

Castaldo®

The wait IS over!!!

**Castaldo's
VLT® sil-
icone
molding
rubber
2004 AJM
Innovation
award
winner**



The number of jewelry manufacturers who have embraced CAD/CAM technology is on the rise, and that trend is not going to stop anytime soon. For many manufacturers, converting to CAD/CAM has meant increased efficiency and better profits. But the process isn't foolproof just yet—and jewelry industry suppliers such as Castaldo in Franklin, Massachusetts, are developing products to streamline it.

VLT molding rubber, the most recent trademarked product from Castaldo, allows manufacturers working in CAD/CAM to use their resin or wax patterns as master models and mold them in as little as one hour, eliminating the need to go through the time-consuming process of creating a metal master model. "Until very recently, you couldn't directly cast the plastic resin models from rapid prototyping systems because they wouldn't burn out cleanly," says Michael Knight, president of Castaldo. "Using cold-mold compounds that wouldn't damage the pattern, casters had to make a liquid rubber mold of the model, cure it overnight, and then inject the wax. They would then cast the wax, which is another overnight process, to get the master model. Finally, they'd make a traditional rubber mold, shoot waxes, and start production casting.

Altogether, the process took more than two days." Recent developments in CAD/CAM model materials have improved the castability of rapid prototype patterns, but many casters still prefer to make a mold of the resin model and shoot waxes—and they want to do it as fast as possible. "More and more people were calling us to say they were running CAD/CAM and using our liquid products, such as LiquaCast, which is a two-part liquid that requires an 18-hour cure," Knight says. "It's ideal for patterns produced by CAD/CAM, but people were telling us that 18 hours is too long. I'd explain that it's a matter of how you schedule the work. You pour at four in the afternoon, go home, and when you come back in the morning, it's fine. For some people that works. Others want fast, fast, fast." And now they can have fast, fast, fast.

VLT (which stands for very low temperature) can be cured at temperatures ranging from 160°F (71°C) to 180°F (83°C), well below the softening point of most commercially available rapid prototype materials. At a temperature of 160°F, a standard 3/4-inch mold will be cured and ready for injection in 90 to 120 minutes. At 180°F, that time is reduced to 30 to 45 minutes. Knight notes that, as with traditional casting rubbers, longer curing times mean better molds. "The longer the

cure, the more likely it is that the rubber will flow into every nook and cranny to provide detail,” he says. In addition, when VLT cures, it shrinks just 1.4 percent. “It’s not zero,” Knight says, “but it’s fairly minor.”

Because it is soft and puttylike, VLT requires much less pressure during vulcanization than traditional molding rubbers, and thus can be used with almost all plastic patterns. (For extremely delicate patterns, Knight suggests using liquid compounds to avoid damage.)

Perhaps one of the greatest benefits of VLT is that it makes rapid prototyping more useful on a mass production basis. “Enabling rapid prototype models to be used directly as master models is a significant development for the jewelry industry,” says Dr. Christopher Corti of the World Gold Council London, a judge of the 2004 AJM Innovation Awards.

“The significant time savings makes rapid prototyping more useful for large-scale manufacturing.” “For anything more than one or two pieces, you want a mold you can inject wax into on a production basis and get thousands of wax pieces,” Knight adds. “On a practical level, you can’t run your rapid prototyping machine a thousand times. It’s too expensive and time-consuming.”

With VLT, a prototype piece can be directly molded, and the subsequent wax models can be used to make thousands of castings. Knight notes that VLT



also works well with traditional hand-carved waxes. Another plus in VLT’s favor is that, when you get right down to it, it’s molding rubber. It acts like any other molding rubber, but cures at much lower temperatures. “It’s traditional technology, tools, and techniques,”

Knight says. “No one needs to learn anything new, buy new equipment, or train people in new techniques. If you’re already doing lost-wax casting, this fits in.” Especially if you feel that lost-wax casting, even when combined with the speed of making models in CAD/ CAM, just takes too long. With VLT, the wait is over.

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