

# Lighting Up Laptop Keyboards with Lite-On



**CHIMEI**  
a step up

**KEY CLIENT / INDUSTRY /  
APPLICATION INFO**

Lite-On: A Taiwan-based manufacturer of consumer electronics and electronic components since 1975

**OPPORTUNITY**

Setting a new standard for thinner laptop keyboards

**CHALLENGES**

Existing MABS (Transparent ABS) could not meet the needs of thinner keycaps for material strength and heat resistance

**SOLUTION**

Developed a new grade of PC resin in cooperation with Lite-On

**RESULTS**

- New PC-145K resin is the new go-to for key caps thinner than 0.55 mm
- New material also improved on impact strength, melt flow index, and recyclability

# CHIMEI's New PC Resin Hailed as Benchmark for Thin Yet Durable Key Caps

After identifying the emerging trend of thinner keyboards in the laptop market, we took the initiative to develop new materials that would cater to the market's changing expectations. Our observation was validated in 2016 when Lite-On approached us with a request for a new material that would allow for thinner key caps, while still maintaining toughness and rigidity. Despite the challenging nature of the endeavor, we were confident that our head start, coupled with the advantage of working alongside our partner, would yield the desired new material specifications.

## **Systematic Testing For Optimal Applicability**

We undertook a systematic process of simulation, reliability, and environmental tests to identify the right balance of properties in a new grade of PC resin. All potential issues and problems that could potentially arise amid real-life use were identified via extensive mold flow analysis and simulation tests.

This systematic process produced favorable results, and we achieved an R&D breakthrough. We reduced the thinness of the laptop keyboard key caps considerably compared to previous standards, to less than 0.55 mm, all while maintaining the impact strength, rigidity, and toughness required for constant daily use.

In addition, the melt flow index of this new PC resin increased greatly to 45g/10 min. The advantages were two-fold as this translates into greater production efficiency and optimizes the injection molding process, maximizing the filling of mold cavities. Also, we upgraded the new material's recyclability. Unused mold offcuts can now be re-used without being discarded. This reduces the overall amount of material required, avoids waste, and creates a cost-saving boon.

### **A New Benchmark**

"The new PC resin was exactly what we needed for making thinner, durable keyboards," says CH Tsai, senior material development manager at Lite-On. "Reducing operating costs and increasing production efficiency compared to previous materials just further added the appeal."

Our new PC resin has become the new standard for the industry, as most major manufacturers, including Lite-On, now use PC-145K for their laptop keyboards. Despite the keycaps becoming thinner, durability has not been sacrificed, creating a better end-user experience and hot sales of super-lightweight laptops

“ *There is a high degree of chemistry and rapport working with CHIMEI as the determination to ensure the success of the project is mutual, regardless of how difficult the task is.* ”

**CH Tsai,**  
Senior Material Development Manager  
Lite-On Technology



### **PC-145K**

High melt flow index, impact resistance, recyclability

#### **What is Melt Flow Index?**

Melt flow index is a measure of the ease of flow of melted plastics. Specifically, it is measured by how much melted plastic flows through a die in 10 minutes. A higher melt flow index represents easier and quicker production, resulting in better processability, higher yields, and greater output.

**CHIMEI**