

Sports/Recreation

Investment Cast Diving Helmet Combines Security of Metal with Light-weight Efficiency of Plastic

Deep sea diving helmets have been traditionally heavy and made of corrosion-resistant metal. They are also a bit cumbersome. While plastic (carbon fiber) helmets offer a light-weight alternative, many divers have an inherent dislike of plastics and opt for the security of more traditional metal helmets.

So how do you get the best of both worlds? How do you get a lighter weight, corrosion-resistant metal helmet that will



Investment cast diving helmet has cast in features which were previously machined.

withstand great pressures, provide a great surface finish and feature lot of fine detail for attaching such in-helmet necessities as valves, radio communication, light intensification and more?

The answer is simple: investment casting and rapid prototyping technology.

A QuickCast pattern was created using stereolithography (SLA) technology. Since no tooling is involved, there were no restrictions on design changes; several versions of the pattern could be produced before castings were made.

The helmet manufacturer decided on a thin-wall diving helmet of 316 Stainless Steel. They wanted a lot of detail that had previously been machined. A locking device that had previously been machined is now being cast.

The one-piece construction of the helmet featured tolerances of less than ± 0.005 ", wall thicknesses ranging from 0.10" to just under 1.0", and a surface finish roughness of 125 RMS at most.

Investment casting eliminated the need for a lot of machining, which was required of the sand cast model. The investment cast version of the helmet weighed in at about 13 pounds compared to the earlier 45-pound sand casting model.

The fine cosmetic appearance was also a winner to the customer, as was the significant reduction in labor to manufacture the new helmet.



Fully assembled helmet.