

# CASE STUDY

## EziSurg Medical Relies on SABIC's ULTEM™ Resin for High-performance Premium Ultrasonic Scalpel Shears

### THE CUSTOMER

EziSurg Medical Co., Ltd. (ESM) specializes in the development and commercialization of high-end, minimally invasive surgical instruments. The Shanghai-based company, a China market leader in medical scalpel systems, was looking for a material solution to help maintain and build on their competitive strength in these demanding medical devices, both locally and abroad. Their goal was to find a polymer capable of outperforming incumbent materials, including polysulfones, in the next generation of their fast-cutting easyUS® premium ultrasonic scalpel shears.

“With SABIC’s high-performance ULTEM™ resin and their outstanding project support, we managed to get our new scalpels to the market in time to maintain our competitive edge.”

**Chen JIDONG**  
Vice President of R&D, EziSurg Medical



### THE CHALLENGE

Basic material requirements included long-term thermal and mechanical stability, as well as ease of processing. In addition to the many clinical performance characteristics, it was important that the new solution supported a safe and clean surgical environment. Lastly, design flexibility was desired to help achieve an optimal balance of flexural strength and toughness to address the torque force performance requirements needed during device assembly and surgery.

### THE SOLUTION

Leveraging comprehensive local and technical support from SABIC in material selection, including part and mold design, ESM succeeded in developing a new range of scalpels with components molded in ULTEM™ resin, a high-performance polyetherimide (PEI) material that met the manufacturer’s critical expectations. The smooth collaboration between the two teams helped accelerate the time to market for the redesigned instruments. SABIC also supplied significant data support, which included key material performance characteristics for this application, and assisted the customer in optimizing the final processing parameters.

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## ULTEM™ RESIN PROVIDED:

- Outstanding wear and abrasion resistance to minimize the generation of small particles from the frequent assembly and disassembly of the scalpel devices, which could potentially cause contamination.
- Excellent hydrolytic stability and chemical resistance for flexible sterilization (gamma, EtO, plasma, autoclave) and ease of cleaning with medical disinfectants.
- Long-term heat resistance (RTI >170°C) for withstanding multiple autoclave cycles.
- Outstanding dimensional stability, as well as an optimum balance of mechanical strength and ductility, which have been instrumental in enhancing reliability and extending the usable life of the surgical instruments.
- High flow capability for greater design freedom and cost-efficient injection molding of complex components.

In addition, ULTEM resins from SABIC comply with certain medical and environmental standards and regulations, including FDA, USP Class VI, ISO 10993, WEEE and RoHS.

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