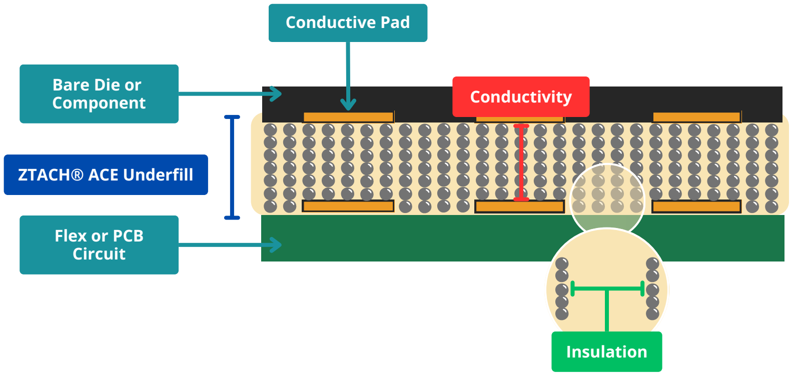
SUNRAY SCIENTIFIC

ZTACH® ACE

ZTACH® ACE

Z-Axis Magnetically Aligned Anisotropic Conductive Epoxy

Polymer matrix comprised of ferromagnetic particles vertically aligned using our patented ZMAG® Magnetic Pallet system. Scalable and reliable alternative to solder, wire bonding, and epoxies, utilizing existing manufacturing infrastructure.

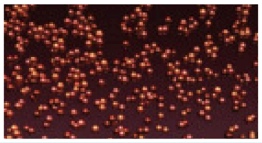


- Superior Adhesion to Flexible/Rigid Substrates
- High Density Interconnects
- No Pressure Required During Cure
- Fine Pitch 100 µm
- Broad Cure Range Options (80-160°C)
- Rapid UV Cure Option

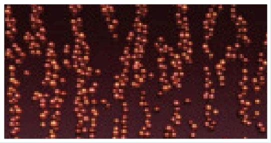
Conductive Column Formation

ZTACH® ACE conductive column formation within 10 seconds prior to cure.

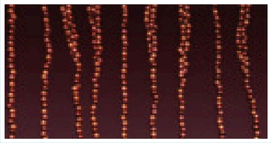
Curing locks columns in place at low temperature (80-160°C), with no pressure required. UV cure is also an option.



BEFORE CURE
Randomly dispersed particles



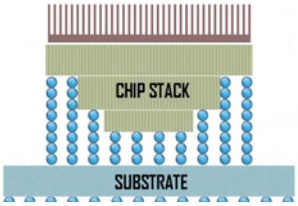
WITHIN 4 SECONDS
Particles align with magnetic field exposure



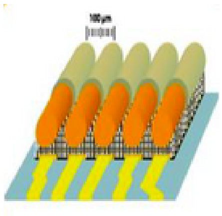
WITHIN 10 SECONDS
Conductive columns fully form

Additional Applications

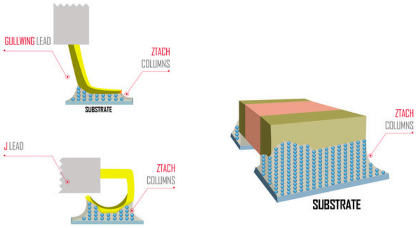
CHIP STACKING



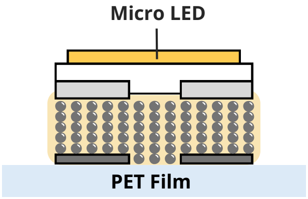
ULTRA-FINE WIRE ATTACH



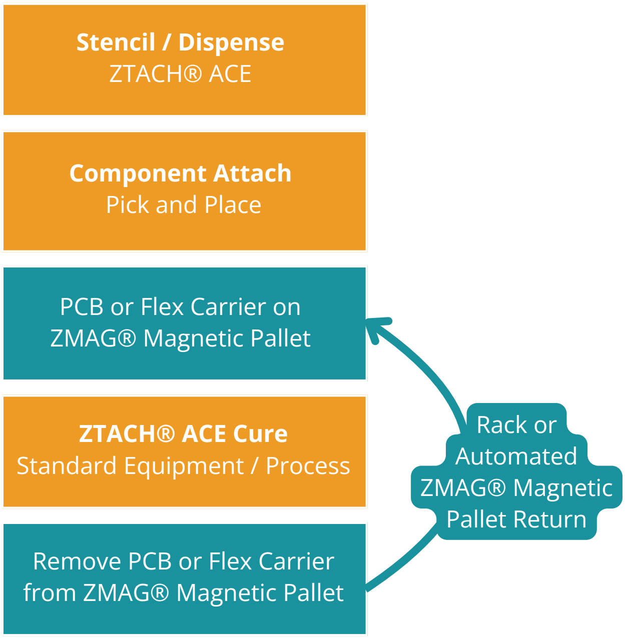
LEADED COMPONENTS



SMT FOR FLEXIBLE ELECTRONICS



ZTACH® ACE integrates easily into standard SMT equipment



Stencil / Dispense
ZTACH® ACE

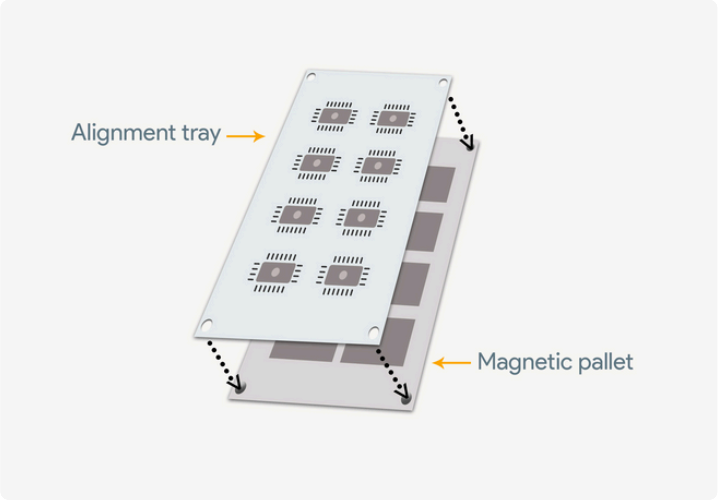
Component Attach
Pick and Place

PCB or Flex Carrier on ZMAG® Magnetic Pallet

ZTACH® ACE Cure
Standard Equipment / Process

Remove PCB or Flex Carrier from ZMAG® Magnetic Pallet

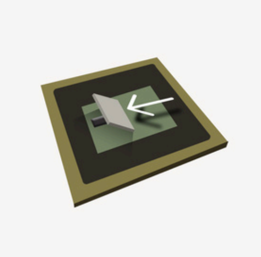
Rack or Automated ZMAG® Magnetic Pallet Return



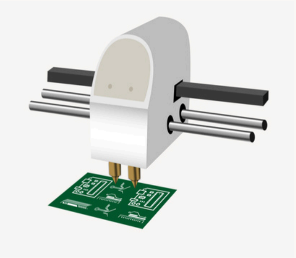
Our **ZMAG® Magnetic Pallet** is the key to seamlessly integrating **ZTACH® ACE** into your manufacturing process.

How It Works

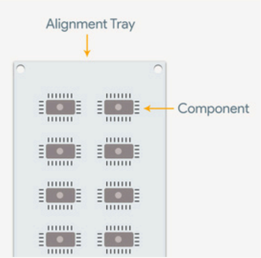
1. Apply ZTACH® ACE formulation to substrate



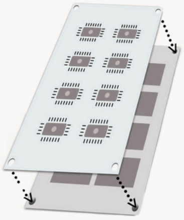
2. Place components onto substrate



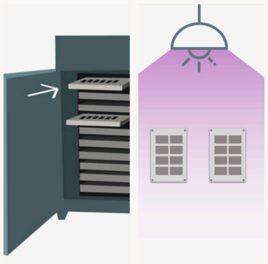
3. Place assembled boards on alignment tray



4. Place alignment tray onto patented ZMAG® Magnetic Pallet



5. Cure via oven or UV light to lock into place



ZTACH® ACE Technical Specifications

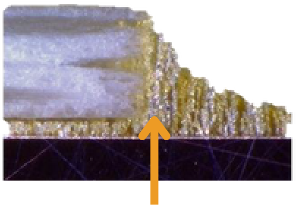
Typical Specifications

Operating Temperature	-50°C – 105°C
Glass Transition Temperature (Tg)	125°C with 150°C Post cure
Coefficient of Thermal Expansion (CTE) Below Tg	65 ppm/ °C
Shrinkage	< 5%
Thermal Conductivity	1.5 – 2.0 W/m-K
Elastic Modulus (ISO 527-2)	500 N/mm^{2}
Shear Strength	6.8 X 10^{6} N/m^{2} - TAC Lap shear test on aluminum 1.7 X 10^{7} N/m^{2} - HAC Lap shear test on copper
Typical Bond Line Thickness	25µm to 50µm
Connection Resistance	0.007-0.020 Ω
Insulation Resistance	>$1x10^{11}$Ω

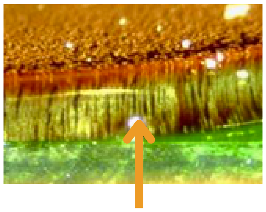
Substrates & Components

Substrates	TPU, PET, Paper, Polycarbonate, Ceramic, Textiles, Silicon, Quartz, FR4, Glass & Metallic Surfaces
Acceptable Pad and Circuit Finish	Gold, Silver, ENIG, Copper, Nickel, Palladium, Platinum, Carbon, Tin
Appropriate Components & Interconnections	SMDs, IC Flip Chip, Chip Scale Components, Fine Wire, Flex to Rigid, Flex to Flex
Component Sizes	>= 01005 (0402 metric)
Pad Pitch	Down to 50 µm space and trace

RoHS Compliance: *This product meets the requirements of the Restriction of Hazardous Substances (RoHS) Directive, 2011/65/EU for the stated banned substances.*



ZTACH® ACE cross section of Bare Die on PCBA at 50x



ZTACH® ACE columns at 50X

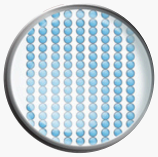
ZTACH® ACE Comparison

Parameter	ZTACH® ACE	No-Lead Solder	ACF
Curing Temperature (°C)	**80 - 160**	250 - 340	130 - 150
Feature Size (microns)	**100**	< 50	> 150
Z-Axis Connection Resistance (Ωcm)	**.007 - .020**	< .007	.020 - .100
X-Y Insulation Resistance (Ω)	**$<10^{11}$**	$<10^{10}$	$>10^{10}$
Thermal Conductivity (W/m-k)	**1 - 2**	60 - 100	0.5 - 5

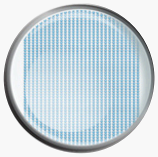
Formulations to Fit Your Unique Application

Available in gold or silver coating

Coarse



Fine



Ultra-Fine

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Advanced Electronic Materials Manufacturer

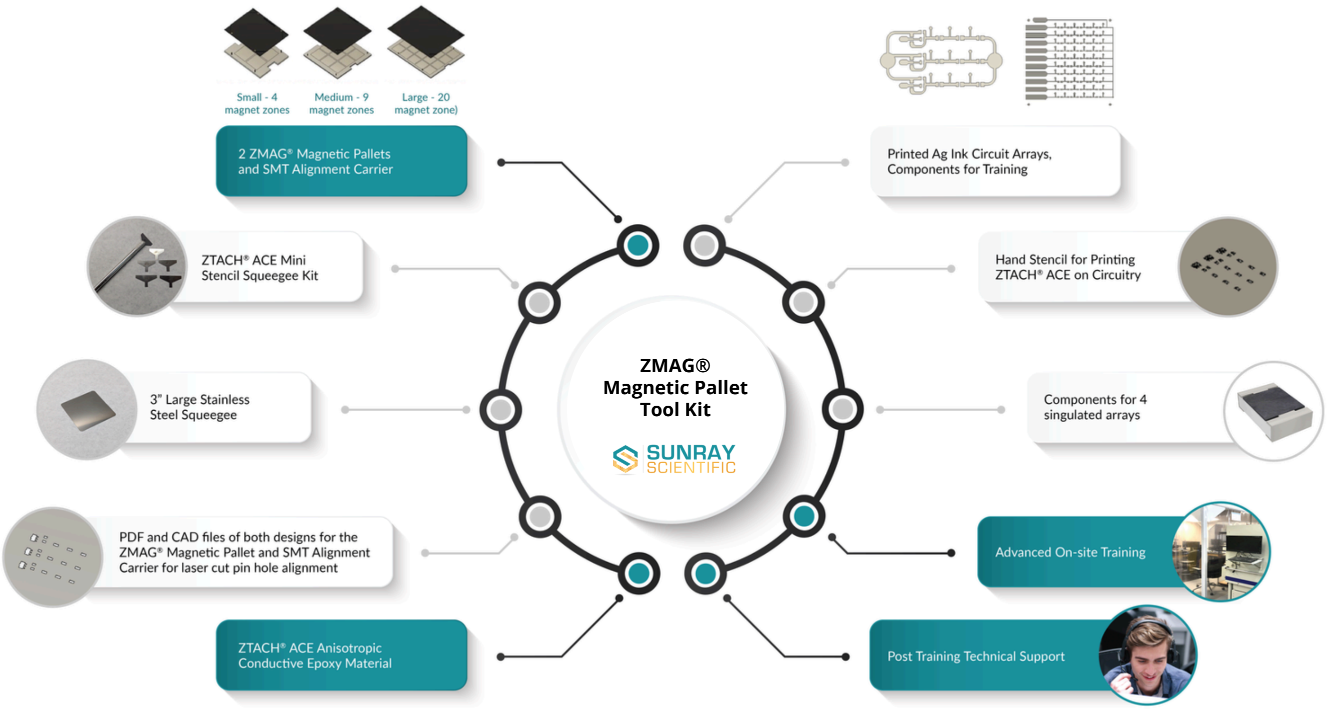
Implement ZTACH® ACE for Your Applications

ZTACH® ACE offers original equipment manufacturers and contract manufacturers the ability to reduce process steps, improve yield, and increase reliability.

Let us conduct a proof of concept to demonstrate how our technology can benefit you.

Then, transfer ZTACH® ACE into your manufacturing process with our ZMAG® Magnetic Pallet Tool Kit.

Continue Your Own Development with the Purchase of Our ZMAG® Magnetic Pallet Tool Kit



ZMAG® Magnetic Pallet Tool Kit

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Small - 4 magnet zones

Medium - 9 magnet zones

Large - 20 magnet zone)

2 ZMAG® Magnetic Pallets and SMT Alignment Carrier

ZTACH® ACE Mini Stencil Squeegee Kit

3" Large Stainless Steel Squeegee

PDF and CAD files of both designs for the ZMAG® Magnetic Pallet and SMT Alignment Carrier for laser cut pin hole alignment

ZTACH® ACE Anisotropic Conductive Epoxy Material

Printed Ag Ink Circuit Arrays, Components for Training

Hand Stencil for Printing ZTACH® ACE on Circuitry

Components for 4 singulated arrays

Advanced On-site Training

Post Training Technical Support

Contact Our Team Today

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