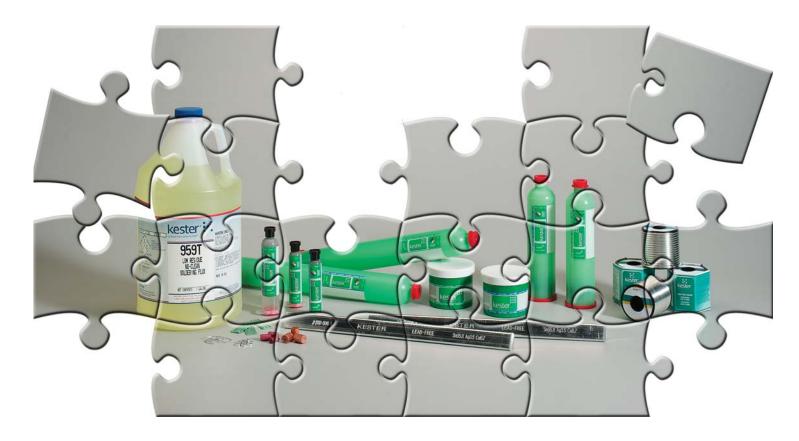
2008 RECOMMENDED Electronics Assembly Materials







Solve Your Lead-Free Puzzle with Kester





An Illinois Tool Works Company

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Kester's set of compatible lead-free materials makes lead-free assembly a snap. Whether it's for SMT, Wave Soldering, Hand Soldering or Rework applications, Kester has reliable Lead-Free Solutions™ specifically tailored for your assembly needs.

EnviroMark™907 No-Clean Solder Paste

- Excellent wetting and shininess
- Extremely print friendly
- #1 globally specified lead-free paste

K100LD Bar Solder

- Lowest copper dissolution
- Silver-free and low-dross to lower costs
- Shiny joints with excellent process yields

959T Alcohol-Based and 979 VOC-Free Fluxes

- Excellent hole-fill
- Low voids
- High reliability no-clean with low residues

275 No-Clean Cored Wire

- Fast wetting for efficient soldering
- Minimal smoke and low odor
- Available in K100LD and SAC305 alloys

Call Kester today for your complete Global Lead-Free Solutions™ package.

Kester Lead-Free Solutions™

With over 100 years of soldering technology experience,

Kester understands the challenges associated with the transition from leaded to lead-free soldering. Kester's Lead-Free Solutions™ offers the following help:

- Complete line of lead-free materials
- Kester's know-how to implement lead-free
- Consulting and training courses in lead-free SMT, wave soldering, and rework
- Unique lead-free product packaging
- Test services

Kester RoHS Ready Logo

Kester commitment to a smooth lead-free transition is demonstrated by its "green packaging", the development of uniquely shape lead-free triangular bar solders for easy identification,

and the lead-free knowledge available in Kester University training courses, lead-free seminars, and its quarterly Lead-Free Connection™ newsletter. Now Kester has gone one step further by developing a RoHS Ready Logo.



- Logo identifies Kester products to be in compliance with RoHS Directive 2002/95/EC Article 4 for banned substances
- Can be seen on technical literature such as data sheets.





Lead-Free Solder Pastes

Formula	EnviroMark™ 907	EnviroMark™ 828	R520A
Application	No-Clean Stencil Printing	Water-Soluble	Stencil Printing
Alloys	Sn96.5Ag3.0Cu0.5	Sn96.5A	g3.0Cu0.5
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.	R520A is designed to solder effectively difficult metal surfaces in an air or nitrogen reflow atmosphere. The activator package is able to withstand the higher temperatures without slump. The flux system is non-hygroscopic, reducing paste waste at the printer. It is available in all common lead-free alloys.
Residue Characteristics	Light colored	Cleanable in warm water	Cleanable in warm water
Typical Metal Percentage	88.5%, -325/+500 (Type 3)	89.5%, -325/+500 (Type 3)	89.5%, -325/+500 (Type 3)
Compliant Specifications	Telcordia Issue 1 GR-78-CORE IPC/J-STD-004 Flux Designator ROLO	IPC/J-STD-004 Flux Designator ORH1	IPC/J-STD-004 Flux Designator ORHO
Suggested Packaging Style	500g jar, 600g, 1400g cartridges	500g jar, 600g, 1400g cartridges	500g jar, 600g, 1400g cartridges



Liquid Soldering Fluxes for Lead-Free Wave Soldering

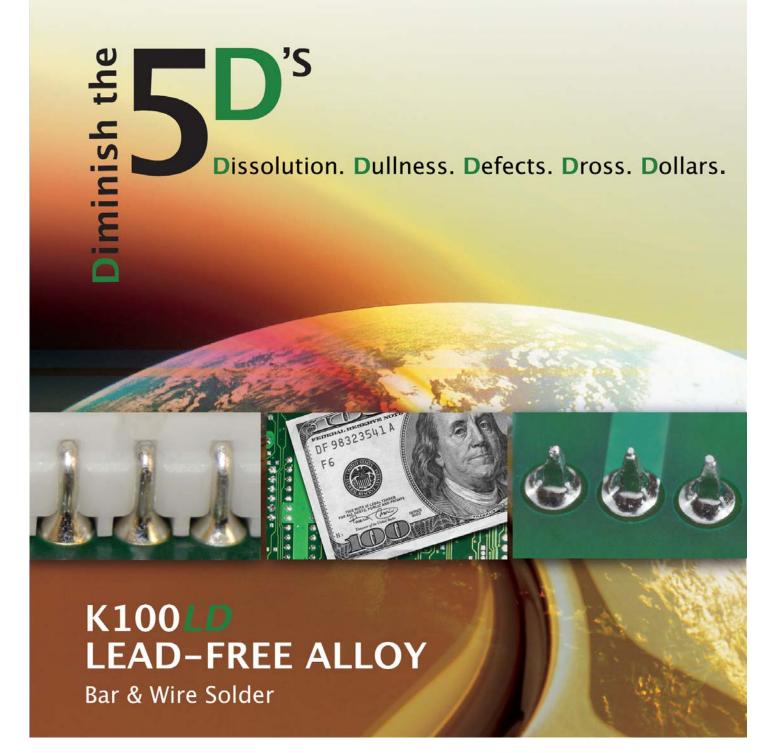
Lead-free wave and selective soldering require exposing the flux to slightly higher soldering temperatures. Lead-free alloys traditionally wet metal surfaces more slowly than tin-lead. Kester liquid fluxes for lead-free assembly have new activator packages to enable rapid wetting and hole-filling, ensuring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

Kester Part #	Description	Alloy	Packaging
57-3043-9909	EM907 No-Clean, Type 3, 88.5% metal	Sn96.5Ag3.0Cu0.5	500g jar
57-3043-9913	EM907 No-Clean, Type 3, 88.5% metal	Sn96.5Ag3.0Cu0.5	600g cartridge
57-3043-9916	EM907 No-Clean, Type 3, 88.5% metal	Sn96.5Ag3.0Cu0.5	1400g cartridge
55-3843-2209	EM828 Water-Soluble, Type 3, 89.5% metal	Sn96.5Ag3.0Cu0.5	500g jar
55-3843-2213	EM828 Water-Soluble, Type 3, 89.5% metal	Sn96.5Ag3.0Cu0.5	600g cartridge
57-3843-8109	R520A Water-Soluble, Type 3, 89.5% metal	Sn96.5Ag3.0Cu0.5	500g jar
57-3843-8113	R520A Water-Soluble, Type 3, 89.5% metal	Sn96.5Ag3.0Cu0.5	600g cartridge
57-3843-8116	R520A Water-Soluble, Type 3, 89.5% metal	Sn96.5Ag3.0Cu0.5	1400g cartridge

*Formula	985M	959T	2220-VF VOC-Free	2235
	No-Clean	No-Clean	Water-Soluble	Water-Soluble
Application	Spray or Wave Fluxer	Spray or Foam Fluxer	Spray, Wave or Foam Fluxer	Spray or Foam Fluxer
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 Specifications	IPC/J-STD-004 Flux Designator ROLO	IPC/J-STD-004 Flux Designator ORLO	IPC/J-STD-004 Flux Designator ORH1	IPC/J-STD-004 Flux Designator ORH1

 $^{{}^{\}star}$ These products are designed specifically for high performance lead-free applications.



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.

Ultrapure® K100 Lead-Free Solder Bar

Kester Ultrapure® K100 is a low-cost lead-free bar and wire solder. It is a near-eutectic Tin/Copper alloy with metallic dopants to control the grain structure of the solder joint. This improves joint reliability and virtually eliminates icicling and bridging. The improved grain structure also results in shinier solder joints than other traditional lead-free alloys.

Kester Part #	Alloy	Each Bar	Sold As
04-9574-0050	K100LD	1 2/3 lbs.	25 lbs.
04-9571-0050	K100	1 2/3 lbs.	25 lbs.
04-7068-0000	Sn96.5Ag3.0Cu0.5	1 2/3 lbs.	25 lbs.

Common Lead-Free Alloys				
*Alloys Melt Temperature Application				
K100LD ~227°C/441°F		Wave/Hand Soldering		
K100 ~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 ROLO	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 <i>LD</i>	.020	66
24-9574-7619	K100 <i>LD</i>	.025	66
24-9574-7618	K100 <i>LD</i>	.031	66
24-9574-7613	K100 <i>LD</i>	.050	66
24-9574-7615	K100 <i>LD</i>	.062	66

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

"331" Water-Soluble Core 1 lb. with K100 <i>LD</i>			
Part #	Alloy	Diameter	Core Size
24-9574-6401	K100 <i>LD</i>	.020	66
24-9574-6417	K100 <i>LD</i>	.025	66
24-9574-6403	K100 <i>LD</i>	.031	66
24-9574-6409	K100 <i>LD</i>	.050	66
24-9574-6411	K100 <i>LD</i>	.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 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 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 Pas	te for Stencil Printing Applications			
Formula Type	Easy Profile 256HA		Easy Profile® 256	HydroMark 531		R562	
Alloy	Sn63Pb37 Sn62Pb36Ag	Sn63Ph	37 Sn62Pb36Ag2	Sn63Pb37	Sn62Pb36Ag2	Sn63Pb37	Sn62Pb36Ag2
Product Characteristics			of reflow profiles and printing ons. Industry standard formula performs well in a variety of ions. Compatible with enclosed	consistently so manufactu extremely rob to 1 hour and very active for metallizations,	ctive, anti-slump paste is produced that every batch results in high yield ring. HydroMark 531 also offers out printing, even with idle time up print speeds of up to 6 in/sec. This mula is effective on a wide variety of including palladium. Compatible with losed print head systems.	and minimal of over 8 ho of humidit	r maximum environmental robustness void production, R562 has a stencil life ours and may be used in a wide range ties (10 - 85% RH). Compatible with nclosed 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 ROLO	Tel	ordia Issue 1GR-78-CORE, IPC/J-STD-004 Classification ROLO		IPC/J-STD-004 Classification ORMO		IPC/J-STD-004 Classification ORHO
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	6	500g jar, 00g, 1400g cartridges		500g jar, 600g, 1400g cartridges
			Solder Paste	for Syringe Dispo	ensing Applications		
Formula Type	e R276				R:	500	
Alloy		Sn63Pb37			Sn6	3Pb37	
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.			ator package in this formula is aggres solder to OSP coated boards. R500 d			
Residue Removal	Not normally required.		Use de-ionized or soft tap water at 120-140°F.		at		
Compliant Specifications			IPC/J-STD-004 Classification ORHO				
Powder Mesh Size	-325/+500 (Type 3)		-325/+500 (Type 3)				
Metal %	87%			8	7%		
Suggested Packaging Style	35g	and 100g syringes		35g and 100g syringes			

Solder Paste

Kester Part #	Description	Alloy	Packaging
57-3201-9209	Easy Profile® 256HA No-Clean, Type 3, 90% metal	Sn63Pb37	500g jar
57-3203-9209	Easy Profile® 256HA No-Clean, Type 3, 90% metal	Sn62Pb36Ag2	500g jar
57-3201-9213	Easy Profile® 256HA No-Clean, Type 3, 90% metal	Sn63Pb37	600g cartridge
57-3203-9213	Easy Profile® 256HA No-Clean, Type 3, 90% metal	Sn62Pb36Ag2	600g cartridge
57-3201-9216	Easy Profile® 256HA No-Clean, Type 3, 90% metal	Sn63Pb37	1400g cartridge
57-3203-9216	Easy Profile® 256HA No-Clean, Type 3, 90% metal	Sn62Pb36Ag2	1400g cartridge
57-3201-4809	Easy Profile® 256 No-Clean, Type 3, 90% metal	Sn63Pb37	500g jar
57-3203-4809	Easy Profile® 256 No-Clean, Type 3, 90% metal	Sn62Pb36Ag2	500g jar
57-3201-4813	Easy Profile® 256 No-Clean, Type 3, 90% metal	Sn63Pb37	600g cartridge
57-3203-4813	Easy Profile® 256 No-Clean, Type 3, 90% metal	Sn62Pb36Ag2	600g cartridge
57-3201-4816	Easy Profile® 256 No-Clean, Type 3, 90% metal	Sn63Pb37	1400g cartridge
57-3203-4816	Easy Profile® 256 No-Clean, Type 3, 90% metal	Sn62Pb36Ag2	1400g cartridge
57-3201-8509	HydroMark 531 Water Soluble, Type 3, 90% metal	Sn63Pb37	500g jar
57-3203-8509	HydroMark 531 Water Soluble, Type 3, 90% metal	Sn62Pb36Ag2	500g jar
57-3201-8513	HydroMark 531 Water Soluble, Type 3, 90% metal	Sn63Pb37	600g cartridge
57-3203-8513	HydroMark 531 Water Soluble, Type 3, 90% metal	Sn62Pb36Ag2	600g cartridge
57-3201-8516	HydroMark 531 Water Soluble, Type 3, 90% metal	Sn63Pb37	1400g cartridge
57-3203-8516	HydroMark 531 Water Soluble, Type 3, 90% metal	Sn62Pb36Ag2	1400g cartridge
57-3201-7509	R562 Water Soluble, Type 3, 90% metal	Sn63Pb37	500g jar
57-3203-7509	R562 Water Soluble, Type 3, 90% metal	Sn62Pb36Ag2	500g jar
57-3201-7513	R562 Water Soluble, Type 3, 90% metal	Sn63Pb37	600g cartridge
57-3203-7513	R562 Water Soluble, Type 3, 90% metal	Sn62Pb36Ag2	600g cartridge
57-3201-7516	R562 Water Soluble, Type 3, 90% metal	Sn63Pb37	1400g cartridge
57-3203-7516	R562 Water Soluble, Type 3, 90% metal	Sn62Pb36Ag2	1400g cartridge
57-3901-5403	R276 No-Clean, Type 3, 87% metal	Sn63Pb37	35g syringe
57-3901-5407	R276 No-Clean, Type 3, 87% metal	Sn63Pb37	100g syringe
57-3901-5603	R500 Water Soluble, Type 3, 87% metal	Sn63Pb37	35g syringe
57-3901-5607	R500 Water Soluble, Type 3, 87% 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 E-Bar

Designed for electrical, electronic and mechanical applications requiring bar solder that meets or exceeds the requirements of ASTM B32, and IPC/J-STD-006A.

Kester Part #	Alloy	Each Bar	Sold As
04-6337-0000	Sn63Pb37	1 2/3 lbs.	25 lbs.
04-6040-0000	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.



"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 ROLO 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 ROLO 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 ROLO 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

No-Clean Fluxes						
Alcohol Based			VOC-Free			
Formula	959	951	958	979	977	971M
Flux Type	Low Solids No-Clean	Rosin-Free Low Solids, No-Clean	Low Solids No-Clean	VOC-Free No-Clean	VOC-Free No-Clean	VOC-Free No-Clean
Percent Solids	3.9	2.0	2.7	4.5	3.25	2.8
VOCs (g/liter)	776	792	735	0	0	0
Specific Gravity	0.800	0.813	0.806	1.016	1.012	1.007
Product Characteristics	Designed for the wave sol- dering of conventional and surface mount circuit board assemblies. Developed to minimize the formation of micro-solderballs during wave soldering operations.	Very low solids, rosin free, foam and spray application flux. Practically no residue after the soldering process.	Designed for wave sol- dering applications, gives excellent soldering performance on bare copper PCBs.	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 ORLO	Telcordia Issue 1 GR-78-CORE & IPC/J-STD-004 Flux designator ORLO	Telcordia Issue 1 GR-78-CORE & IPC/J-STD-004 Flux designator ORLO	Telcordia Issue 1 GR-78-CORE & IPC/J-STD-004 Flux designator ORLO	Telcordia Issue 1 GR-78-CORE & IPC/J-STD-004 Flux designator ORLO	Telcordia Issue 1 GR-78-CORE & ANSI/J-STD-004 Flux designator ORLO
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	#4662-SM	110	#4662-SM	De-ionized Water	De-ionized Water	De-ionized Water
Flux Test Kit	PS-20 or PS-22	PS-22	PS-20	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
63-0000-0958	958 No-Clean	1 gallon
	750 110 410411	
64-0000-0958	958 No-Clean	5 gallon
65-0000-0958	958 No-Clean	53 gallon drum
63-0000-0959	959 No-Clean	1 gallon
	757 110 410411	_
64-0000-0959	959 No-Clean	5 gallon
65-0000-0959	959 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
03-0004-07/1	77 IM VOC-Free No-Cleuii	55 guiloii uroiii
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
63-0000-0979	979 VOC-Free No-Clean	1 gallon
64-0000-0979	979 VOC-Free No-Clean	5 gallon
65-0000-0979	979 VOC-Free No-Clean	53 gallon drum

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 ORH 0
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 Fluxes

	Rosin Based Fluxes			
Formula	186 Series	1544		
Flux Type	Rosin Mildly Activated (RMA)	Activated Rosin (RA)		
Percent Solids	18 to 36	50		
Specific Gravity	0.879 ± 0.005 (186) 0.848 ± 0.005 (186-25) 0.831 ± 0.005 (186-18)	0.929 ± 0.005		
Percent Halides	0.02	0.44		
Product Characteristics	Designed for high thermal stability and superior solderability. Kester 186 is available in 18, 25, or 36 percent solids formulations.	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 ROLO	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 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.



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
63-0018-0186	186-18 RMA	1 gallon
64-0018-0186	186-18 RMA	5 gallon
65-0018-0186	186-18 RMA	53 gallon drum
63-0025-0186	186-25 RMA	1 gallon
64-0025-0186	186-25 RMA	5 gallon
65-0025-0186	186-25 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



Additional Flux Materials

Kester Saponifier

5768 Bio-Kleen® is a highly concentrated liquid cleaner used for the safe removal of rosin flux residues. The chemicals in the cleaner react with the rosin residues to form soaps that can then be rinsed away with water. 5768 Bio-Kleen® is designed for difficult to remove solder paste residues and is non reactive with most metals present on electronic assemblies.

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 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-SM	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 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.



Kester Part #	Description	Packaging
63-0000-5768	5768 Bio-Kleen®	1 gallon
64-0000-5768	5768 Bio-Kleen®	5 gallon
65-0000-5768	5768 Bio-Kleen®	53 gallon drum

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

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
63-0024-4662	4662-SM Flux Thinner	1 gallon
64-0024-4662	4662-SM Flux Thinner	5 gallon
65-0024-4662	4662-SM 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

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	951 No-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 270°C. The residues are clear, non-conductive, and non-corrosive.

Kester Part #	Description	Packaging
55-0000-1225	TSF-6592LV No-Clean	30g syringe
55-0000-1237	TSF-6592LV No-Clean	100g jar
55-0000-1241	TSF-6592LV No-Clean	150g 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 Packagin	
57-0000-1225	TSF-6502 No-Clean	30g syringe
57-0000-1237	TSF-6502 No-Clean	100g jar
57-0000-1241	TSF-6502 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 20-65°C yielding bright, shiny joints. TSF-6852 is a drop-in solution for solder alloys that will have a liquidus up to 300°C. TSF-6852 also has a 6 month shelf life when stored between 0-25°C (refrigerated or room temperature).

Kester Part #	Description Packaging	
55-0000-1325	TSF-6852 Water-Soluble	30g syringe
55-0000-1337	TSF-6852 Water-Soluble	100g jar
55-0000-1341	TSF-6852 Water-Soluble	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	
KINDOID	Thickness	0.0762 ± 0.03	3.18 ± 0.13	
	Width	0.50 ± 0.13	76.20 ± 0.75	
Cut-Offs	Thickness	0.0762 ± 0.03	3.18 ± 0.13	
	Length	0.762 ± 0.25	500 ± 1.25	
	o al pr	0.000 0.05	(0.50.10	
	Outside Diameter	0.889 ± 0.05	63.5 ± 0.13	
Washers	Inside Diameter	0.38 ± 0.05	58.42 ± 0.13	
	Thickness	0.0762 ± 0.03	6.35 ± 0.25	
D:	Outside Diameter	0.41 ± 0.05	65 ± 0.05	
Discs	Thickness	0.0762 ± 0.03	6.35 ± 0.25	
	Diameter	0.254 ± 0.03	12.7 ± 0.13	
Pellets	Length	0.50 ± 0.13	152.4 ± 0.76	
Stampings	Description	Stampings use special dies that are customer specil 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.

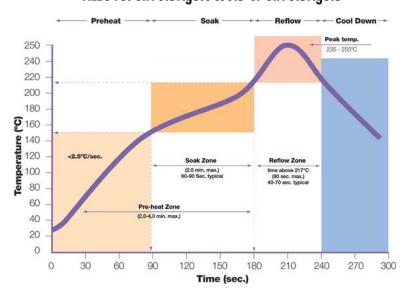


Table 1 Metal Solderability Chart					
Category	If trying to solder to this Solder Paste and Liquid Fluxes and Cored Wire metal surface: Tacky Soldering Fluxes Flux-Pen® Formulas				
1	Platinum, Gold, Copper, Tin, Solder, Silver	All products can solder these metal surfaces.	All products can solder these 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™ 808 Easy Profile® 256 & 256HA HydroMark 531, TSF 6592, 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						
	ION CONVER					
To Change	To Change To Multiply By:					
Gallons (US)	Gallons (US) Liters 3.7853					
Quarts (liquid) Liters 0.9463						
Pounds (avdp.) Grams 453.592						
Pounds (avdp.)	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.					
	$T = \frac{W(A - B)}{(100 - A)} \qquad \frac{900 (63 - 61.6)}{(100 - 63)} = \frac{1260}{37} = \frac{34 \text{ lbs. of}}{\text{Tin to add}}$					
T = Pounds of Tin to add W = Pounds of solder on pot A = Percentage of Tin desired 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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Kester Vision Statement

Smart Products. Great Service. No Boundaries.

Kester <u>will</u> 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.

