

Shell Shocked!



Fiberglass. It's used in everything for Corvettes to boat hulls. It simply permeates our society. And for the commercial diving industry, it is never more prevalent than in diving helmets. Ocean Eye, Inc.'s Chris Gabel takes the mystery out of caring for fiberglass helmets. Photos by Gabel and Dive Lab's Michael S. Ward.



These pics show heavily damaged Kirby Morgan SL 27 hats.

In the beginning, most commercial hats started with copper and brass. Modern demand helmets from such manufacturers as Kirby Morgan Dive Systems are predominantly fiberglass. In the spirit of full disclosure, some of the more recent shells do contain some different materials, such as carbon fiber for reinforcement in key areas (such as on the newer SL 17B).

For the sake of this discussion, I'm going to generalize a bit so as to not get overly complicated or confusing. Stainless steel is becoming increasingly popular, but the vast majority of working hats use a fiberglass shell with a gel coat overlay.

There are also bronze, copper, and brass hats in service, but those are for another article. I've seen a five-gallon bucket with a faceplate, harness, and a couple of fittings used as a dive helmet (not suggested in the least). But for now, let's stick with fiberglass.

DURABILITY & MAINTENANCE

The thought behind fiberglass is to create a structure that is durable, long-lasting, and lightweight. Fiberglass fit those criteria. The gel coat is required to make it

waterproof and provide a reinforcement outer layer shell. Otherwise you have a very wet hat. Gel coat is available in a myriad of different colors.

These days, it's practically like buying a car. No longer are the days of settling for simply yellow, red, or black. Now you can order colors like burgundy and charcoal. Personally, I'm waiting for choices like sunfire yellow and majestic orange with the optional racing stripe. Or perhaps even the Boss 302 model.

Sorry, I digress.

One of the responsibilities with owning and diving these hats is to make sure that the fiberglass shells are properly maintained and repaired when necessary. Pushing these hats beyond their design and maintenance limitations is both dangerous and not the smartest idea.

This is especially true on older hats. For instance, the Kirby Morgan SL 17B has been available for many years. Over time, the older shells can, and usually will, show some stress cracking especially around the inserts. This isn't a design flaw, just age. I want to see a Corvette that's been around for over 15 years that doesn't show some stress cracking from age and use.

These cracks may not even be visible until you remove parts such as the port retainer assembly. They can also appear from



abuse. Dropping the hat on deck doesn't equate to good care. In large part, the reason for the cracking in ears of the SL17B is due to divers dressing themselves and having the neck clamp misaligned when camming. Another instance, cracks can radiate out from the inserts that are con-

stantly under tension for the port retainer screws holding the clear bits in place (Okay, the faceplate or the thingy you're supposed to be looking out of).

Over time, the fight between the screws trying to go one way and the retainers keeping them in place is going to show wear.

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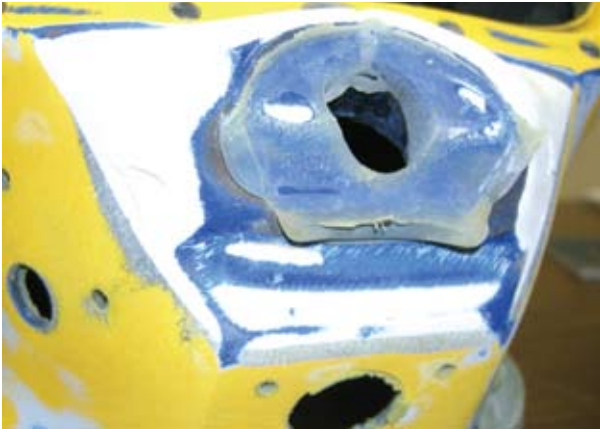
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(Above) A gouged-out gel coat.

(Below) A filler job. Get your work done by professionals.



These inserts need to be checked at least annually to check for any cracking and insert issues. If an insert is bad, then it needs to be replaced.

Cracking needs to be addressed with the appropriate measures which include having a trained, qualified technician grind the crack, reinforce it with the proper material, then seal it in gel coat.

USE YOUR EYES

Another point to note is the visible shell itself. I'm referring to the areas that you can see without removing any of the installed components. I don't know what kind of diving you do, but most of my time in the water has been spent not seeing a (fill in your favorite adjective here) thing. I have spent a lot of time banging in to something first before even having a clue it's there. Your hands can only feel so many places at once.

Why did I mention this? Is it to say I'm a klutz? Perhaps so, but my point is that the shells take a lot of abuse. I've seen several that have started life with a color and have shown up on my table with a lot of white showing – the white being visible fiberglass.

Once a shell shows exposed fiberglass, you need to take it out of service until the appropriate repair can be made. The longer that you put it off, the more damage the shell is going to sustain and the more unnecessary danger the diver is going to be exposed to.

Exposing non-gel coated fiberglass is not a good idea in any circumstance. The longer you expose non-gel coated fiberglass, the more expensive and extensive the repair is going to be.

USE YOUR EARS

Yes, ears. I'm not talking about the noise-receiving devices on the side of our head, but about the lower assemblies that are prevalent on the SL 17B. I call attention to these hats because of the damage I have seen by people improperly camming the neck clamp yoke assembly. Not having everything set just right with the neck clamp and camming it in place can easily cause the ears undue stress and crack or break one or more of the ears off.

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The other instance of abuse is usually in the form of dropping the hat on one of the ears from a height of more than an inch. They were designed to keep water out with the inclusion of the neck clamp neck seal. They weren't supposed to take the impact of Ronnie Lott throwing his 49ers helmet in the end zone.

Just a side note, spiking your dive gear is never a good idea. That's why Ronnie was playing strong safety in the NFL rather than diving in the Gulf (Okay, maybe the money was a factor as well).

Those ears can be repaired or even reformed, bringing them back to factory spec. Again, if the ear is damaged, then the hat needs to be taken out of service and repaired. Leaving the damage unattended to can result in very dangerous situations. As they say in some of the drug commercials, a side effect could be death. I don't know about you, but that side effect of not repairing the important bits doesn't intrigue me at all.

SHAKE YOUR GROOVE THANG

While we are on the topic of the lower end of the hat, one other place to pay particular attention to is the o-ring groove. Check to make sure that there are no cracks, even small ones, in that groove. Those stress

cracks can get significantly worse over time.

Remember that every time you cam the neck clamp in place, you are depending on tension between the o-ring, neck clamp, and neoprene (or latex) to keep the water out. This is a critical and widely overlooked point of daily inspection.



One other point of discussion is the gel coat. Please, please make sure that the shop you are entrusting your helmet to is both authorized and qualified to apply the appropriate gel coat to your hat. All gel coats are not the same.

Another important point to mention is that, should you decide to do it yourself or have the local auto body shop shoot your hat with gel coat, if the serial number can't

be seen then the hat won't pass its annual. If you send a shell that was repaired by a questionable entity, the inspector is not going to be able to pass the hat, as well. All of the gel coat will need to be removed and the shell re-shot to make sure that there is no discrepancies.

This isn't just for the liability of the shop but is also in place to protect those who are going to be underwater (meaning you, the reader). Incorrectly repairing a shell can literally, in some cases, mean the difference between going home at the end of the day and not.

Believe me, I understand that in this economy everyone is watching every dime being spent. That said, life-support gear maintenance is not the place to be conservative.

Bottom line, what does this all mean? Here it is in a nutshell. If you own, dive, and work with a fiberglass shell hat, then it needs to be properly maintained. If it's broke, fix it. Not later, but now. These hats can last a lifetime if they are properly taken care of. If not, lets just say that I personally don't like the alternative. Dive Safe. **uw**

Email your commercial diving equipment maintenance or repair questions to Chris at cgabel@ocean-eye.net.

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