EASTMAN

Support for **molding precision medical devices**

World-class capabilities for small-bore connectors and other complicated parts

The growing need for precision molding of complicated medical components has created an unmet need for advanced medical polymers. Many companies have found solutions in medical grades of Eastman Tritan™ copolyester—and the support provided by Eastman.

The success of Tritan is built on its unique combination of properties that includes:

- Biocompatibility—meets ISO 10993 and/or USP Class VI requirements
- Excellent chemical resistance against lipids, medical disinfectants, powerful drugs and their carrier solvents, and solvents used in secondary applications
- High impact strength—excellent durability
- Outstanding clarity and functional integrity after sterilization (EtO and gamma irradiation)
- Made without bisphenol A (BPA), halogens, or *ortho*-phthalate plasticizers
- Compliance with ISO 80369 standards (*http://www.eastman.com/Pages/Small_bore_connectors.aspx*)

Eastman provides the region's highest level of technical support for those who design and mold complicated medical components. Two excellent examples of this support are demonstrated in a three-way stopcock that was designed and molded in Eastman's China Technology Center (CTC) in Shanghai and the development of a 32-cavity demonstration R&D mold.

Three-way stopcock produced at our China Technology Center, drawing on in-house testing, molding, and application development capabilities

Expertise in multicavity processing of small medical parts

Eastman has made a commitment to working with customers to find precision multicavity molding solutions using Eastman Tritan™ copolyester in small, complicated medical parts. While Tritan was still relatively new to the medical device market, Eastman designed its own demonstration R&D mold and collaborated with a leading mold maker. The mold is a 32-cavity hot runner/valve gate system that shows the efficiencies possible when using Tritan to produce parts with outstanding clarity, toughness, chemical resistance, and sterilization stability—without BPA, BPS, or other chemicals of concern.

Watch a short video about this showcase mold (*http://www.tritanmoldit.com/medical/video-library#32-Cavity Mold*), or read an in-depth blog (*https://www.tritanmoldit.com/blog/efficient-multicavity-processing-small-medical-parts*) at TritanMoldIt.com, Eastman's online technical information center.

To learn more about Eastman support capability for the Asia Pacific region, contact (65) 6831-3100.

The table shows how Eastman added value at three key phases in the commercialization of the three-way stopcock.

Examples of Eastman capabilities and applied support

Phase	Eastman capabilities	Three-way stopcock application
Product development	• Technical guidance for part design; mold flow analysis to improve molding success rate • Recommend best raw material and grade • Provide comprehensive data for chemical resistance	• Mold flow analysis – Determine how product will fill the mold – Optimize position of weld line • Finite-element analysis helped determine shrinkage • Use design of experiment (DOE) to improve product design; optimize outside and inside diameters, thickness, and joint surface; and determine optimal design combination
Mold development	• Optimize the structural design of the mold • Recommend water channel design for optimum mold cooling • Provide technical recommendations for secondary processing	• Use mold flow analysis to help: – Determine position and size of runner – Avoid shrinkage – Determine position of venting • Improve success rate of trial
Product testing and improvement	• CTC (China Technology Center, Shanghai) has first-class equipment and technical capability to conduct: – Mechanical property testing – Chemical resistance testing – Intrinsic viscosity (IV) testing – Chemical analyses – Testing for other physical properties • Molding lab (Shanghai) – Conduct research for typical applications – Help clients mold samples	• Use DOE for the following tests to improve product performance: – Twist tests – Leaking tests – Simulated sterilization tests – Aging tests • Determine optimal pretreatment technology

EASTMAN
The results of **insight**™

Eastman Corporate Headquarters
P.O. Box 431
Kingsport, TN 37662-5280 U.S.A.

U.S.A. and Canada, 800-EASTMAN (800-327-8626)
Other Locations, +(1) 423-229-2000

www.eastman.com/locations