Dow Corning Granted Korean Patent for Industry-Leading LED Optical Silicone Encapsulant Technology

Seoul, South Korea – Dow Corning, a global leader in silicones, silicon-based technology and innovation, reported today that the Korean Intellectual Property Office (KIPO) granted a patent protecting the company’s high refractive index (RI) phenyl-based optical silicone encapsulant technology, which targets advanced LED lighting applications. Specifically, the patent protects the composition of curable organopolysiloxane chemistry used to formulate Dow Corning® Optical Encapsulant products, which offer numerous high-value benefits to LED devices. These benefits include improved light output, excellent mechanical protection of LED components and enduring gas barrier properties for enhanced reliability. The patent granted by the KIPO ensures only Dow Corning products are authorized to contain the patented technology.

“The KIPO’s decision is only the latest milestone in Dow Corning’s ongoing efforts to rigorously protect its diverse and multi-layered intellectual property family of advanced optical materials,” said Kaz Maruyama, global marketing director, Lighting Solutions, Dow Corning. “We applaud the KIPO’s action, which helps to validate prior decisions from patent offices in the European Union, the United States, Taiwan and Malaysia, as well as Japan, where we began developing this advanced technology more than a decade ago.”
Granted in early March, Patent 101499709 covers the composition of industry leading products such as Dow Corning® OE-6630, OE-7620 and OE-7651N Encapsulants. All deliver high RIs in the range of 1.53 to 1.55, compared to the lower RI of 1.41 that is typical of methyl-based silicone chemistries. While seemingly small, that difference can translate into about 7 percent more light output. Achieving a comparable improvement from an LED chip would require significant investment.

In addition to higher RI, Dow Corning’s broad portfolio of phenyl silicone packaging materials delivers photothermal stability suitable for many middle- and high-power general lighting applications. Compared to methyl-based technology, phenyl-based silicone encapsulants generally offer a stronger gas barrier, which helps protect key LED components such as silver electrodes and phosphor against moisture deterioration and sulfur corrosion. LED electrodes double as reflective elements, and phosphor is a key element of light conversion. As a result, enhanced gas barrier protection helps maintain both light output performance and reliability of LED packages.

“Patenting these high RI phenyl-based optical silicone encapsulants in Korea is an important step for Dow Corning and for its customers, who depend on the consistent high-quality and reliable high-performance that our LED encapsulants provide,” Maruyama said. “Supply chain integrity and consistent material quality will be critical competitive benefits as LED lighting aims to offer a credible, cost-effective alternative to conventional light sources.”

Over the past decade, the high efficiency and reliability afforded by Dow Corning’s phenyl silicones has helped establish the company as today’s recognized market and technology leader in optical encapsulants for high-performance LED applications. Virtually all of the company’s high RI encapsulants fall under the recently granted patent or its associated patent family. In addition, Dow Corning’s phenyl encapsulants are also protected by patents covering other advantageous aspects of Dow Corning technologies. Therefore, LED manufacturers and equipment manufacturers can be confident they are designing with high-performance encapsulant materials backed by strong international patent protection.
Dow Corning’s dedicated investment and innovation extends beyond high RI silicones, to encompass a broad range of materials solutions that aim to enable next-generation LED devices, including transparent and thermally conductive die attach adhesives phosphor film binders and white reflective materials.

**About Dow Corning**

Dow Corning (dowcorning.com) provides performance-enhancing solutions to serve the diverse needs of more than 25,000 customers worldwide. A global leader in silicones, silicon-based technology and innovation, Dow Corning offers more than 7,000 products and services via the company’s Dow Corning® and XIAMETER® brands. Dow Corning is equally owned by The Dow Chemical Company and Corning, Incorporated. More than half of Dow Corning’s annual sales are outside the United States. Dow Corning’s global operations adhere to the American Chemistry Council’s Responsible Care® initiative, a stringent set of standards designed to advance the safe and secure management of chemical products and processes.

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