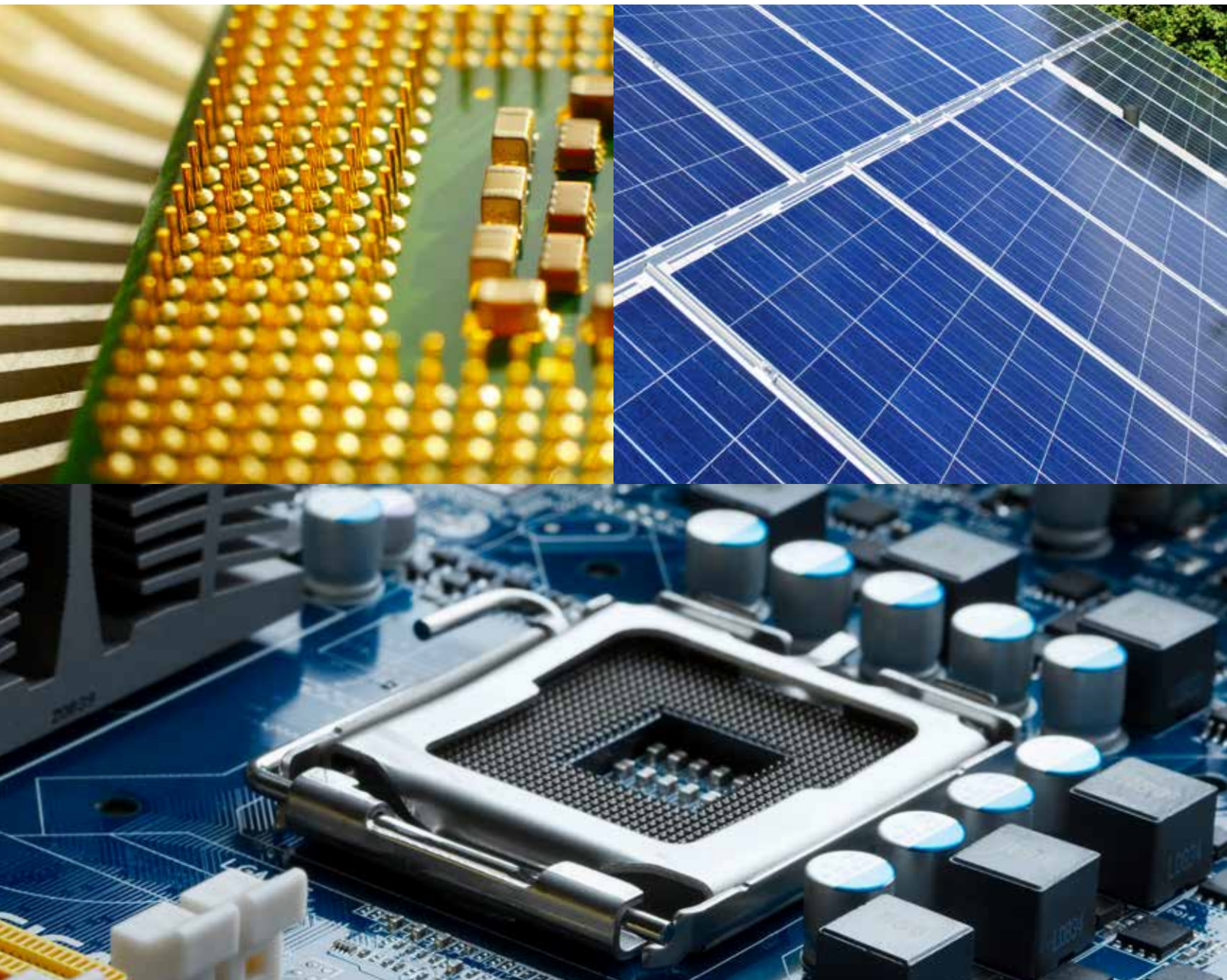


RECOMMENDED
ELECTRONIC ASSEMBLY
MATERIALS



MATERIALS AND PEOPLE THAT DRIVE INNOVATION

Kester is a leading global supplier of assembly materials to the electronic assembly, component and microelectronic marketplaces. Our products include an array of basic and high-tech attachment materials including traditional soldering chemicals, paste, wire, and bar products. We serve a worldwide customer base with facilities in North America, Europe and Asia. We are an Illinois Tool Works (ITW) Company. ITW is one of the world's leading diversified manufacturers of specialized industrial equipment, consumables, and related service businesses with more than 100 years of history and over 800 decentralized business units in nearly 60 countries.

Kester products are solution-driven, reliable, and backed by unparalleled customer service. At Kester, we believe that long-term relationships drive innovation and that people are at the center of everything we do.

Kester offers the following solutions:

- Solder Paste
- Liquid Solder Flux
- Solder Wire
- Tacky Solder Flux (TSF)
- Preforms
- SE-CURE™ Advanced Materials for Semiconductor Packaging
- Bar Solder
- A full spectrum of global customer technical support



Kester's Products Offer High-Reliability

Soldering made easy with high-reliability products for demanding applications

Recently, the manufacturers in the Electronic Assembly industry have expressed concern over no-clean flux residue and its influence on reliability. This concern has been heightened by miniaturization simultaneous with high density board design trends.

To ensure high reliability, Kester has followed specific experimental procedures based on simple chemical fundamentals. These protocols discriminate two primary chemical mechanisms causing reliability failures: corrosion and electrochemical migration. Including industry standards and customer-specific testing, Kester is proud to present our series of chemically reliable products.



NP505-HR Solder Paste

A zero-halogen, lead-free, no-clean solder paste formula developed specifically for high-reliability applications. Recently passed the Bono Corrosion Test with a corrosion factor (Fc) value of 1.1%.



296 Flux-Cored Wire

A zero-halogen, lead-free, no-clean solder wire. With its unique flux chemistry system, 296 provides superior workability performance for both manual and automated soldering in the electronics industry. 296 is classified as Type ROL0 flux under J-STD-004B specifications.



SELECT-10™

Selective Soldering Flux

A zero-halogen, no-clean selective soldering flux designed to withstand long dwell times and high preheat temperatures.



NF372-TB Soldering Flux

A zero-halogen, no-clean, low solids liquid flux designed to withstand long dwell times and high preheat temperatures needed in thick board assemblies. Recently passed the Bono Corrosion Test with a corrosion factor (Fc) value of 0.5%.



NF372-TB Flux-Pen®

A zero-halogen, no-clean flux-pen for high-reliability applications.



RF550

A high-reliability, zero-halogen, no-clean rework flux designed for electronic component rework and repair applications.

NEW PRODUCT

NP545 Solder Paste

**THE PASTE WITH A
1 YEAR UNREFRIGERATED SHELF LIFE**



NP545 IS A ZERO-HALOGEN, LEAD-FREE, NO-CLEAN SOLDER PASTE FEATURING:

- Consistent print performance to 0.5AR
- Wide reflow profile window with good solderability
- Excellent shelf life, 1 year in both refrigerated and room temperature conditions
- Low QFN/BGA voiding
- Compatible with multiple conformal coatings
- Excellent cosmetics and a clear residue

SOLDER PASTE



Formula	Description	Type	Alloy/ Mesh	Class	Packaging
NP505-HR	The Lead-Free No-Clean Paste that Passes Harsh Modified SIR Testing	NC	SAC305, Type 3 & Type 4	ROL0	500 g JAR 600 g CRT
NP545	The Lead-Free No-Clean Zero-Halogen Paste	NC	SAC305, Type 3&4	ROL0	500 g JAR 600 g CRT 750 g DEK
NXG1	The Lead-Free No-Clean Paste that Works as Well as SnPb Alloys	NC	SAC305, Type 3	ROL1	500 g JAR 600 g CRT
EP256HA	The No-Clean Leaded Paste with Ultimate Activity for Difficult Soldering Applications	NC	Sn63Pb37, Type 3	ROL0	500 g JAR 600 g CRT
HM531	The Water-Soluble Leaded Paste that Prints Everything	WS	Sn63Pb37, Type 3	ORM0	500 g JAR 600 g CRT
R276	The Dispensable Paste for Every Application, Formulated in Both Leaded and Lead-Free Alloys	NC	Sn63Pb37 & SAC305, Type 3	ROL0	35 g SYR 100 g SYR
R500	Dispensable Water-Soluble Solder Paste for Leaded Alloys	WS	Sn63Pb37 Type 3	ORM0	35 g SYR
RF550	The High-Reliability, Zero-Halogen, No-Clean Rework Flux	NC		ROL0	30 g SYR

NEW PRODUCT

SELECT-10™

THE LIQUID FLUX DESIGNED SPECIFICALLY FOR THE
NEEDS OF THE SELECTIVE SOLDERING PROCESS



SELECT-10™ IS A ZERO-HALOGEN, NO-CLEAN LIQUID FLUX DESIGNED TO WITHSTAND LONG DWELL TIMES AND HIGH PREHEAT TEMPERATURES FEATURING:

- Zero-Halogen Chemistry (none intentionally added)
- Sustained Activity – flux is able to withstand long dwell times and high preheat temperatures to improve hole-fill and wetting on thick or challenging boards
- Reliability Assurance – unheated flux will pass SIR testing therefore ensuring reliability in final assemblies
- Controlled flux application, flux does not spread beyond the spray pattern
- Ability to provide desired hole-fill with preheat temperatures over 135°C
- Clear and Minimal Residue – clear residue that is non-tacky for improved cosmetics and testing
- No Clogging – does not cause clogging of Dropjet heads

LIQUID FLUX

Lead-free wave and selective soldering systems 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. The table below shows preferred Kester Liquid Fluxes available globally.



Formula	Description	Packaging		Type	Solvent	% Solids	Class
SELECT-10™	The Liquid Flux Designed Specifically for The Needs of the Selective Soldering Process	1 Gal 5 Gal	1 Liter	NC	Alcohol	10	ROLO
SELECT-3.9™	The Liquid Flux Designed Specifically for The Needs of the Selective Soldering Process	1 Gal 5 Gal	1 Liter	NC	Alcohol	3.9	ROLO
NF372-TB	The No-Clean Flux for High Temperature and Thick Board Applications	1 Gal 5 Gal	53 Gal 20 Liter	NC	Alcohol	3.9	ROLO
985M	The No-Clean General Use Wave Solder Flux	1 Gal 5 Gal	53 Gal 20 Liter	NC	Alcohol	3.6	ROLO
952-S	The Solar Applications Flux	1 Gal 5 Gal	53 Gal 20 Liter	NC	Alcohol	2.0	ORLO
959T	The Low-Solids No-Clean Flux that Minimizes Micro-Solderballs	1 Gal 5 Gal	53 Gal 20 Liter	NC	Alcohol	2.9	ORLO
979VT	The Best Wetting Properties Available in a VOC-Free Liquid Flux	1 Gal 5 Gal	53 Gal 20 Liter	NC	Water	5.0	ORLO
2331-ZX	The Industry Proven Water Soluble Wave Solder Flux	1 Gal 5 Gal	53 Gal 20 Liter	WS	Alcohol	33	ORH1
2235	The High Activity, Low Foaming Water Soluble Flux	1 Gal 5 Gal	53 Gal 20 Liter	WS	Alcohol	11	ORH1
186	The RMA Flux Designed for High Thermal Stability	1 Gal 5 Gal	53 Gal 20 Liter	RMA	Alcohol	36	ROLO
4662	The Thinner for NC Alcohol-Based Fluxes	1 Gal 5 Gal	53 Gal 20 Liter	Thinner	Alcohol		

SOLDER WIRE

Kester wire products have been developed to provide superior performance for hand soldering in the electronics industry. While the globally available preferred products are listed below, other combinations and core fluxes may be available. The Kester website will have the most updated listing of all available cored wire and solid wire products.



LEAD-FREE WIRE OFFERINGS

Formula	Description	Type	Alloy	Class
296	The Zero-Halogen Flux	NC	SAC305	ROL0
275	The Superior Wetting No-Clean Core Flux	NC	K100LD SAC305	ROL0
331	The High Activity, Water-Soluble Core Flux for Soldering Difficult Metals	WS	K100LD SAC305	ORH1
48	The Activated Rosin Flux Developed for Lead-Free Applications	RA	K100LD SAC305	ROM1



LEADED WIRE OFFERINGS

Formula	Description	Type	Alloy	Class
245	The No-Clean Flux Core Choice for Leaded Builds	NC	Sn63Pb37	ROL0
331	The High Activity, Water-Soluble Core Flux for Soldering Difficult Metals	WS	Sn63Pb37	ORH1
44	The Activated Rosin Flux Designed for Instant Wetting Action	RA	Sn63Pb37 Sn60Pb40	ROM1

PREFERRED CONFIGURATIONS

Other diameter and core size options may be available, please visit www.kester.com or call customer service for the latest offerings.

Formula	Alloy	Diameter	Flux %
275	SAC305	0.015" (0.4mm)	2.2%
		0.020" (0.5mm)	2.2%
		0.025" (0.6mm)	2.2%
		0.031" (0.8mm)	2.2%
		0.050" (1.3mm)	2.2%
		0.062" (1.6mm)	2.2%
		0.093" (2.4mm)	2.2%
	K100LD	0.031" (0.8mm)	3.3%
245	Sn63Pb37	0.015" (0.4mm)	1.1%
		0.020" (0.5mm)	1.1%
		0.020" (0.5mm)	2.2%
		0.025" (0.6mm)	1.1%
		0.031" (0.8mm)	1.1%
		0.031" (0.8mm)	2.2%
		0.031" (0.8mm)	3.3%
		0.050" (1.3mm)	1.1%
		0.062" (1.6mm)	1.1%
	SAC305	0.031" (0.8mm)	3.3%
331	Sn63Pb37	0.020" (0.5mm)	3.3%
		0.025" (0.6mm)	3.3%
		0.031" (0.8mm)	3.3%
		0.062" (1.6mm)	3.3%
		0.031" (0.8mm)	3.3%
	SAC305 K100LD	0.031" (0.8mm)	3.3%
		0.031" (0.8mm)	3.3%
44	Sn60Pb40 Sn63Pb37	0.031" (0.8mm)	3.3%
		0.031" (0.8mm)	3.3%
		0.050" (1.3mm)	3.3%
		0.062" (1.6mm)	3.3%
48	SAC305	0.031" (0.8mm)	3.3%
		0.062" (1.6mm)	3.3%
	K100LD	0.031" (0.8mm)	3.3%
		0.062" (1.6mm)	3.3%
296	SAC305	0.010" (0.25mm)	2.2%
		0.015" (0.40mm)	2.2%
		0.020" (0.50mm)	2.2%
		0.010" (0.25mm)	2.8%
		0.031" (0.80mm)	2.2%




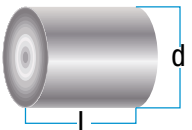
PREFORMS



Kester preforms can be specified in a variety of forms and sizes. Common solderforms and their dimensions are seen in the first table below. Depending on customer specifications on alloy type, flux core or coating and packaging requirements, the combination variables are nearly endless. The charts below are offered as a guide to help customers understand the possible options and configurations. Please call Kester Sales to start your preform quote.



Solderforms

		Dimensions	Tolerance
	RIBBONS	.050" - 2.5" (1.27 - 63.5mm)	± .005" (.127mm)
		t .005" - .060" (.127 - 1.52mm)	± .002" (.050mm)
	CUT-OFFS	W .028" - .250" (.0011-6.3mm) > .250" (6.35mm)	± .003" (.076mm) ± .005" (.127mm)
		L < .500" (12.7mm) > .500" (12.7mm)	± .003" (.076mm) ± .005" (.127mm)
		t .004" - .125" (.102 - 3.1mm)	± .002" (.050mm)
	WASHERS	OD .030" - 1.0" (.762 - 25.4mm)	± .002" (.050mm)
		ID .015" - 0.93" (.381-23.6mm)	± .002" (.050mm)
		t .004" - 0.95" (.102 - 24.1mm)	± .002" (.050mm)
	DISCS	d .020" - .250" (.508 - 6.35mm)	± .002" (.0500mm)
		t .004" - .012" (.102 - .305mm)	± .002" (.050mm)
	PELLETS	d .010" - .585" (.254 - 14.8mm)	± .003" (.076mm)
		L < 2" (50.8mm)	± .003" (.076mm)
		2 - 6" (50.8 - 152.4mm) 6 - 10" (152 - 2520mm)	± .010" (.254mm) ± .020" (.508mm)

Alloy

Preferred Lead-Free Alloys

Sn96.5Ag3.0Cu0.5
Sn95.5Ag3.8Cu0.7
Sn97Ag0.2Sn0.8Cu2
Sn96.3Ag3.7

Preferred Leaded Alloys

Sn63Pb37
Sn10Pb88Ag2
Sn62Pb36Ag2
Sn60Pb40

Other alloys maybe available, depending on melt point required.

Fluxing Type

% Varies by Configuration

CORED - INTERNAL

245S
285
48SF
44
88

COATED - EXTERNAL

285
290S
44
291S
435

Flux Descriptions

245S	No-Clean Flux ROL0
285	RMA Flux ROL0
290S	Low Solids Flux ROL0
48SF	RA Flux ROL1
44	RA Flux ROM1
88	RA Flux ROM1
291S	No-Clean Flux ORL0
435	High Activity WS Flux ORH1

Key

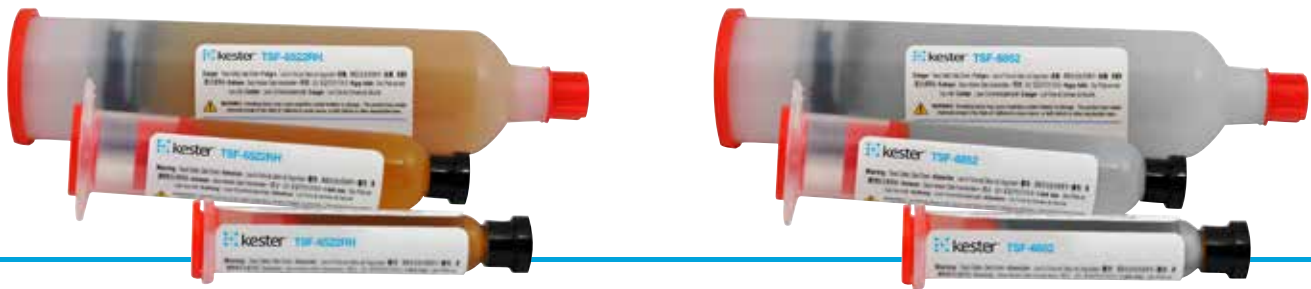
W = Width
L = Length
d = Diameter
t = Thickness
OD = Outer Diameter
ID = Inner Diameter

Packaging Types

Bulk in Jar Stackpack Tape & Reel Layer Pack

TACKY SOLDER FLUX

Kester TSF's are the industrial standard for Flip Chip and BGA Sphere Attach. With viscosities optimized for high speed application and holding of a chip or sphere in place prior to reflow, Kester TSF's enable wide process windows for our users. Known for their active soldering, Kester TSF's ensure good electrical connections on known good die and components.

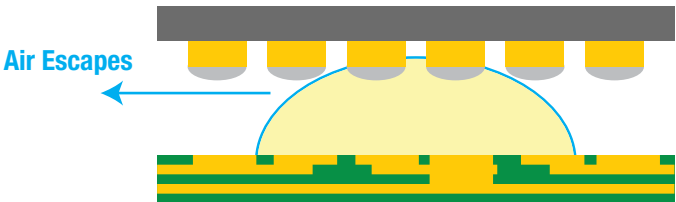
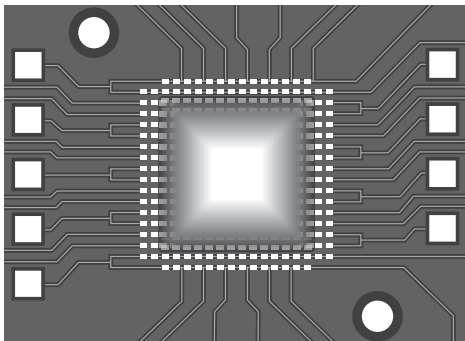


Formula	Description	Type	Class	Packaging*
TSF 6852	TSF-6852 is a synthetic rosin-free water-soluble tacky solder flux. TSF-6852 has easy to clean liquid residues and solders quickly, allowing for short profiles.	WS	ORH1	15 g SYR 30 g SYR 100 g JAR 165 g CRT
TSF-6522	TSF-6522 is a rosin-based tacky solder flux that provides a wide process window for printing or dipping applications.	NC	ROL0	30 g SYR 100 g JAR 150 g CRT
TSF-6522RH	TSF-6522RH is a rosin-based, no-clean tacky soldering flux formula designed to be compliant with IEC 61249-2-21 definition for halide-free materials.	NC	ROL0	10 g SYR 30 g SYR 100 g JAR
TSF-8818HF	TSF-8818HF is a synthetic rosin-free water-soluble tacky solder flux. TSF-8818HF is a zero-halogen formula that uses TSF-6852 best-in-class cleanable chemistry. TSF-8818HF works well in dipping, printing and dispensing applications.	WS	ORH1	30 g SYR
TSF- 6750	TSF-6750 is a zero-halogen rosin-based tacky solder flux with the solderability of a fully halogenated flux. TSF-6750 works well in dipping, printing and dispense applications.	NC	ROL0	30 g SYR 150 g CRT

*Other packaging may be available upon request.

One Step Chip Attach Materials for use in Mass Reflow – OSCA-R

Kester's OSCA-R product line combines Flux and Underfill Technology for Flip Chip and Cu-Pillar Die Attach processes. This advanced material solution enables process simplification, cost reduction, and elimination of the Keep-Out-Zone at the perimeter of the chip needed for traditional capillary underfill solutions. OSCA-R is available with 0 to 40% by weight filler, and applied with a dispense or jet system.



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