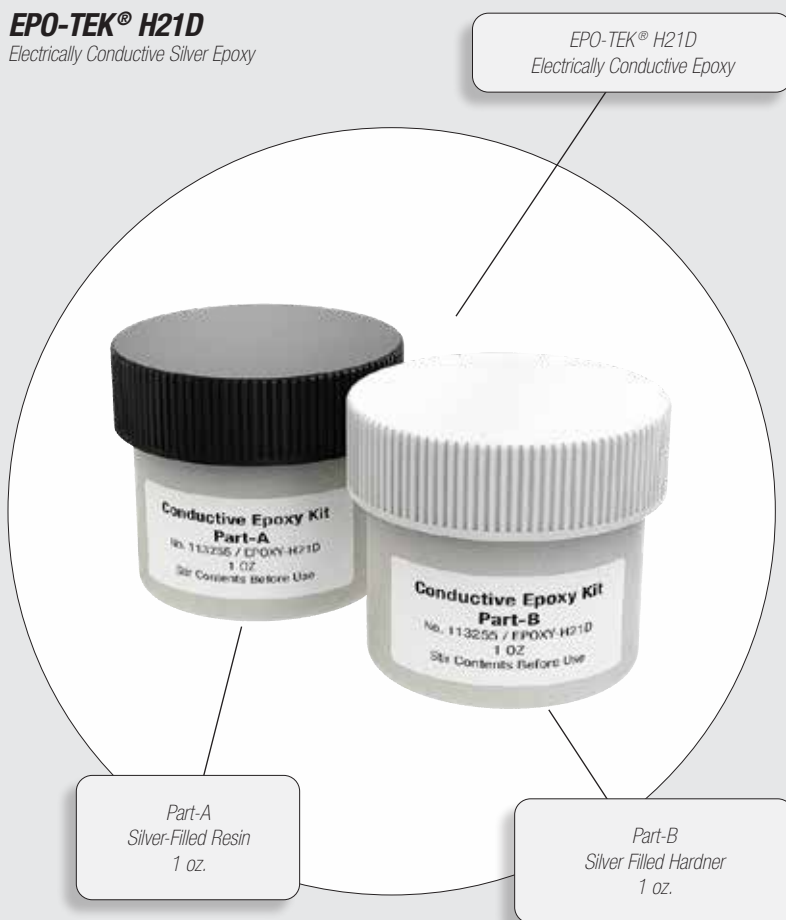




### EPO-TEK® H21D Electrically Conductive Silver Epoxy



### EPO-TEK® H21D Electrically Conductive, Silver-Filled Epoxy

EPO-TEK® H21D is a two part, high Tg, silver-filled epoxy adhesive designed for chip bonding microelectronic and optoelectronic applications. Contains no solvents or thinners.

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 or toothpick. Extended pot-life and can be cured at relatively low temperatures, such as 80°C. Designed to be used in the 300°C range for applications such as wire bonding operations and eutectic lid-sealing processes. Also suggested for hybrid aerospace circuits found in RF / Microwave devices like cockpits and satellites. Compatible with Au-plated ceramic substrates found in traditional and custom hybrids.

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

### Features

- AGP Part Number 113255
- 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 / Silver
Consistency	Smooth Paste
Viscosity @ 10 RPM, 23°C	25,000 – 40,000 cPs
Thixotropic Index	2.6
Glass Transition Temperature (Tg)	≥ 100°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	42 x10 <sup>-6</sup> in/in/°C
Above Tg	225 x10 <sup>-6</sup> in/in/°C
Shore D Hardness	60
Shear Strength @ 23°C	
Lap	1,504 psi
Die	≥10Kg / 3,556 psi
Degradation Temperature (TGA)	416°C
Weight Loss	
@ 200 / 250 / 300°C	0.03 / 0.06 / 0.17%
Operating Temperature	
Continuous	- 55 to 225°C
Intermittent	to 350°C
Storage Modulus @ 23°C	802,491 psi
Ions — Cl <sup>-</sup> , Na <sup>+</sup> , NH <sub>4</sub> <sup>+</sup> , K <sup>+</sup>	64, 72, 121, and ND ppm
Particle Size	≤ 45 μm
Specific Gravity Part A / B	2.45 / 2.14
Shelf Life @ 20–25°C	1 Year
Pot Life	15 Hours

#### Vacuum Range

UHV, Ultrahigh Vacuum	1x10 <sup>-10</sup> Torr
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#### Electrical Properties

Volume Resistivity @ 23°C	≤ 0.0009 Ohm-cm
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#### Thermal Properties

Thermal Conductivity	1.0 W/mK
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#### Notes

1. For reference use only
2. Container(s) should be kept closed when not in use.
3. Filled systems should be stirred thoroughly before mixing and prior to use.
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.



113255 / Conductive Glue  
H21D 225°C

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This information is based on data and tests believed to be accurate. It is only provided as a guide in selecting an adhesive. Properties listed are typical, average values. It is recommended the user perform a thorough evaluation for any application based on their specific requirements. Accu-Glass Products, Inc. makes no warranties (expressed or implied) as to its accuracy and assumes no liability in connection with the use or inability to use these products.