be mixed well.

$$T = \frac{W(A - B)}{(100 - A)}$$

EXAMPLE

$$\frac{900\ (63 - 61.6)}{(100 - 63)} = \frac{1260}{37} = 34 \text{ lbs. of Tin to add}$$

T = Pounds of Tin to add
A = Percentage of Tin desired
W = Pounds of solder on pot
B = Percentage of Tin in pot

Please visit www.kester.com and click on Lead-Free Solutions™ for a worksheet to balance Lead-Free alloy systems.

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Smart Products.
Great Service.
No Boundaries.

Kester *will* be the leading global supplier of high performance interconnecting materials and related services for the electronic assembly and component assembly markets.

To achieve this we will focus on customer-driven innovation and exceptional service worldwide.

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