

Stuck on Adhesives

By Chris Gabel, Ocean Eye, Inc.

I was having a long conversation with John Drewniak, formerly of Trelleborg Viking fame. We were talking at length about different suits and their construction. Specifically, he wanted to discuss the different glues. John mentioned that he thought it would be a good idea to address some questions and perhaps clear up some misconceptions. So this article was formulated with that idea in mind.

Glue. Go to any hardware store and you see a plethora of choices. Wood glue, plastic cement, PVC glue, etc. It's not entirely different for the underwater community. If there is a problem, there is a chemical. That said, some people still prefer to use a single adhesive for everything. Although white paste may have that special taste, it doesn't do very well in repairing latex cuffs.

Lets start with a new drysuit on the market. There has been a lot of talk about the new Viking HDS suit. For those who haven't read the ads, looked at the booth at DEMA or Underwater Intervention, talked to people in the industry, or have been recently entered in to the witness protection program, here is the skinny.

The new offering from Viking is the HDS (Hazmat Diving Suit). To make a long marketing description short, it's a highly chemical resistant suit that is significantly lighter than the Pro or HD series.

It's made out a material called NITECS. So why even mention this? Well, the only way to keep it highly chemically resistant is to use the appropriate adhesive. If you or your equipment supplier uses standard two part Viking glue to attach components (such as wrist ring systems) to your suit rather than the HDS glue, you just turned your expensive HDS suit into a Pro 1000. So that means that the chemical permeation figures go right out of the window. Even if they use the appropriate components (in this example, the ring system) without using the proper adhesive, the glue will start breaking down long before the component will. It would be very embarrassing, not to mention dangerous, to have your suit start coming apart in a HAZMAT environment.

OK, that said, I can now bring up the other glue mentioned. The standard tried and true glue for many vulcanized rubber suits has been the two part Viking glue. First, let me state that before using this adhesive for any other suit other than the Viking vulcanized rubber suits, check with the manufacturer. Just because the suits may be the same color and look alike doesn't mean that they are. Different suit manufacturers use different formulations. For many suits, the Viking glue is the standard. Be safe, check first. The next point that I would like to make is that before repairing your own suit, PLEASE make sure that you have had some training. You need to make sure that the glue is mixed correctly with the right ratio of glue to hardener. Believe me when I say that it's important.

But what about suits made of different materials you may ask. Suits like neoprene and trilaminate. Even Viking makes a low weight drysuit made of a polymer-coated fabric called the X-Treme. Believe it or not, Viking has a special glue for the X-Treme line as well. It's a single component black glue. So in the Viking example, there are three different glues from just one manufacturer.

In some cases, like Whites, the glue is already applied for you.

Be sure you're using the right glue for the right suit.

VIKING GLUE

- Highly Flammable Solution.
- Keep Container Closed.
- Solvent Vapor is Highly Explosive.
- Use Only in Well Ventilated Areas.

CONTENTS:
10% Glue Batch
Dissolved in Heptane.

KEEP OUT OF REACH OF CHILDREN

DIRECTIONS:
Do not mix hardener in glue container. Add 10-15 drops of hardener in half a cup. Stir well. Use mixture within 2 hours for sufficient adhesion. Apply in two coats. Dry thoroughly before assembly. Roll seams evenly.

TRELLEBORG Viking, Inc.
290 Forbes Boulevard • Mansfield, MA 02048
774-719-1444

POLATRAK®
CP Probes

CP Gun™ for Divers

Dual Measurement Systems
Twin Ultra-bright LED Readouts
Contact Probe
Rated to 1000 ft (305 m)
Season-long Battery Life



Accurate underwater cathodic protection surveys every time!

DEEPWATER
DEEPWATER CORROSION SERVICES, INC.
+1 713 983 7117
WWW.STOPRUST.COM



When using these, or any, adhesives during suit maintenance or repair procedures, READ THE DIRECTIONS. The suit, or life, you save may be your own.



The only thing that you need to do is heat and apply. This configuration makes self repair easy, but there is still going to be a fair amount of cursing during install (as with any suit, don't deny it, we've all been there). You activate the glue on the part and need to get it on pretty much in one shot. Challenging in itself, but certainly not impossible. This also means that you need to not add more adhesive to the part that you are trying to install. Again,

check with the manufacturer before attempting a repair. It takes five minutes and could be the difference in a successful repair and a lost diving day.

I've talked about a couple of different brands of suits but that doesn't mean that everyone else is left out of this discussion. For instance, Hunter has stated that two part Viking glue works for their vulcanized rubber suits. Other manufacturers, such as Waterproof and DUI, have different product lines that need to be addressed individually.

The rule is no different for neoprene drysuits. In the case of neoprene, it can end up a little trickier. The reason for the last statement is that you may have to mate neoprene parts to other materials such as vulcanized rubber. For example, a neoprene neck seal on a Northern Diver vulcanized rubber suit. In this case, you may end up using a thin adhesive made for the vulcanized rubber material. You will have to apply many layers of the glue before you can mate the pieces together. The neoprene has to soak up enough of the sticky stuff to fill in all of the gaps and texture of the material so that it creates a good seal between the dissimilar materials. Not to confuse the issue, but if you are bonding two pieces of neoprene, then you may use a totally different adhesive. As previously mentioned, you need to check with the individual manufacturer and describe the components you are trying to stick together so that they may guide you in the appropriate direction.

Some people like the trial and error methodology. Well, keep this in mind. Using the incorrect adhesive may work for a while, but that doesn't mean that it will for the long run. Basically, if you use a glue and it sticks to the parts together and seems like everything is working appropriately, it may work for a few hours to a few weeks or even months. I don't know where you dive, but I end up in some pretty nasty water. Personally, I'd rather not take the risk that my suit comes apart in the water column because I didn't take the time to either send the suit out to an appropriately trained service center or learn how to properly fix it myself using the proper chemicals. At best, you may lose a diving day, at worst, a trip to the hospital.

One last point to note, don't forget to also pay attention to the solvent that you use, they are as different as the glue.

As always, dive safe. **uw**

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

Softline Cutters - NOW AVAILABLE

Subsea cutting tool experts, Webtool, have designed a lightweight tool specifically for cutting soft line and fibre ropes up to 50mm (2") diameter, quickly and efficiently. The SL54 has an open side design, which allows the tool to be easily positioned anywhere along a length of rope.

This new compact design has been optimised for efficiency with its narrow profile. Stainless and coated alloys are utilised for subsea protection.

Webtool specialises in engineering powerful hydraulic tools for use subsea.

- Wire Rope Cutters - up to 150mm (6") dia.
- Cable Cutters - up to 330mm (13") dia.
- Wire Rope / Cable Grippers
- Softline Cutters
- Automatic Shackles
- Wire Rope Clamps

t: 416-234-8671 e: info@webtool-subsea.com
f: 416-237-9279 w: www.webtool-subsea.com

WEBTOOL
Cutting Edge Technology