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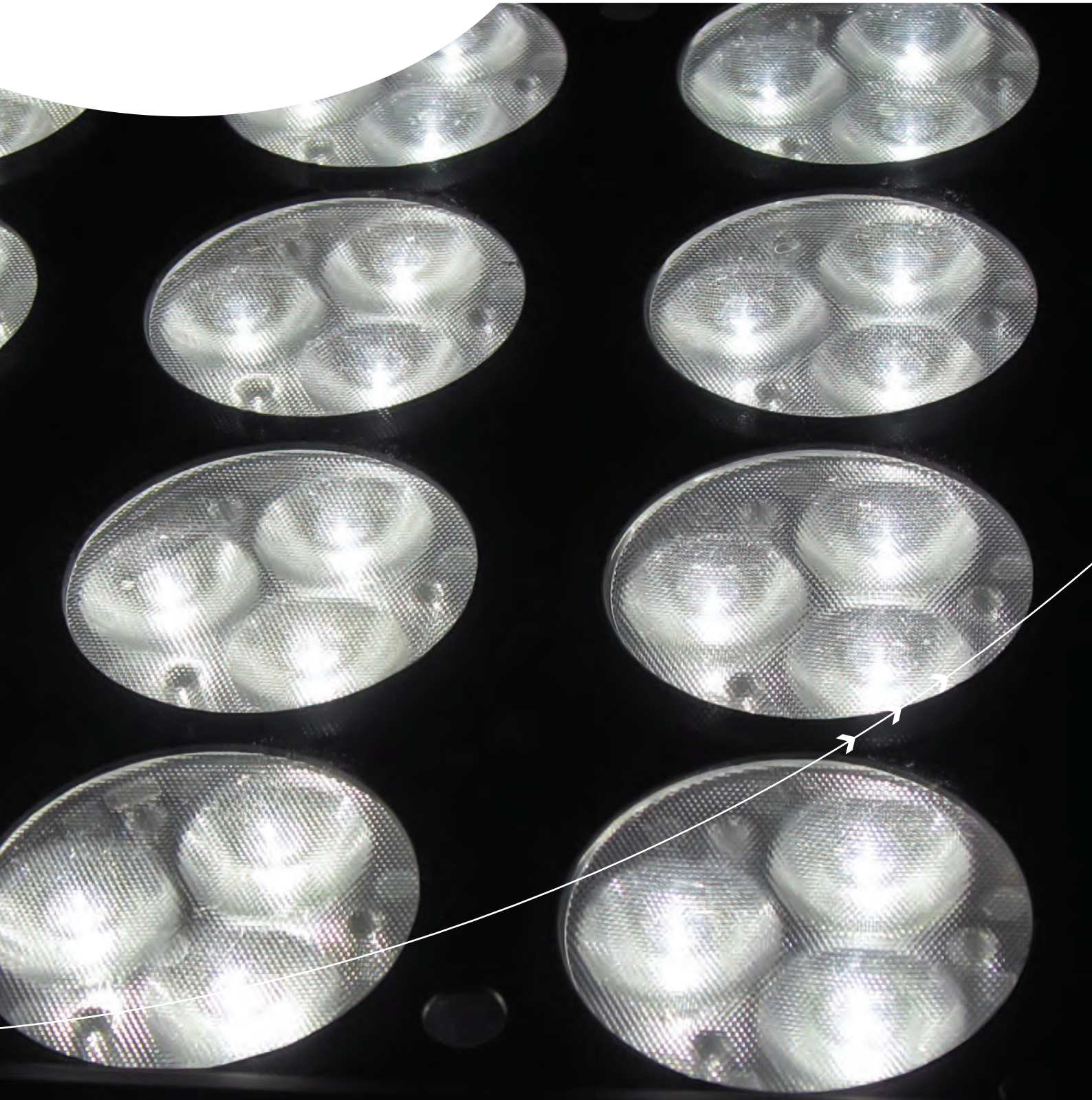
*Solutions for LED Assembly*



# *Adding value to LED Lighting*

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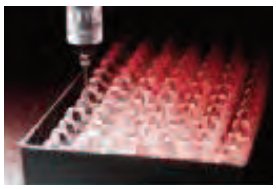
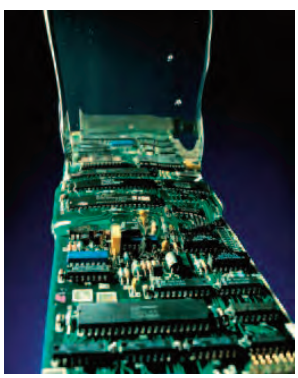
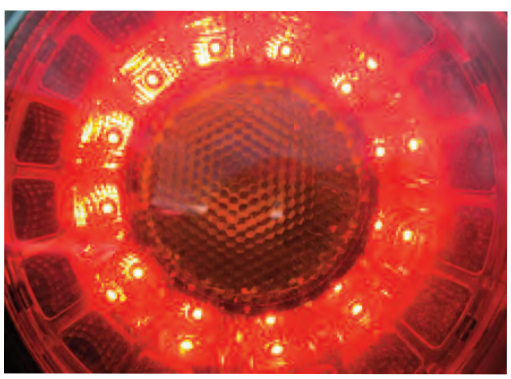
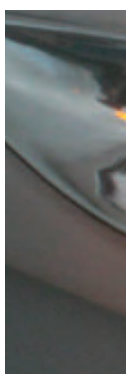
# LED Encapsulants, LED Potting and Protection

Techsil provide a wide range of materials for LED assembly, sealing and protection from harsh environmental factors such as moisture ingress, vibration and thermal shock. Designed to have, in particular, an excellent refractive index, all materials have great UV stability. Techsil's materials are used in but not limited to LED light engines, linear modules, luminaires, housings, architectural lighting, security and flood lighting, outdoor LEDs, oceanic LEDs, panel mounted LEDs and PCB mountings for example.

| Product | RTV27844 Clear | RTV28418 Pearl | VT2420LV Clear | VT2420HD Clear | PU20490 Black | PU23930 Pearl |
|---|---|---|---|---|---|---|
| Chemistry | 2 part Silicone | 2 part Silicone | 2 part Polyurethane | 2 part Polyurethane | 2 part Polyurethane | 2 part Polyurethane |
| Features | Potting & Encapsulation. Excellent environmental resistance RI=1.41 FDA Approved | UL-94 HB approved Primerless Adhesion, Diffused Light | Clear Potting, RI=1.48 Pourable | Clear Potting RI=1.48 Pourable Scratch Resistant | UL-94 V0 approved, Improves reflection | Scratch resistant, high mechanical strength Opalescent |
| Density | 1.02 | 1.0 | 1.11 | 1.09 | 1.65 | 1.11 |
| Mixed Viscosity | 4,000 mPas | 1500 mPas | 700 mPas | 1,700 mPas | 6,000 mPas | 400 mPas |
| Mix Ratio | 10:1 | 20:1 | 1:1 | 1:1 | 8.4:1 | 1:1 |
| Pot Life | 4 hrs | 100 mins | 15mins | 25 mins | 6 hrs | 30 mins |
| Initial Cure Time | 1 hr at 100ºC 4 hrs at 65ºC | 3 hrs | 2 hrs | 48 hrs | 7 days | 60 mins |
| Full Cure | 24 hrs | 72 hrs | 48 hrs | 72 hrs | 7 days | 48 hrs |
| Shore Hardness | 44A | 18A | 70A | 80D | 90A | 30D |
| Thermal Conductivity | 0.45 W/mK | 0.18 W/mK | 0.25 W/mK | 0.25 W/mK | 0.75 W/mK | 0.25 W/mK |
| Temp. Performance | -55º to 204ºC | -60º to 204ºC | -55º to 120ºC | -55º to 120ºC | -40º to 125ºC | -55º to 120ºC |





# Thermal Management Sealants and Adhesives

When designing luminaires and modules, LED Design Engineers use a variety of liquid materials to provide environmental protection, extend service life and improved light performance. Techsil's materials are easy to mix and process; and in addition they have thermal management properties to dissipate heat from the rear of the diode.

| Product | RTV1084 Grey | RTV12130 Clear | RTV12120 Clear | RTV27462 Dark Grey | EP21292 Black | PU2600FS White |
|---|---|---|---|---|---|---|
| Chemistry | 1 part Silicone | 1 part Silicone | 1 part Silicone | 2 part Silicone | 2 part Epoxy | 2 part Polyurethane |
| Features | Thermal Management. Adhesive Non-corrosive | Coating for PCB protection. Adhesive | Seals lens in a bezel | UL-94 V0 Flame Retardent 1:1 Pourable Potting Adhesive | UL94-VO, Thermal Management & High Temp | Heat dissipation, can co-cure with VT2420LV Approvable to UL94 V0 Flame retardent |
| Density | 2.11 | 1.04 | 1.04 | 1.38 | 1.96 | 1.48 |
| Mixed Viscosity | 350,000 mPas | 2,500 mPas | 50,000 mPas | 1270 mPas | 9,500 mPas | 3,000 mPas |
| Mix Ratio | N/A | N/A | N/A | 1:1 | 9.6:1 | 3.8:1 |
| Initial Cure Time | 4 mins | 10 mins | 10 mins | 1 hr at 100ºC 4 hrs at 64ºC | 6 hrs | 30-60 mins |
| Full Cure | 24 hrs | 24 hrs | 24 hrs | 48 hrs | 36 hrs | 7 days |
| Shore Hardness | 67A | 30A | 20A | 62A | 92D | 80D |
| Thermal Conductivity | 2.3 W/mK | 0.18 W/mK | 0.18 W/mK | 0.31 W/mK | 1.3 W/mK | 0.8 W/mK |
| Temp. Performance | -50ºC to 220ºC | -55ºC to 200ºC | -55ºC to 200ºC | -60ºC to 204ºC | -55ºC to 200ºC | -55ºC to 140°C |

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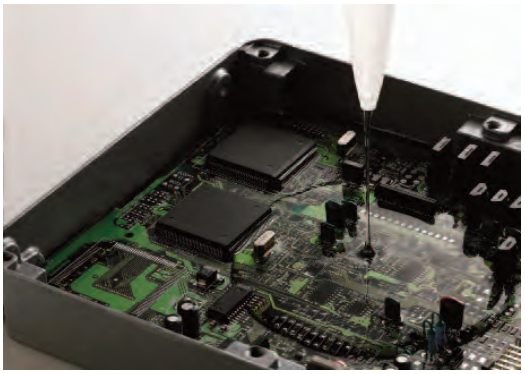
# Thermal Compounds, Greases and Tapes

Techsil recognised the need for a full suite of thermal management materials specifically for the LED lighting industry and have selected some high performance compounds, greases and pressure sensitive adhesive tapes for bonding heat sinks and providing an excellent thermal path.

| Product | TIM11007 White | TIM11021 Grey | TIM11030 Grey | TIM15604 Amber | TIM11311 Green | TIM11330 Sky Blue |
|---|---|---|---|---|---|---|
| Chemistry | 1 part Silicone Compound | 1 part Silicone Compound | 1 part Silicone Grease | Kapton Polyamide Film & Silicone Coating with Acrylic PSA | Soft ceramic filled silicone with PET release liner | Soft ceramic filled silicone with PET release liner |
| Features | Heat Transfer Compound<br>High Temperature Performance | High Thermal conductivity.<br>Low oil bleed and low weight loss at elevated temperatures | Higher Thermal conductivity.<br>Low oil bleed and low weight loss at elevated temperatures | Thermally conductive Management.<br>Double Sided Tape with release liners | Extremely soft Gap Filler<br>Very compliant<br>UL94 V0 rated<br>Suitable for low pressure environment | Gap Filler with excellent compression performance<br>Die-cutable<br>UL94 V0 rated<br>High Thermal conductivity |
| Density | 2.4 | 2.9 | 3.0 | 0.127mm Thick | 0.5-6.0mm Thick | 0.5-6.0mm Thick |
| Mixed Viscosity | Paste | Paste | Paste | D/S Tape | Pad | Pad |
| Thermal Conductivity | 0.7 W/mK | 2.1 W/mK | 3.0 W/mK | 0.4 W/mK | 1.1 W/mK | 3.0 W/mK |
| Temp. Performance | -54ºC to 204ºC | -40ºC to 150ºC | -40ºC to 150ºC | -29ºC to 149ºC | -54ºC to 200ºC | -54ºC to 200ºC |



Techsil Limited are the UK's leading technical supplier of potting, encapsulation, sealing, bonding and thermal management materials. Techsil work in close consultation with engineers to ensure the correct performance specification is achieved by building on our years of expertise with these concepts. Key material technologies are RTV Silicones, Polyurethane, Epoxy, UV-Curing Acrylic & Epoxy, Hot Melt Adhesives, Technical Industrial Tapes and others.

*Adding value to LED Lighting*

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