



# Highland Yacht Club Soundings



January 2006

Editor: Tom Gillard Jr.

---

Please remember, in your thoughts and prayers, all our Troops around the world and those on the way home.



---

\*\*\*ATTENTION MEMBERS\*\*\*

Nominations for Officers

HYC members are invited to submit nominations for the board of directors of HYC for the upcoming year. The following positions will be voted on by the membership in February:

- \* Commodore
- \* Vice Commodore
- \* Secretary\ Treasurer
- \* Port Captain
- \* Harbor Master

---

## Calendar of Events

Winter Banquet: 2-25 @ Lakeside Club

Spring Regatta:

Independence Day: Tuesday (7-4)

---

## **NEXT MEETING**

The next meeting is Monday the **16th** of January at Camino Real in Winchester. Eat at 6:00, meeting at 7:00. (No additional theme). We need to mention we will be discussing the membership proposal, and also that we are still in need of nominations for a Secretary/Treasurer for next year.

**DUES are DUE!!**

**Renewal Application is attached**

# Batteries in Winter

In [Winter Storage](#), Joy Smith suggests that up north the batteries should be removed and a trickle charger attached, but no reasons are offered as to why. Can you explain it?

1. Why is it bad to leave them in place? Or is it simply an urban legend?
2. Would it be bad to leave them outside (in the boat) with a trickle charger left on year round?

## Tom Wood responds:

I'm continually amazed that this question comes up every season. Even though cars up north survive the winter outside each year, and indeed many inexpensive automotive batteries last three or four years, their more expensive marine and RV cousins die an unnaturally premature death at the age of two. But the car gets started and used, throwing a load and recharge onto the battery every day. Try letting your car sit in the driveway from Labor Day until spring and see if it starts after Easter.

Here are the facts. Wet-cell batteries have a self-discharge rate of about one percent per day at 75 degrees Fahrenheit. This rate goes down with the temperature, but it rises to two percent per day at 95 degrees. AGM and gel-cell batteries have a slower self-discharge rate. But in any event, a battery left fully charged in October will be dead or dying by New Year's Eve even though it wasn't used.

What is happening as the battery loses its charge is that the specific gravity of the acid is diminishing. A battery that is 100-percent charged won't freeze because the electrolyte is dense, with a freezing temperature around minus 75 degrees Fahrenheit. A battery that is zero-percent charged, however, has acid with a specific gravity approaching that of water, and it will freeze at only 27 degrees above zero.

When the electrolyte freezes, a battery's life is over, and many times the case will crack from the expansion, driving the point home with an unmistakable acid spill.

A slower, more painful battery death is usually ascribed to sulfation. Don Casey covered it in some depth at SailNet in an article entitled "[A Little Help from the Sun](#)." Basically, when a battery sits unused and undercharged, some of the sulphuric acid adheres to the lead plates as a coating of sulfates. This causes such a portion of the plates to have reduced effectiveness in transferring the chemical to electrical (and reverse) process in the future. Sometimes the sulfates can be "blown" off the plates by "equalizing" the batteries—that is charging at an unusually high voltage, but each time the battery sits unused, the sulfation becomes a little worse. Letting a battery sit over the winter without stirring the electrolyte by frequent charging will reduce its life by approximately 50 percent.

The answer: Disconnect the battery entirely to avoid any stray electrical leaks draining the battery, make sure that the cells are topped with water monthly, and give a small charge weekly. It's a lot easier to do this in the garage than up a ladder at the boatyard in the snow. A trickle charger without a full shut-off regulator such as the little portables found in many automotive stores does as much damage as not charging at all—buy a good one. I frankly wish that someone would invent a machine on a timer that would throw a small load on the battery for an

hour and then charge it back up automatically once a week. Batteries could be left in storage indefinitely that way.

Oh, by the way, do you remember when you bought a battery in the old days and you had to wait two hours while the store added the acid and charged it the first time? How sulfated do you think many brand new batteries are today when you buy them off the dealer's shelf where they have been sitting with the acid in them all winter?

[www.sailnet.com](http://www.sailnet.com)

---

## New Year's Day Sail

Wasn't that a GREAT day? There were 10 boats, 40 people and one dog present to usher in the New Year. As Max toasted, "may all your winds be appropriate..."

-----

### **Blister Repair**

*by Don Casey*

Fiberglass blisters occur because water passes through the gelcoat. Water soluble chemicals inside the laminate exert an osmotic pull on water outside, and some water molecules find a way through the gelcoat. As more water is attracted into the enclosed space, internal pressure builds. The water molecules aren't squirted back out the way they came in because they have combined with the attracting chemicals into a solution with a larger molecular structure. Instead, the pressure pushes the covering gelcoat into a dome-a blister.

There has been a great deal of hysteria about blisters, but the reality is that the number of boats that develop serious blister problems is extremely small. An occasional blister or two is not a serious problem, any more than is an occasional gouge in the hull. Some boats seem to exhibit a greater propensity to blister, presumably due to the chemical components used and/or the layup schedule, but all boats are at some risk. Surveys suggest that about one boat in four develops blisters.

### **Repair materials**

Effecting the repair of a few hull blisters requires an appropriate quantity of epoxy resin and hardener. Do not use polyester resin for blister repairs; you need the stronger adhesion and better water impermeability epoxy provides.

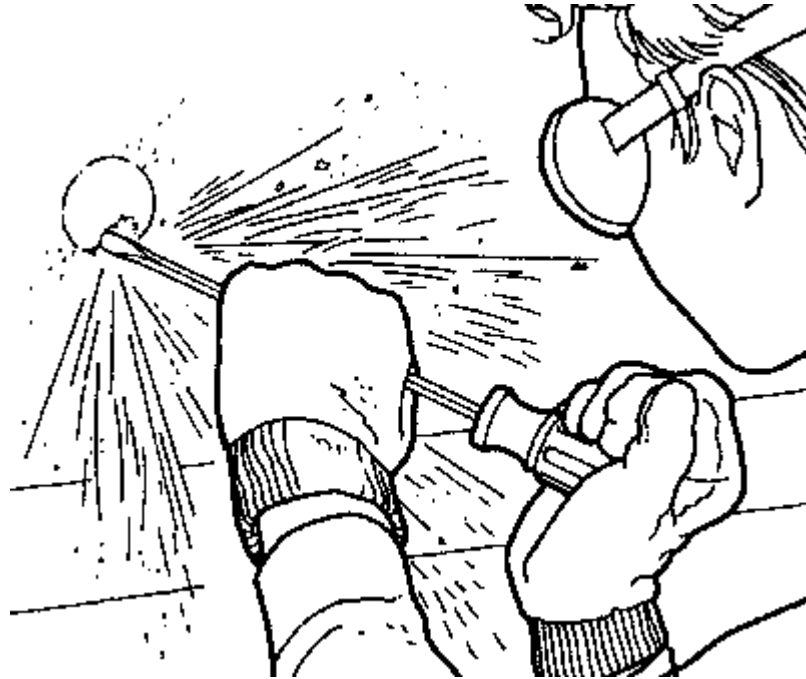
You also need a filler to thicken the epoxy into a putty. Select colloidal silica. Never use microballoons or any other hollow or absorbent (talc, for example) fairing compound to fill blisters.

A quart of acetone, a box of TSP (trisodium phosphate), a few acid brushes, and a 36-grit sanding disk completes your supply list. If the blisters penetrate the laminate, you may also need a yard of 6 to 10 ounce fiberglass cloth.

### **Minor Blistering**

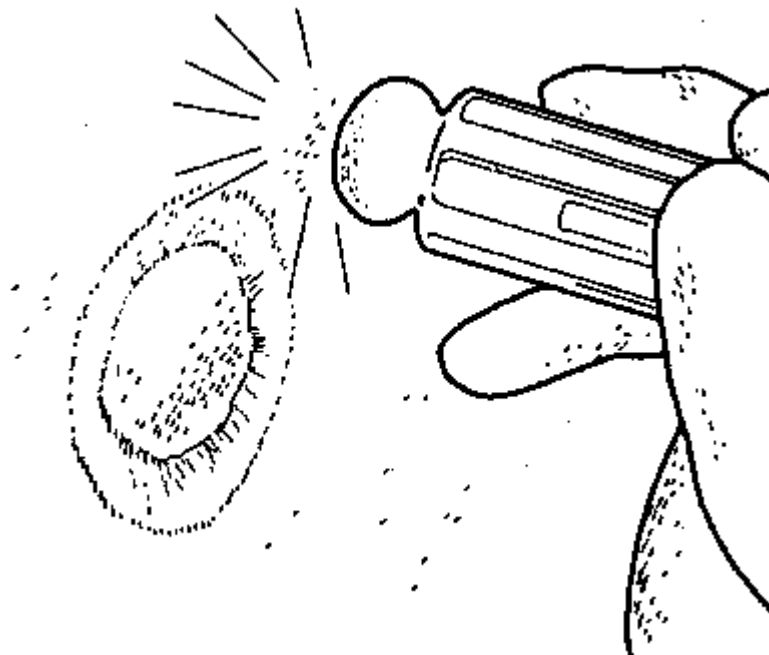
The first step in minor-blisters repair is opening the blister to let it drain. Pop the dome with a chisel, screwdriver, or rotary tool. Be sure you are wearing eye protection; pressure inside a hull

blister can be double that of a bottle of champagne, and the fluid that blasts out when you pop it is acid



Load a disk grinder with your 36-grit disk and grind the open blister into a shallow depression. The rule of thumb is that the depression should be 20 times as wide as it is deep, and it should only be as deep as required to remove any damaged laminate beneath the gelcoat.

Use a plastic mallet or the handle of a screwdriver to tap the hull all around the blister. Sound laminate will give a sharp report. A dull or flat sound anywhere indicates additional delamination, meaning that the blister is larger than you thought. Increase the circumference (not the depth) of the depression until the laminate all around it is sound.

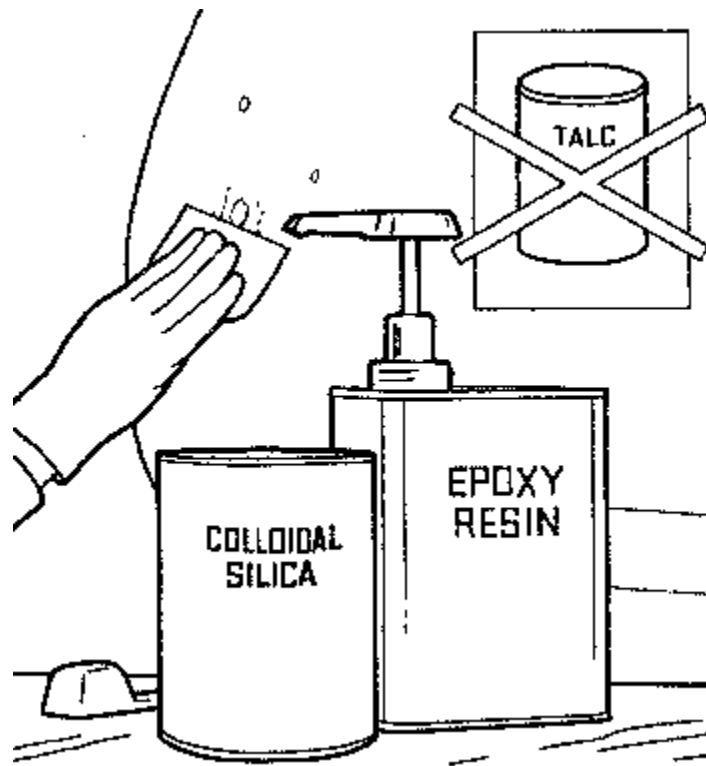


Flush the open blister with water, then scrub it squeaky clean with a solution of hot water (if available) and TSP-about a quarter cup of TSP to a gallon of water. Rinse thoroughly, then allow the blister to dry for at least 48 hours, longer if practical. If you dry-store your boat for the winter, grind and scrub blisters at haulout but don't fill them until launch time.

### Filling

Just before filling, scrub each depression briskly with a clean rag dampened with acetone.

Mix a small quantity of epoxy (one pump) and paint this un-thickened resin into the cavity. Wet out the entire surface of the depression. Use an acid brush to apply the epoxy and give this application 20 or 30 minutes to begin to kick. For shallow blisters, prepare a small amount of fresh epoxy (one or two pumps) and thicken it to peanut butter consistency with colloidal silica. Fill the depression completely with this mix, using a squeegee to compress and fair the filler. Silica-thickened epoxy is difficult to sand, so take extra time to fair the epoxy as well as possible while it is wet.



Deep blisters require the replacement of the damaged glass fabric. Cut a disk of fiberglass cloth the size of the bottom of the depression, then cut several more, each a little larger than the last. Use only cloth; never use fiberglass mat with epoxy resin.

Wet the bottom of the cavity with epoxy and lay in the smallest disk of cloth. Wet out the cloth with resin until it is transparent, then lay in the next, slightly larger disk. Wet this one out, using the end of the brush to tamp the disks and compress them together. Continue adding disks and saturating them with resin until the repair is even with the surrounding surface.

Whether you have filled the cavity with glass disks or epoxy putty, allow the filler to kick. When the epoxy is no longer fluid, but still tacky, paint the repair and an inch or so beyond with at least two coats of unthickened epoxy, letting each coat kick before applying the next.

Let the repair cure for 24 hours, then scrub it with water and an abrasive pad (like Scotchbrite) to remove the waxy film on the surface of the epoxy. Fair the repair with a sanding block and you are finished.

Gelcoat should never be applied over epoxy. Since the repair will be covered with bottom paint, there is no need for a gelcoat surface anyway. Don't use gelcoat in blister repair.

### **Boat Pox**

Boat pox is a much more serious condition, related to the occasional blister like acne to the occasional pimple. If the bottom of your boat is covered with blisters, filling them won't cure the problem. Pox is a systemic condition indicating that the hull is saturated. The actions necessary to remedy boat pox require specialized equipment and expertise.

For more information about hull-damage repair, consult *Sailboat Hull & Deck Repair by Don Casey*.

*Boatus.com* "How to"

Hope to see you on the 16<sup>th</sup>!

Anyone interested in submitting articles to be included in the newsletter, PLEASE send them to me. I'll try and be informative and include some articles that can be used by our members.

Thank you for this opportunity...

Tom Gillard



The future of sailing!



Hal Tutor's boat