

**LED Applications** use epoxy materials in two areas: one is needed for **high thermal** and **electrical conductivity** as well as **reflectivity** to maximize efficiency and performance in die attach applications, the other for **protecting** the die attach elements with **encapsulation**.

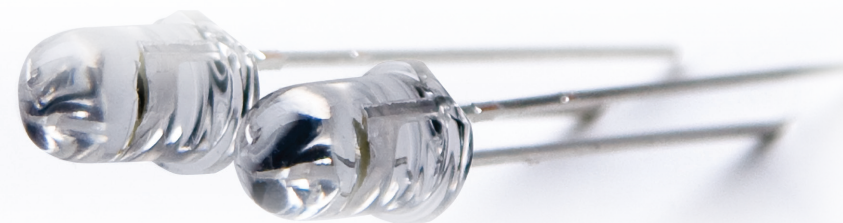
**EPO-TEK®** high thermal and electrical conductivity, low thermal resistance, die attach adhesives (ECAs) are ideal for thermal management in LOW POWER and HIGH POWER LEDs. These specialty adhesives are easy to use and provide a shiny background for increased reflectivity.

Epoxy Technology also provides optical potting materials for LED encapsulation. Important characteristics of these products are that they provide high optical transmission, excellent moisture protection and resistance to yellowing.

ELECTRICALLY  
CONDUCTIVE

| EPO-TEK        | NO. of COMPONENTS | COLOR Before/ After CURE (thin film) | CURE TEMPERATURE (minimal)                                    | VISCOSITY @ 23°C          | GLASS TRANSITION TEMPERATURE (Tg) | DIE SHEAR STRENGTH @ RT (80mil x 80mil) | INDEX OF REFRACTION (Nd) | SPECTRAL TRANSMISSION                     | TGA DEGRADATION TEMPERATURE | CTE Below Tg/ Above Tg (in/in/°C)               | POT LIFE (@ room temp.) | SHELF LIFE (@ room temp.) |
|----------------|-------------------|--------------------------------------|---|---------------------------|-----------------------------------|---|--------------------------|---|-----------------------------|---|-------------------------|---------------------------|
| <b>EK1000</b>  | One               | Silver/Silver                        | 200°C – 30 min<br>150°C – 1 hour + 200°C – 1 hour (post-cure) | 1,800-3,600 cPs @ 100 rpm | ≥80°C                             | >10 kg/3,400 psi                        | N/A                      | N/A                                       | 357°C                       | 38 x 10 <sup>-6</sup><br>94 x 10 <sup>-6</sup>  | 2 weeks                 | 1 year @ -40°C            |
| <b>H20E</b>    | Two               | Silver/Silver                        | 175°C – 45 seconds<br>80°C – 3 hours                          | 2,200-3,200 cPs @ 100 rpm | ≥80°C                             | >5 kg/1,700 psi                         | N/A                      | N/A                                       | 425°C                       | 31 x 10 <sup>-6</sup><br>158 x 10 <sup>-6</sup> | 2.5 days                | 1 year                    |
| <b>H20E-HC</b> | Two               | Silver/Silver                        | 175°C – 30 min<br>150°C – 1 hour                              | 3,500-6,000 cPs @ 50 rpm  | N/A                               | >5 kg/1,700 psi                         | N/A                      | N/A                                       | 372°C                       | 53 x 10 <sup>-6</sup><br>80 x 10 <sup>-6</sup>  | 2.5 days                | 1 year                    |
| <b>301</b>     | Two               | Clear/Colorless                      | 65°C – 1 hour<br>23°C – 24 hours                              | 100-200 cPs @ 100 rpm     | ≥65°C                             | >10 kg/3,400 psi                        | 1.519                    | >98% @ 400-700 nm<br>>97% @ 700-2500 nm   | 430°C                       | 39 x 10 <sup>-6</sup><br>98 x 10 <sup>-6</sup>  | 1-2 hours               | 1 year                    |
| <b>301-2</b>   | Two               | Clear/Colorless                      | 80°C – 3 hours<br>23°C – 2 days                               | 225-425 cPs @ 100 rpm     | ≥80°C                             | >15 kg/5,100 psi                        | 1.5318                   | >99% @ 400-1200 nm<br>>98% @ 1200-1600 nm | 360°C                       | 61 x 10 <sup>-6</sup><br>180 x 10 <sup>-6</sup> | 8 hours                 | 1 year                    |
| <b>302-3M</b>  | Two               | Clear/Colorless                      | 65°C – 3 hours<br>23°C – 24 hours                             | 800-1,600 cPs @ 100 rpm   | ≥55°C                             | ≥10 kg/3,400 psi                        | 1.5446                   | > 95% @ 460-1620 nm                       | 351°C                       | 57 x 10 <sup>-6</sup><br>193 x 10 <sup>-6</sup> | 1 hour                  | 1 year                    |

N/A - not applicable, as these are filled systems



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For ordering information contact us at: Epoxy Technology, Inc. • 14 Fortune Drive • Billerica, MA 01821 Tel: 978-667-3805 • Fax: 978-663-9782