EPO-TEK® H27D Electrically Conductive, Silver-Filled Epoxy

EPO-TEK® H27D is a two part, silver-filled epoxy adhesive designed for semiconductor and hybrid-microelectronic packaging applications.

Rheology provides a smooth paste with excellent handling characteristics and a reasonable pot life. It can be machine-dispensed, screen printed, stamped, or applied by hand using spatula, toothpick, or many other applicators. Semiconductor applications such as Au-plated chips, Si, GaAs, Cu or Ag based lead-frames and die-paddles, JEDEC plastic IC packaging using transfer molded encapsulation processes. Hybrid micro-electronics; active and passive SMDs on ceramic substrates, Au and Ag-Pd contact pads, chip caps and resistors, inductors, quartz crystals, oscillators, making or repairing conductive traces on the PCB, EMI/RF shielding of the package, near-hermetic sealing, component or package grounding. Packages like DIP, or TO-can format. PCB level; COB die attach, substrates can be rigid like FR4 and BT, or flex like Kapton. Designed to withstand TC wire bonding temperatures, or hybrid lid-seal processes exceeding 300°C.

Passes NASA low outgassing standard ASTM E595 with proper cure...
http://outgassing.nasa.gov/

Features

- AGP Part Number 113256
- Two Part, Electrically Conductive Silver-Filled Epoxy System
- Ultrahigh Vacuum Compatible
- Meets NASA's Low Outgassing Standard ASTM E595 (with proper cure)
- 10:1 Mixing Ratio (by weight)

Specifications

Physical Properties

Color, Part A / B	Silver / Amber
Consistency	Smooth Paste
Viscosity @ 100 RPM, 23°C	2,500 – 4,000 cPs
Thixotropic Index	1.3
Glass Transition Temperature (Tg)	≥ 80°C
Dynamic Cure 20 – 200°C /ISO 25 Min Ramp -10 – 200°C @ 20°C/Min	
Minimum Bond Line Cure Schedule	150°C / 1 Hour
Coefficient of Thermal Expansion (CTE)	
Below Tg	29 x10^{-6} in/in/°C
Above Tg	116 x10^{-6} in/in/°C
Shore D Hardness	55
Shear Strength @ 23°C	
Lap	1,288 psi
Die	≥15Kg / 5,334 psi
Degradation Temperature (TGA)	413°C
Weight Loss	
@ 200 / 250 / 300°C	0.49 / 0.50 / 0.63%
Operating Temperature	
Continuous	- 55 to 225°C
Intermitent	to 325°C
Storage Modulus @ 23°C	539,400 psi
Ions — Cl^-, Na^+, NH_4^+, K^+	8, 25, 7, and 10 ppm
Particle Size	≤ 45 µm
Specific Gravity Part A / B	3.79 / 1.22
Shelf Life @ 20–25°C	1 Year
Pot Life	8 Hours

Vacuum Range

UHV, Ultrahigh Vacuum	1x10^{-10} Torr

Electrical Properties

Volume Resistivity @ 23°C	≤ 0.0005 Ohm-cm

Thermal Properties

Thermal Conductivity	1.2 W/mK

Notes

1. For reference use only
2. Container(s) should be kept closed when not in use.
3. For filled systems, mix the contents of Part A thoroughly before mixing the two together.
4. Last updated on 20220809

Proper Mixing and Handling of Epoxies

Proper mixing and handling epoxies eases the application process and allows for the best possible performance of an adhesive.

For all filled systems, mix contents of each container (part A and part B) before being mixed together. This "premix" re-disperses any filler particles that can sometimes settle. It is also considered good practice to gently mix any one-component systems that contain fillers.

Once the products are thoroughly mixed, weigh out the appropriate amount of each into a third container using a gram scale and the recommended mix ratio found on the data sheet — 10:1 (10 units of Part-A, and 1 unit of Part-B). A minimum of two grams of material should be used each time a product is mixed. This will ensure there is enough material for an adequate cure. Each weighing should remain within +/- 5% of the original ratio for each component. Once the components are weighed out, the product should be mixed for 1-2 minutes in a clockwise fashion and 1-2 minutes in counter-clockwise fashion. This will result in a homogeneous mixture that is ready for application.

Proper storage of the materials is also a key element to material handling. After the weighing of each component is complete, the jar threads should be wiped clean and the caps replaced. If the materials are supplied in the same type of jars, make sure not to mix the caps of the two jars. This could cause cross-contamination and may start to cure or gel any adhesive within the lid threads, causing the jar to seal shut.

Hygiene is also very important when working with epoxies. Most EPO-TEK® epoxies are 100% solids systems, so there is no vapor coming off the material. It is still recommended to work with every material in a well ventilated area or under an exhaust hood. Latex or Nitrile gloves are also required in order to reduce any dermal exposure. Gloves should be replaced often and work spaces should be kept clean of any contaminants. Be sure to wash hands thoroughly with soap and water when finished.

For any necessary clean up of spatulas or counter tops, acetone or IPA (isopropyl alcohol) can be used with a paper towel or rag. Be sure to completely remove all solvent residue in order to avoid any contamination.

113256 / Conductive Glue
H27D 225°C

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