

EPO-TEK® MED-H20E

Technical Data Sheet
For Reference Only
Biocompatible/Electrically Conductive(ECA), Silver Epoxy
ISO 10993 Tested/Fully Compliant

Date: February 2021
Rev: VIII
No. of Components: Two
Mix Ratio by Weight: 1 : 1
Specific Gravity: Part A: 2.03 Part B: 3.07
Pot Life: 2.5 Days
Shelf Life- Bulk: One year at room temperature
Shelf Life- Syringe: One year at -40°C

Biocompatible Certified Cure: 150°C / 1.5 Hours

Alternative biocompatible cure schedules may be possible, but have not been certified. Contact med@epotek.com with any questions.

NOTES:

- Container(s) should be kept closed when not in use.
- Filled systems should be stirred thoroughly before mixing and prior to use.
- Performance properties (rheology, conductivity, others) of the product may vary from those stated on the data sheet when bi-pak/syringe packaging or post-processing of any kind is performed. Epoxy's warranties shall not apply to any products that have been reprocessed or repackaged from Epoxy's delivered status/container into any other containers of any kind, including but not limited to syringes, bi-paks, cartridges, pouches, tubes, capsules, films or other packages.

Product Description: EPO-TEK® MED-H20E is a biocompatible, silver-filled epoxy with electrical and high thermal conductivity. It is a well characterized and relied upon ECA, with over 40 years of successful design use. It is versatile in curing techniques; from box oven, to IR, to hot plate, to convection ovens and is used for circuit connections. Some typical applications are: pacemaker hybrid circuits, X-rays, ultrasound, and hearing aids using MEM or hybrid technology.

Typical Properties: Cure condition: 150°C / 1.5 Hours Different batches, conditions & applications yield differing results.

Data below is not guaranteed. To be used as a guide only, not as a specification. * denotes test on lot acceptance basis

| PHYSICAL PROPERTIES: | | | |
|---|-----------------------------|--|----------------------------|
| * Color (before cure): | Part A: Bright shiny silver | Part B: Slightly shiny silver | |
| * Consistency: | Smooth thixotropic paste | | |
| * Viscosity (23°C) @ 100 rpm: | 2,200-3,200 | cPs | |
| Thixotropic Index: | 4.0 | | |
| * Glass Transition Temp: | ≥ 80 | °C (Dynamic Cure: 20-200°C/ISO 25 Min; Ramp -10-200°C @20°C/Min) | |
| Coefficient of Thermal Expansion (CTE): | | | |
| | Below Tg: | 58 | x 10 ⁻⁶ in/in°C |
| | Above Tg: | 278 | x 10 ⁻⁶ in/in°C |
| Shore D Hardness: | 70 | | |
| Lap Shear @ 23°C: | 1,428 | psi | |
| Die Shear @ 23°C: | ≥ 10 | Kg | 3,556 psi |
| Degradation Temp: | 432 | °C | |
| Weight Loss: | | | |
| | @ 200°C: | 0.66 | % |
| | @ 250°C: | 1.10 | % |
| | @ 300°C: | 1.64 | % |
| Suggested Operating Temperature: | < 375 | °C (Intermittent) | |
| Storage Modulus: | 1,046,490 | psi | |
| * Particle Size: | ≤ 45 | microns | |

| ELECTRICAL AND THERMAL PROPERTIES: | | | |
|------------------------------------|----------|--------|--|
| Thermal Conductivity: | 2.56 | W/mK | |
| * Volume Resistivity @ 23°C: | ≤ 0.0004 | Ohm-cm | |

Epoxyes and Adhesives for Demanding Applications™

This information is based on data and tests believed to be accurate. Epoxy Technology, Inc. makes no warranties (expressed or implied) as to its accuracy and assumes no liability in connection with any use of this product.

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Fiber and Electro-Optical

- Die-attaching LED chips in surgical lighting products, whether light guides or headlamps
- A very shiny and reflective metal appearance, suitable as “opto-mirrors” found in fiber optic sensor/catheter devices
- As a very high thermal conductor, it is an excellent choice for thermal management and TIM applications, in LEDs and lasers

Radiation and Imaging

- MED-H20E is an Electrically Conductive Adhesive (ECA) used in X-ray detection technologies with scintillator crystal and photodiode arrays as it can be easily dispensed, stamped or screen printed onto PCB/substrates, using direct chip or flip chip attachment processes
- Also used in Ultrasound: PZT/Ferro-electronics using ECA for PZT/Au connections to matching PCB, for ultrasound imaging arrays, vibration resistant adhesive

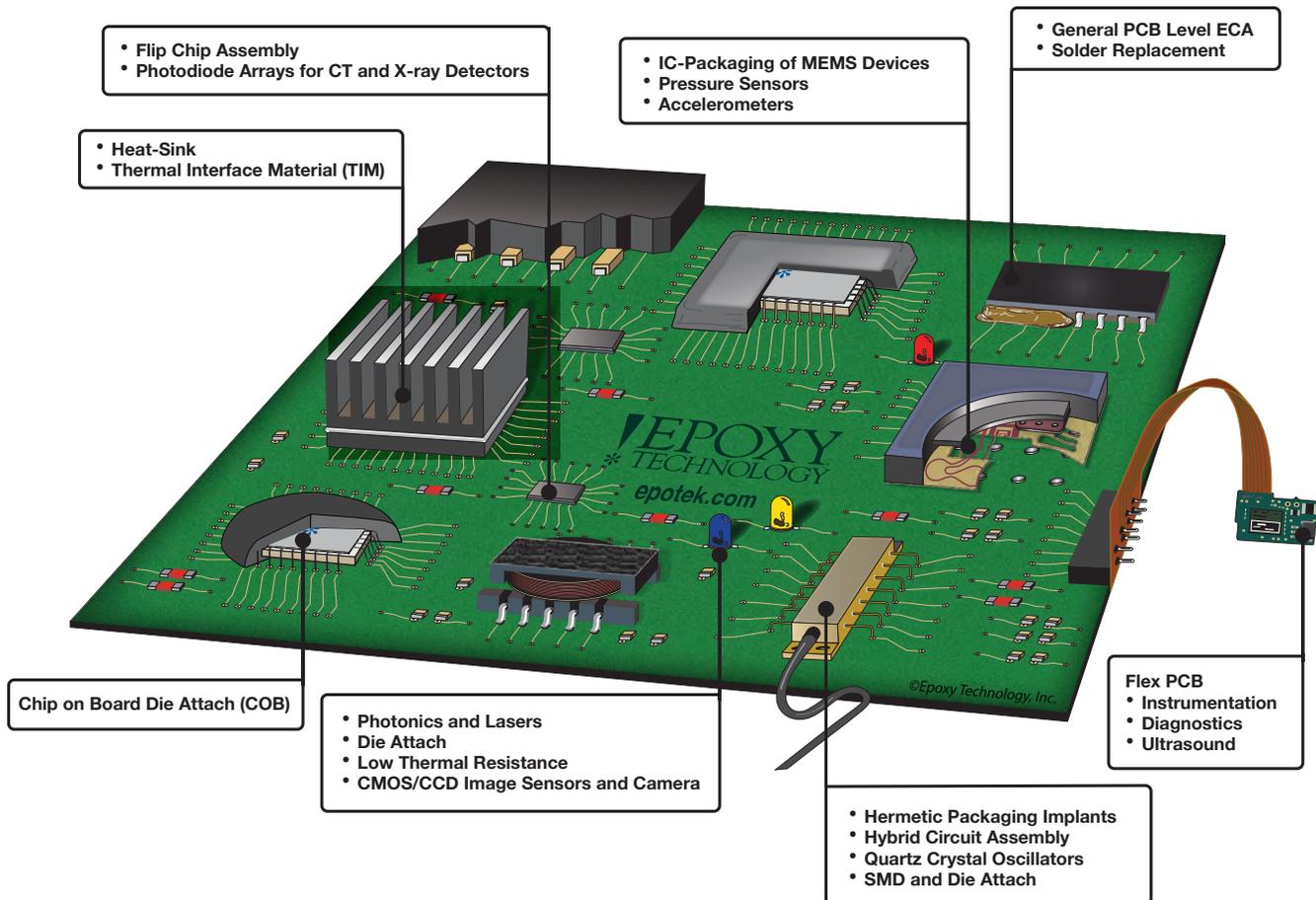
Devices, Implantable Devices and Diagnostics

- MED-H20E is a world leading ECA for in hybrid circuit assembly and hermetically sealed microelectronics for multiple types of implants such as: cardiac, cerebral, spinal, ophthalmic, neurostimulator and cochlear
- Used in electrically contacting chips, SMDs, PCBs, ground and lead-wires; suggested contacts include: Au, Ag, AgPd, Pt, PtIr, SST and nitinol
- Connecting RFID chips to their antenna coil, whether an implant or an endoscope capsule
- A favorite ECA among ISO 13485 medical devices contract manufacturers
- Commonly used ECA for hearing aids using hybrid, ECM or MEMS technology

Surgical Tools

- Connecting RFID chips to their antenna coil for instrument tracking through sterilization cycles

Adhesive Applications for EPO-TEK® MED-H20E



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Biocompatibility Approval

- EPO-TEK[®] MED-H20E cured at 150°C for 1.5 hours has been tested and is ISO 10993 certified, meeting Hemolysis (10993-4), Cytotoxicity (10993-5), Implantation (10993-6), Intracutaneous (10993-10), Sensitization (10993-10) and Systemic Toxicity (10993-11) test protocols.

Sterilization Information

- MED-H20E contains silver which should never be exposed to moisture or bio-fluids since an oxide layer will form, compromising performance and reliability. Therefore it should always be protected, via semiconductor packaging methods, isolating it from its hostile sterilization environments such as: ETO, autoclave and Vaporized Hydrogen Peroxide (VHP) plasma.

Packaging Availability

- EPO-TEK[®] MED-H20E is available in specialty packaging such as Pre-Mixed Frozen Syringes (PMF), Bi-Paks, or bulk (A & B containers).
- A Bi-Pak video tutorial can be found here:
<http://www.epotek.com/site/technical-material/application-video-tutorials/117-effective-handling-and-mixing-of-epo-tek-®-bi-packs.html>
- A video tutorial on handling frozen syringes can be found here:
<http://www.epotek.com/site/technical-material/application-video-tutorials/231-proper-receiving-and-thawing.html>



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