United Adhesives

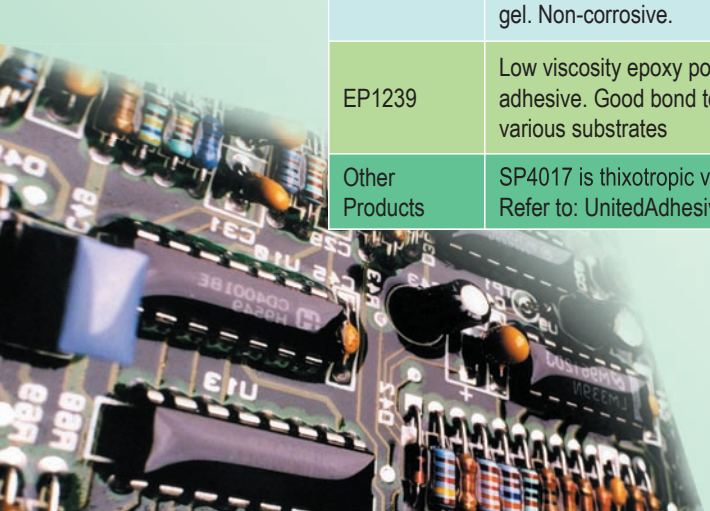
涂层与灌装胶粘剂
Coating and Potting Adhesives

▶ 保形涂层和灌封材料 Coating and Potting Materials

美国联合胶粘剂公司提供的各种介电绝缘保形涂层材料和灌封凝胶材料，有良好的抗潮湿和抗腐蚀性能力，可以保护电子产品免于湿气，腐蚀环境和灰尘等的影响。可广泛用于各类电子部件、设备的表面涂层保护，介电绝缘灌装密封，诸如芯片，硅片，模块，元器件，线焊接点等的涂层保护或全部灌装密封。
它们具有以下特点：
- 具有较高的介电强度，对电压有优良的介电绝缘能力。
- 有机硅为基质的灌装剂具有优良的柔软性，有效地降低热应力。
- 有些保形涂层材料可以室温的湿气固化，不需要加热固化过程
- 有些灌装剂提供优良的导热性能。
- 有些对高电压有优良的绝缘能力。
- 多数为中性、无腐蚀的粘合剂和密封剂。
- 有良好的对潮湿，油类和化学制品的抵抗能力。

Conformal coatings and potting adhesives from United Adhesives protect electronics and filling voids and cracks. They have excellent moisture and corrosion protection, and resistance to dust and dirt particles. They are very soft and flexible and form "stress-free" coating and encapsulating of electronic components and devices. They are used for coating electronic devices to protect chips, silicon dies, components, and wire bonds.
They have following categories and features:
- High dielectric strength. Some can provide high-voltage insulation
- Soft rubber and flexible to couple thermal stress
- Some products can provide high thermal conductivity
- Heat cure potting gels that provide best protection
- Most are neutral chemicals that have no corrosion
- Room temp moisture cure conformal coatings also available
- Epoxy coating and potting that provides oil & chemical resistance

Name	Features / Advantages	Rheology	Hardness / Modulus	Dielectric Strength	Adhesion Al/Al, psi	Cure Profile
Silcoat 7021	Moisture cure soft silicone gel. Sprayable & dispensable. Easy apply. Excellent protection of moisture, media, & corrosion.	1-part liquid 600 cPs	Shore A =32	450 V/mil	N/A	1.8mm / 24 hrs 2.5mm / 72 hrs @ 25°C 50%RH
Silcoat 8022	Soft coating and potting gel. Sprayable & dispensable. Excellent moisture & media resistance.	1:1 mixing, 3,000 cPs	Shore A = 35	450 V/mil	N/A	125°C 15 min
Silcoat 8026	Soft non-sag gel. Dispensable. Excellent moisture and media resistance	1:1 mixing, 25,000 cPs	Shore A = 40	450 V/mil	N/A	125°C 15 min
SP4011	Readily flowable. Thermal cure to form firm rubbery dielectric gel. Non-corrosive.	1-part gel 560 cPs	Shore A = 20	> 480 V/mil	N/A	125°C 60 min
SP4012	Readily flowable. Thermal cure to form firm rubbery dielectric gel. Non-corrosive.	2-part gel 450 cPs	Shore OO = 35	> 480 V/mil	N/A	25°C 12 hrs 125°C 30 min
EP1239	Low viscosity epoxy potting adhesive. Good bond to various substrates	2:1 mixing, 600 cPs	Shore A = 60	> 500 V/mil	> 1800	25°C 10 hrs; 80°C 60 min
Other Products	SP4017 is thixotropic version encapsulant. OE1582, OP4042 are optical encapsulants Refer to: UnitedAdhesives.com for the property details					



▶ 底部填充与灌装粘合剂 Underfills and Encapsulants

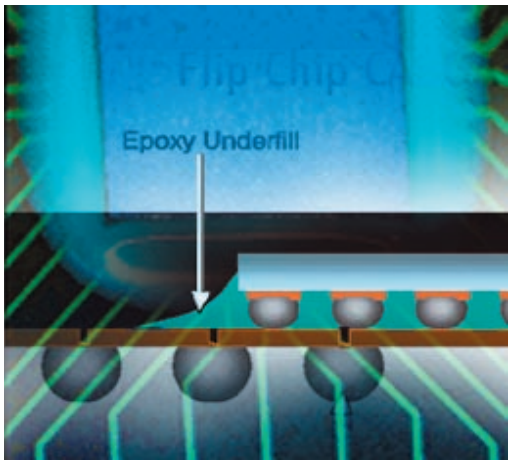
美国联合粘合剂公司(United Adhesives Inc)所研发生产的底部填充与灌装粘合剂以环氧树脂为基体的底部填充与灌装粘合剂(Underfill)主要应用于半导体工业，诸如裸芯片，晶片，BGA，flip-chip，CSP等的粘合或灌装，产品的高流动性使其用来填充芯片和底座间的空隙，或者用来将整个部位进行灌注或者覆盖。

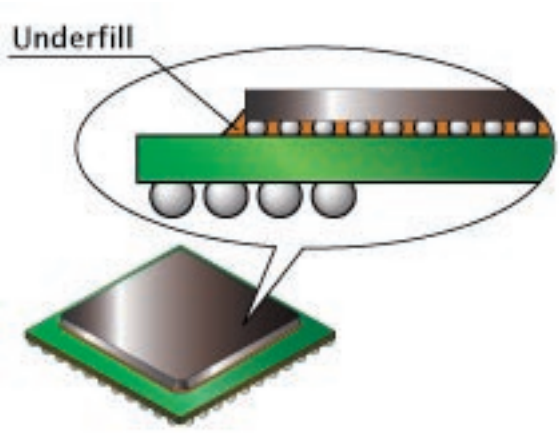
产品具有以下特征：
- 优越的毛细流动能力。
- 高玻璃转化温度(High Tg)，具有高温稳定性。
- 很低的热膨胀系数(CTE)以减少热应力。
- 对高电压有优良的绝缘能力。对低电流有良好的防漏损能力。
- 对FR4，陶瓷，polyimide，金属和其他较难粘结的材料亦有良好的粘结性。
- 本公司同时也提供兼有导热能力的底部填充粘合剂。

Epoxy based underfill and encapsulant products from United Adhesives are for semiconductor applications such as to attach chip-on-board, bare die, BGA, flip-chip, CSP, etc, or to under-fill the gap between die /chip and substrate, or to encapsulate dies, chips, components, or powder devices.

They provide various superior features such as:
- Excellent capillary flow capability.
- High Tg formulation for high temperature stability.
- Very low CTE formulation to minimize the thermal mismatch.
- High voltage insulation formulation.
- Strong bond to FR4, ceramic, polyimide, metals, and other difficult materials.
- Good dielectric property. Low current leakage.

Thermally conductive underfills are also available.





一些典型的底部填充与灌装粘合剂列于下表
Some typical underfills and encapsulatants are listed in following table

Applications	Products	Features / Advantages
Flip chip, BGA underfill	TUF1210 UF1230 UF1240 SE1260	Thermally conductive underfill Fast flow with low CTE low alpha emission Underfill with rubber toughen for high strength Flexible / soft underfill
Die attach	EP1637 EP1723 EP1678 Eposolder 6869	Snap cure in seconds, flowabe, 1-part Snap cure in seconds, non-slump, 1-part 2-part, room temperature curable epoxy Extremely high thermal conductivity k = 11 W/mK
Low CTE bonding and encapsulation	EP1640 EP1641 EP1641NS	2-part 1:1 mixing low CTE epoxy. Low T curable 1-part heat cure. High thermal stability 1-part non-slumping. High Tg
Flexible bonding & encapsulation	EP1346 EP1386 SE1262 BS8311 BS8460	2-part (2:1) flexible, room temp curable 2-part (1:1) flexible, room temp curable 2-part (1:1) flexible, heat cure 1-part silicone, heat cure 2-part silicone, room temp curable
Details of the properties these adhesives can be found on the website: http://www.unitedadhesives.com/underfill_pot.html		

▶ 光学透明粘合剂 Optically Clear Adhesives & Encapsulants

United Adhesives Inc. provides innovative solutions for optoelectronics with optical-grade epoxy and silicone encapsulants, coatings, adhesives, and sealants. They are applied in bonding and potting fiber-optic cables, connectors and terminations, LCD backlighting, displays, traffic and other lightings, upgrading the vibration and shock resistance of electro-optic assemblies, cementing and coating optical parts, potting LED devices, optical replications, and coating or encapsulating a wide variety of electro-optic and laser components. They have the following features:

- Excellent light transmission characteristics.
- Superior non-yellowing properties or anti-yellowing.
- Silicone based system can cure to low stress elastomer.
- Resistance to ozone and UV Degradation
- Broad operating at temperatures of -55 to 180°C.
- High adhesion, high purity, moisture resistance.
- Reworkable for silicones.

基于光学级环氧树脂和硅胶密封剂，涂料，粘合剂和密封剂被用于粘结和灌封光纤电缆，连接器和端子，LCD背光，显示器，交通和其它照明，提高电光组件的振动和冲击阻力，胶结和涂覆光学部件，灌封LED器件，光学复制和涂层或灌封各种各样的电光学和激光元件。

- 优良的光传输特性。
- 低温固化环氧树脂灌封胶具有较高的折射率
- 优良的无黄变性能或抗黄变性能
- 基于硅胶的产品可以固化成低应力的弹性体
- 耐臭氧和紫外线降解
- 较宽的操作温度为-40至180℃
- 高附着力，高纯度，高耐湿性
- 有机硅胶产品可以返修
- 可在低温或在升高的温度下用较短的时间固化

Name	Features / Advantages	Rheology	Hardness / Modulus	Refractive Index (n_D @ 25C)	% Transmission (350 nm to 1000 nm)	Flexible Strength (FS) or Tensile Strength (TS)	Cure Profile
OE1582	Optically clear epoxy. 2-parts, cures at room temperature or can be accelerated at elevated temperatures. Anti-yellowing formulation	2:1 mixing, 1,500 cPs	77 (Shore D)	1.564	95% to 99%	F.S. = 120 MPa	80°C 60 min 125°C 15 min
OE1583	Optically clear epoxy. 1-part ready to apply, cures at elevated temperature. Anti-yellowing formulation	1-part liquid 470 cPs	70 (Shore D)	1.564	95% to 99%	F.S. = 120 MPa	85°C 2 hrs 125°C 30 min
OP4020	Optically clear silicone tough rubber, 2-part ready to apply. Transparency, non-yellowing. Compliance to thermal stress	1:1 mixing, 4,900 cPs	40 (Shore A)	1.41	97% to 99%	N/A	65°C 20 min 85°C 10 min 100°C 5 min
OP4035	Optically clear silicone tough rubber, 1-part ready to apply. Transparency, non-yellowing. Compliance to thermal stress	1-part liquid 4,600 cPs	35 (Shore A)	1.41	97% to 99%	N/A	80°C 90 min 125°C 20min

▶ 静电屏蔽和导电涂料 EMI / RFI Shielding and ESD Protection

United Adhesives engineered electrically conductive coatings and sealants for mission critical applications, such as the military, aerospace, semiconductor, communication, electronic and medical device industries, that require environmental and electromagnetic interference, electrostatic discharge, and radio frequency shielding.

Silductor 6310 and 6350 are conductive silicone rubber that can be used as an EMI/RFI shielding sealant, or forming conducting paths between circuitry and components. E-Shield 6037 and 6531 are the high performance EMI/RFI coatings with silver coated copper filled conductive powder. E-Shield 6410 and 6421 are low cost alternatives for purposes of grounding and electrostatic discharge (ESD). They can be spray-coated or painted on the internal walls of different components to achieve the requirement of shielding and insulating from electromagnetic wave. They form strong bonding to various plastics housings such as PBT, Nylon, PS, ABS, ceramic or composite materials.

美国联合粘合剂的导电涂料为电子产品能够避免电磁辐射和无线电频率的干挠（EMI/RFI）以及静电释放(ESD)的干挠等，提供有效的保护涂层. 广泛用于如军事，航空航天，半导体，通信，电子和医疗设备，等需要屏蔽环境和电磁干扰，静电放电和射频屏蔽等行业。

Silductor6310和6350为导电硅橡胶，可以用来作为EMI / RFI屏蔽的密封剂，或形成电路和元件之间导电路径。 E-Shield 6037是高性能EMI / RFI涂料，用镀银铜填充的导电粉末为导电媒介。 E- Shield 6410和6421顷为了接地和静电放电（ESD）的低成本替代品。它们可以是喷雾涂覆或已涂漆的不同部件的内壁上，以达到屏蔽和从电磁波的绝缘的要求。它们形成强结合到各种塑料外壳，如PBT，尼龙，PS，ABS，陶瓷或复合材料。

Name	Chemical Base	Features / Advantages	Rheology	Hardness / Modulus	Volume Resistivity (Ohm-cm)	Cure Profile
E-Shield 6037	Acrylic / Ag-Cu	Sprayable fluid. Good electrical conductivity. One-component. Low cost.	Paintable / Sprayable	Shore D > 80	Sheet Resistance <0.02 Ohm / inch^2	6 to 8 min @ 25°C
E-Shield 6421	Epoxy / Graphite	Electrically conductive coating with strong mechanical resistance. High temperature stability. No solvent.	Paintable	Shore D = 30	Sheet Resistance < 2 Ohm / in^2	85°C 60 min 125°C 30 min
E-Shield 6410	Glass / Graphite	Electrically conductive coating with strong mechanical resistance. Very high temp stability. Water based.	Paintable	Shore D > 80	Sheet Resistance < 50 Ohm / in^2	25°C 6 hrs 85°C 15 min
Silductor 6350	Silicone / Ag-Cu	Low cost alternative with Ag coated Cu as conducting media	Paintable / Dispensable	Shore A = 68	< $2x10^{-3}$	125°C 60 min
Silductor 6381	Silicone / Ag-Cu	Low cost alternative with Ag and Cu hybrid as conducting media	Paintable / Dispensable	Shore A = 68	< $2x10^{-3}$	125°C 60 min

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