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## SILICONES FOR LED & LIGHTING APPLICATIONS

ADHESIVES

POTTING COMPOUNDS

THERMAL TRANSFER MATERIALS

OPTICALLY CLEAR ENCAPSULANTS

# SILICONES FOR LIGHTING

## HEAT DISSIPATION

The need for efficient transfer of heat is a key design requirement as components continue to reduce in size and increase in power, this is particularly apparent with LEDs. This unwanted heat must be dissipated away from the components to maintain performance and avoid premature failure or reduced light output. CHT **SILCOTHERM**<sup>®</sup> silicones are very effective in performing this function and providing other benefits such as adhesion, protection from vibration and moisture or other environmental contaminants.

### **SILCOTHERM**<sup>®</sup> Adhesives

- ▶ RTV & Heat cured, including fast cure 2-Part RTV
- ▶ Flowable and Paste versions
- ▶ Thermally conductive up to 2.3W/mK
- ▶ UL 94 V-0 approved materials
- ▶ High temperature resistance up to +260°C

### **SILCOTHERM**<sup>®</sup> Encapsulants:

- ▶ RTV & Heat cured
- ▶ Range of viscosities down to 1950 mPa.s
- ▶ Thermally conductive up to 2.1W/mK
- ▶ UL 94 V-0 approved materials
- ▶ High temperature resistance up to +260°C

### **SILCOTHERM**<sup>®</sup> Greases or Compounds:

- ▶ Thermally conductive up to 2 3.0 W/mK
- ▶ Non-setting work stable
- ▶ High temperature resistance up to +200°C

## OPTICAL PERFORMANCE

Optical performance is greatly affected by what is in front of the LED. Encapsulants used to protect the LEDs will need a high degree of optical clarity and resistance to yellowing when exposed to UV light. CHT Silicone encapsulants include products with UV resistance and optical clarity.

### **Optically Clear Encapsulants:**

- ▶ UV Resistant
- ▶ Range of harnesses from Gels up to 65 Shore A
- ▶ Low viscosities down to 630 mPa.s

## LENS CONTAMINATION

Silicone adhesives are ideal for sealing and bonding fixtures, lenses and enclosures. However, traditional silicone sealants produce by-products when exposed to heat which can leave traces of impurities in the inside of lenses and impair optical performance. CHT have a number of low outgassing silicone adhesives that will not leave any impurities on the lens.

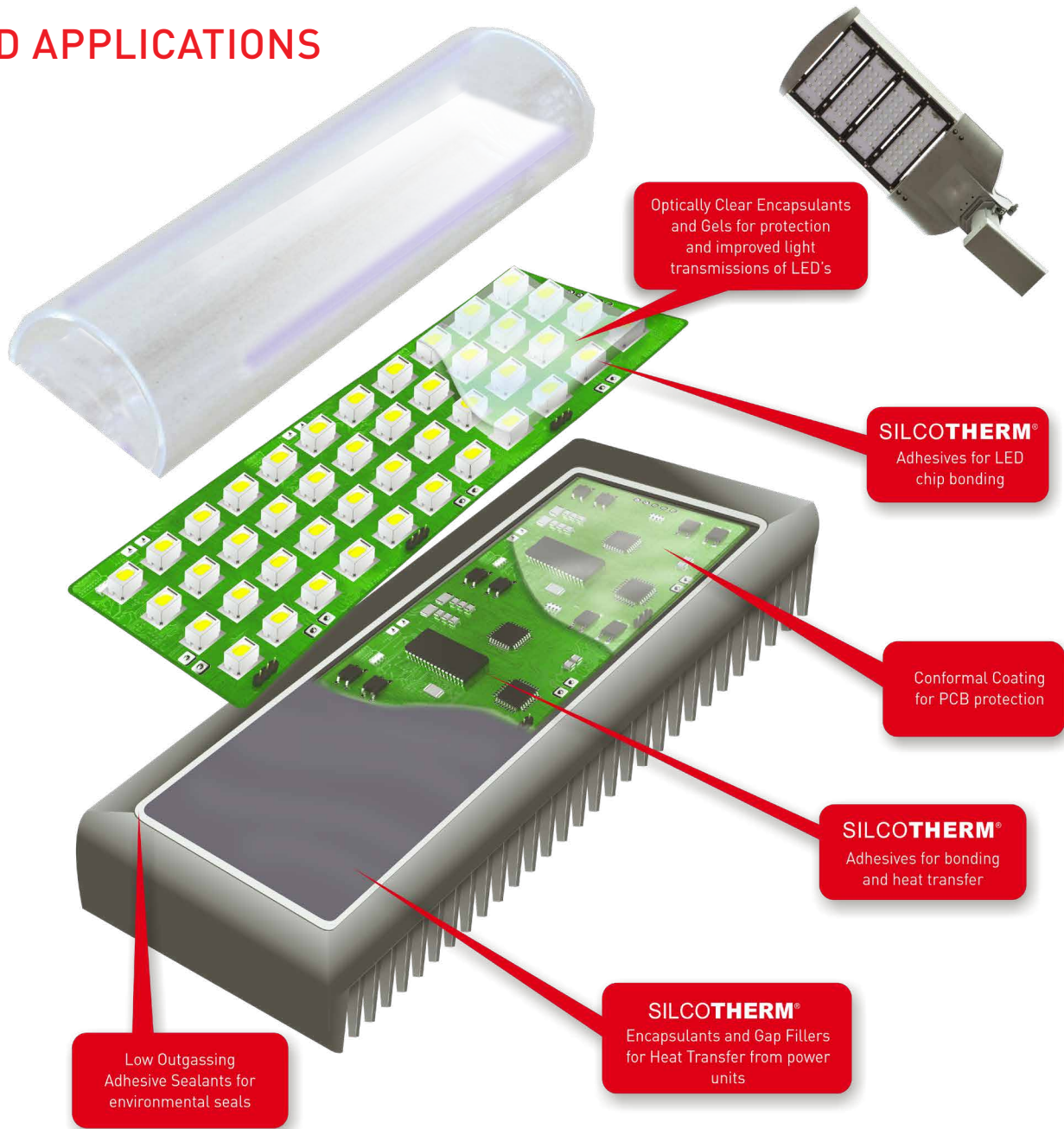
## PCB PROTECTION

Protecting PCBs in critical applications which are exposed to harsh environmental working conditions is essential, if product failure is to be avoided. A conformal coating, silicone or acrylic, is normally applied as a thin layer across the surface of a PCB, covering all components and delicate wiring.

CHT coatings are effective, as they maintain good adhesion to all the component substrates, are unaffected by changes in operational temperature and are resistant to contaminants, such as moisture and chemicals. Their ability to flow around, under and over the components without leaving areas exposed to the atmosphere, especially on sharp edges, is very important.



# LED APPLICATIONS



## Summary of CHT Silicone Materials & Applications

Silicone Material	Heat Dissipation	Encapsulation & Potting	Bonding & Sealing	Optically Clear Potting	PCB Coating
1-Part - RTV Paste	✓		✓		
1-Part - RTV Flowable		✓	✓		✓
1-Part - RTV Self Level	✓		✓		
2-Part - RTV Paste Fast Cure	✓		✓		
1-Part - Heat Cured Paste	✓		✓		
1-Part - Heat Cured Flowable	✓	✓	✓		
2-Part - RTV Flowable		✓			
2-Part - Heat Accelerated RTV	✓	✓		✓	
2-Part - Heat Cured		✓		✓	

# MANUFACTURING SILICONE COMPOUNDS FOR OVER 40 YEARS

CHT have acquired an enviable reputation for producing high quality specialist chemicals which have been proven to perform to the highest standards in the most demanding applications. With the acquisition in 2017 of the ICM Silicones group, including ACC Silicones Ltd, Quantum Silicones and ICM Products, they have further enhanced their capabilities, industry knowledge and global reach within the silicone market. Key industries serviced include the aerospace, electronics and automotive industries.

CHT have extensive R&D facilities located throughout the world and much of our research work is focused on electrical and electronic applications developing coatings, thermal transfer compounds and neutral cure sealants. Our customer focused development programme and flexible production facilities enable us to keep pace with the needs of today's modern production methods and design requirements.

Qualified, experienced sales and technical staff are readily available to make site visits to advise on product selection and production methods. Our expertise extends into all areas of 1 and 2 part RTV silicone chemistry with a strong bias towards application based solutions.

The enlarged CHT silicones expertise enables our customers to benefit from technical and manufacturing support within Europe, China and the USA.

## BESPOKE SERVICE

Our adaptable facilities based upon batch production allow us to offer formulations developed to meet very specific application requirements. Subject to strict commercial evaluation we can chemically engineer our products and change any of the following properties:

- ▶ Rheology – paste to free-flowing low viscosity
- ▶ Cure speed and tack free times
- ▶ Thermal conductivity
- ▶ Hardness
- ▶ Colour
- ▶ Operating temperature range
- ▶ Cure mechanism
- ▶ Packaging and delivery systems

**We are CHT, Smart Chemistry with Character.**  
Together with ICM, ACC and QSi we are the most customer centric specialty silicones expert. We are committed to finding your individual solution.

**CHALLENGE US NOW!**

Get in touch with us!  
[silicone-experts.cht.com](http://silicone-experts.cht.com)

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