低碳環氧樹脂材料

Low-Carbon Epoxy Resin Materials

因應電子產業淨零減碳與低碳材料需求，本技術以車廠瑕疵品回收單體結合生質原料，開發低碳環氧樹脂，並導入銅箔基板（CCL）及印刷電路板（PCB）製程驗證。所開發材料規格可對標市售環氧樹脂，兼具材料性能、製程相容性及減碳效益，可降低下游導入時的設備與製程調整成本。
目前已完成低碳樹脂、CCL / PCB 製造、電源模組至實際場域應用之全流程實證，並持續推進 UL認證，加速商品化與產業導入。

In response to the electronics industry’ s growing demand for net-zero carbon reduction and low-carbon materials, this technology utilizes recycled monomers recovered from automotive manufacturing waste and combines them with bio-based feedstocks to develop low-carbon epoxy resins for CCL and PCB applications. The developed materials are designed to match the specifications and performance of commercial epoxy resins while maintaining compatibility with existing manufacturing processes, thereby minimizing equipment and process modifications for downstream users.
Full-process validation has been completed, covering low-carbon resin production, CCL/PCB manufacturing, power modules, and real-world applications. UL certification is also being advanced to accelerate commercialization and industrial adoption.

技術特色

● 製程相容，規格對標市售品

可直接導入既有 CCL/PCB 配方與製程，維持加工性與材料性能，降低設備及製程調整需求。

Process Compatible, Commercial-Grade Performance Compatible with existing CCL/PCB formulations and processes while maintaining processability and material performance.

● 回收 × 生質雙低碳原料

結合車廠廢棄物回收單體與生質原料，降低原料端碳足跡，兼顧循環經濟與低碳效益。

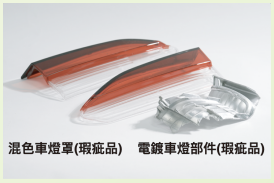
Recycled × Bio-Based Feedstocks
Combines recycled monomers from automotive waste with bio-based feedstocks to reduce carbon footprint at the raw-material stage.

● 維持既有產線，提升綠色競爭力

無須大幅改造既有產線即可導入低碳樹脂，協助供應鏈因應碳盤查與淨零減碳需求。

Existing Processes Retained, Green Competitiveness Enhanced Enables low-carbon resin adoption without major production-line modifications, supporting supply-chain carbon management and net-zero goals.







解決方案/應用案例

應用案例：低碳電源模組PCB
本技術已將低碳環氧樹脂導入銅箔基板樹脂配方，完成CCL製作、PCB加工及電源模組板應用驗證，建立由材料端至終端產品之完整實證鏈結。
應用流程：
低碳環氧樹脂→CCL製造→PCB製造→電源模組板→場域應用

The developed low-carbon epoxy resin has been incorporated into copper-clad laminate resin formulations, followed by successful validation through CCL fabrication, PCB manufacturing, and power module board applications, establishing a complete validation chain from raw materials to end-use products.
Application Flow :
Low-Carbon Epoxy Resin → CCL Manufacturing → PCB Manufacturing → Power Module Board → Field Application

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