

Flotation for Scale model Boats

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Almost every model boat has the potential to sink. There are factors of risk include hazards, statistics, model size and type and durability.

Forward

At a recent Suncoast Scale Model Boat Club meet one of the boats went down. Although there is going to be some work and expense involved, this particular incident could have been worse. It occurred in about two feet of water about eight feet from the shoreline. A newer member of the club (who is working on his first boat) said “do we need to put flotation in my boat?”

That led me to put together some information on the need for flotation. There are various considerations to ponder as opinions will vary from one person to another.

I know that I have ticked off the power boat guys (one recently) but I am nervous about a high speed boat colliding with one of my scale boats. If it doesn't sink my boat it would probably do some serious damage to the structure/details. *Lesson: When someone puts one of these “loose canons” in the water it is time to head for a protected area (shoreline) or out of the water.*

Chances are a model boat will get stuck in pond growth usually found at most ponds and lakes rather than sink. There may even be some areas that are not very accessible.

Safe or Hazardous Conditions

Before I get into the details, one major factor is what are the weather and water conditions at the sailing site? I've seen video of model boats cutting through surf at a beach. That is one environment I would use flotation in a model boat.

However, the model boat pond at Lake Seminole Park is about 300-feet in diameter. I've been there with about a 25-MPH wind blowing and the water has no more than about a 2 - 3 inch chop. Most of our operating is done in winds less than 8 – 10 MPH and not many would go above that. (For fun Jim ran his “Blue Devil” destroyer through the waves at the large lake but that's another story.)

So, as I go further, let's assume that we are operating at the boat pond with winds less than 10 MPH.

Statistics

Next, how likely is it that a boat will sink? Since I returned to the operational scale model boat hobby, I have seen two boats go under. Let's say four years at 20 meets per year and an average of 8 boats per meet. That is 640 boats in the water during two years and two of them sank. Not too bad!

Cause of Sinking

Both of these sinkings were caused by interaction with other boats, either collision or pushing. Many of us check for leaks on the first outing. We also check inside each time we bring the boats in. That may not be enough. My towboat apparently developed a small crack in the paint on the wood hull. When I went to charge the boat two weeks later the leak was enough (possible over multiple times in the water) to swell up the wood and split the bottom seam open about 1/10-inch wide by about 8-inches long. That is a big gap! *Lesson: Visually check the hull (if it is wood) before sailing.*

Fire. Now that is an ugly word for model boaters. It can and has happened. I had my towboat smoking (which is why I rebuilt it). This is easy to do with motors that can pull umpteen amps. I had one motor I bought in the hobby store and installed it not knowing it drew almost 100-amps.

As we continue you will see I used “small” and “larger” references to model boats. They don't have a specific size definition. It is all relative. A 2-foot boat would be small if up against a 3-foot boat. That 3-foot boat would be small if up against a 5-foot boat. Also consider weight and speed of each boat.

Type of Boats that are Candidates for Sinking

Now that we are looking into what could cause a boat to sink by itself via leaking lets look into boat that are susceptible to sinking.

Small & Lightweight boats. Size matters especially when in a collision with a larger boat. The hull may not fracture but the tipping over to the point to where water can seep in, usually at the joint of the superstructure to the deck.

Rounded Bilge boats. These boats can easily tip or roll in event of a collision, even if they are not considered a small boat. The bow on most boats are at an angle so if the offending boat hits the side of another boat it will have the tendency to ride up pushing the gunwale further and rolling the boat enough to get water in the hull. If enough water gets in it will sink, sometime slowly, sometimes fast.

Durability

Some boats are stable and have a durable hull. My towboat has 3/4-inch wood sides and I have some ABS hulls which seem tough. Most Fiberglas hulls are pretty tough.

At this point each model boat owner will need to assess the information given above and make a decision. For some boats the decision for floatation or not is easy. Note that the vast majority of scale model boats do not have floatation.

Methods for Retrieving a Boat

Up to this point we have looked at whether is particular boat can sink either on its own or by collision. Lets look at ways to make a boat retrievable for whatever cause makes the boat sink.

Flotation to keep the boat at the surface.

To find out how much floatation is needed for a specific boat we need to do a little math. (Let's toss out this mass versus weight stuff – not really needed for this simple job.)

First, weigh your boat full loaded. This is the displacement, or how much water the boat displaces. Example, a boat weighs out at 16-pounds.

Second, calculate the cubic inches of floatation needed for the displacement. At 80 degrees water weighs about 62.22 pounds per cubic foot, or every pound requires 27.77 cubic inches of floatation. The 16-pound boat requires 448.48 cubic inches of floatation. This comes out to be about 5-inches X 3-inches X 30-inches if measured in one piece.

What you use for floatation also counts. Styrofoam is very light, almost zero for this size piece. The weight of wood varies from balsa (heavier that Styrofoam) to other woods. If you use floatation with a noticeable weight you will need to add those calculations to the total displacement of the boat.

There may be some quirks as to items in the boat that are heavier than water as well as those lighter than water but the above will get you in the ballpark. Just have a little more floatation than you need and you should be safe.

Floating marker (buoy) to find and retrieve a sunken boat.

If floatation is not an option (space) you might consider having something (boat fender/bumper, lifeboat, etc.) on the deck that will pop up to the surface if the boat sinks. It could be attached to some fishing line (sufficient weight) and anchored to the hull. The line should be longer than the depth of the water you operate in. The line would unroll or spool out upon sinking, and you could retrieve the boat by pulling on the line.

You should try to pull it straight up rather than drag it on the bottom where it could snag. Don't forget to attach any items (like the superstructure) that are not secured in place. A short line from the inside/bottom of the superstructure to inside the hull is one thought.