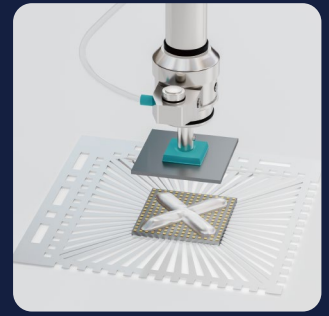


EPO-TEK® EK1000

Electrically & Thermally Conductive Adhesive

>15 W/m·K

Designed for high-performance electrical and thermal management
in semiconductor and component attach



1 Product Overview

EPO-TEK® silver-filled electrically conductive epoxies deliver excellent electrical and thermal conductivity, strong adhesion, and reliable performance under high temperatures, humidity, and thermal cycling. They support demanding applications in semiconductor packaging, microelectronics, photonics, aerospace, medical devices, and telecommunications.

EPO-TEK® EK1000 is a one-component silver epoxy designed for automated dispensing. It offers volume resistivity of $\leq 0.00009 \Omega\text{-cm}$, thermal conductivity more than 15 W/m·K, and excellent thermal-cycling and shock resistance.

2 Key Applications

Target markets: Aerospace, defense, electronics, optical communications, and telecommunications

High-Power, High-Brightness LED Die Attach

Meets high thermal-conductivity requirements for high-power LED packaging

Semiconductor Packaging

Component attachment and hybrid-package die bonding

Optical Communications

Suitable for 800G and 1.6T high-speed optical modules

High-Power Microwave/RF Communications

Excellent thermal-cycling and shock resistance for high-reliability applications

Concentrator Photovoltaic (CPV) Cells

Semiconductor die attach with low electrical and thermal resistance. Solder-alternative die attach material

Military-Grade Applications

EK1000-MP certified to MIL-STD-883 Method 5011 for low-outgassing requirements

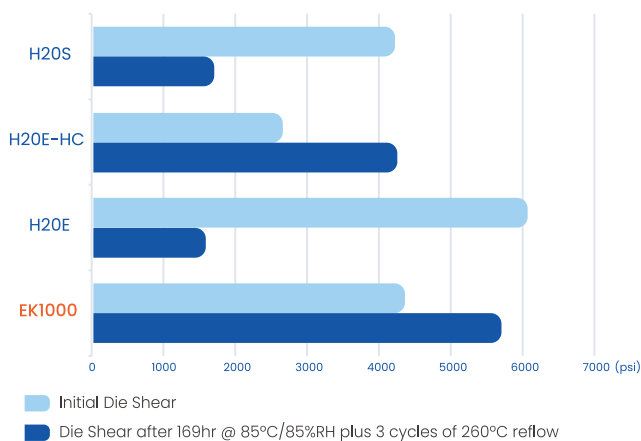
3 EK1000 Product Family

EPO-TEK®	Key Features	Recommended Use
EK1000-1	Longer dry time for extended batch-production processes	Extended dry time
EK1000-1-D	Lower viscosity and improved flow for dispensing; enhanced dispensing version of EK1000-1	Extended dry time + enhanced dispensing
EK1000-MP	Military-grade version certified to MIL-STD-883 Method 5011	Defence applications
EK1000-IMP	Extended-dry-time version of EK1000-MP, combining military certification with a longer working time	Extended dry time + military applications

4 Technical Data

Parameter	Typical Value
General	
No. of Components	Single
Specific Gravity	3.34
Pot Life	2 Weeks
Dry Time	≤ 1 Day
Shelf Life	One year at -40°C
Physical Properties	
Color (before cure)	Silver
Consistency	Smooth thixotropic paste
Viscosity 23°C @ 100 rpm	1,800 – 3,600 cPs
Thixotropic Index (TI)	3.6
Glass Transition Temp (T _g)	≥ 80 °C
Degradation Temp	357 °C
Suggested Operating Temp	< 300 °C (Intermittent)
Shore D Hardness	66D
Storage Modulus	273,528 psi
CTE Below T _g	38 x 10 ⁻⁶ in/in°C
CTE Above T _g	94 x 10 ⁻⁶ in/in°C
Weight Loss @ 200°C	0.19 %
Weight Loss @ 250°C	0.94 %
Weight Loss @ 300°C	1.70 %
Particle Size	≤ 45 microns
Ion Content	Cl ⁻ : ≤ 10 Na ⁺ : 2 NH ₄ ⁺ : 6 K ⁺ : 0 (ppm)

Parameter	Typical Value
Electrical And Thermal Properties	
Thermal Conductivity (150°C/1 hr)	12.6 W/mK
Thermal Conductivity (150°C/1 hr + 200°C/1 hr)	26.3 W/mK
Thermal Conductivity (125°C/2.5 hr+150°C/36 min + 200°C/15 min)	35.5 W/mK
Thermal Conductivity (125°C/2 hr)	5.56 W/mK
Volume Resistivity @ 23°C (150°C/1 hr + 200°C/1 hr)	≤ 0.00009 Ohm-cm
Volume Resistivity @ 23°C (125°C/2 hr)	0.00007 Ohm-cm
Mechanical Properties	
Lap Shear @ 23°C	1,010 psi
Die Shear @ 23°C (Initial)	≥ 10 Kg 3,556 psi
Die Shear @ 23°C (after 1000 hr 85°C/85% RH)	≥ 5 Kg 1,778 psi
Die Shear @ 23°C (125°C/2 hr)	≥ 5 Kg 1,778 psi
MSL 1 (JEDEC Level 1) Die Shear	
Die shear strength of Au-Au (80mil x 80mil) die on Au/Kovar® substrate	



5 Key Advantages

High Electrical and Thermal Conductivity

- > Multi-step curing optimizes thermal management, more than 15 W/m-K
- > Low volume resistivity of ≤0.00009 Ω-cm
- > Silver-filled formulation provides both electrical and thermal conductivity

Process Compatibility

- > One-component, no mixing and supports automated high-volume dispensing
- > Low viscosity, and high thixotropic index for precision die attach that require thermal stress management
- > Multi-step cure schedule optimizes thermal management

High Reliability

- > Maintains strong adhesion after 169 hours at 85dC/85%RH & 3 times reflow cycle
- > Decomposition temperature: 357°C; recommended intermittent service temperature: <300°C

Low Ionic Contamination

- > Cl⁻ ≤ 10 ppm, Na⁺ 2 ppm, NH₄⁺ 6 ppm, K⁺ 0 ppm
- > Low ionic content helps minimize ionic contamination, an important consideration for long-term electronic reliability

EPOXY
TECHNOLOGY
A Meridian Brand

Rev_001

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