Cobe Increases Product Quality With New Light Curing Adhesive

Loctite Partners With Cobe Design Team In Early Stages

Cobe Cardiovascular, Inc. of Arvada, Colorado, is a leading manufacturer of blood collection and processing systems, as well as extracorporeal systems for cardiovascular surgery. In 1993, Cobe, like many other device manufacturers, used solvents for bonding several device components and subassemblies. OSHA and the EPA were encouraging industries to move away from using solvents, and Cobe particularly wanted to eliminate their use of methylene chloride. Toward this goal, Cobe began to redesign most of their assemblies to accept light curing (UV or visible) adhesives. Most of Cobe’s devices were made of glass-like plastics. Because of this, their engineers required clear bonds for aesthetic purposes with no stress cracking or crazing.

Situation:

Cobe’s blood salvage or collection reservoir is an oval polycarbonate device, approximately 12” tall, 8” in diameter, and 4” deep. The reservoir is a one-time use, or disposable device. Its purpose is to collect and hold blood during open heart and chest surgery, or arthroscopic and ER (emergency room) procedures. Up to 3,000 cc’s of blood may be stored in the reservoir, awaiting passage into a 250 cc centrifuge, which cleans the blood and returns it to the patient after the surgical procedure is complete.

The collection reservoir consists of a clear, polycarbonate lid assembly joined to a polycarbonate bucket. The joint between the lid and bucket is a tongue and groove configuration. The goal was to create a strong, elastic joint that could withstand repeated stresses with no chance of leakage.

Solution:

Working with the local Loctite Adhesives & Sealants Specialist, Cobe learned that Loctite had recently introduced several new UV and Visible Light Curing adhesives designed specifically for medical devices made of polycarbonate. Adhesive samples were tested with Cobe parts in order to determine which medical device adhesive was best able to meet their requirements.

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Solution (continued):
Loctite 3211 outperformed all products tested, including competitor’s products. The groove served as a channel or trough, allowing the 3211 adhesive to be dispensed into it, and the two pieces bonded together, providing a hermetic seal. The viscosity of 3211 (10,000 cPs) allowed the adhesive to fill the gap consistently for a clean bond of the two parts. Further, the Loctite adhesive did not stress crack the parts, and when cured, produced a clear joint.

“We’ve enjoyed a long-standing relationship with Loctite,” claims Jim Lambrechts, Cobe Purchasing Agent. “Having them work with us at the design stage made sense. Their technical and service contacts have always been responsive to our needs — providing samples, testing and technical service is part of the package.”

Results:
Environmental concerns and issues associated with solvent bonding were eliminated with the new design and with Loctite 3211 — a safer, faster and more consistent bonding choice. Loctite 3211 light curing adhesive provided the aesthetic bondline Cobe wanted — one that was clear and barely perceptible. It also provided the structural strength that Cobe needed to maintain a competitive edge in the marketplace.