

# BUOYANCY

## 30-gallon plastic drums

Buoyancy is equal to the volume of water displaced. A gallon of water weighs about 8.35pounds so  $4 \times 30 \times 8.35 = 1002$  pounds. This would include any of the framework you wanted to hold above a waterline.

Water is not going to make for a very good ballast, some, but since it's the same density as the water outside the barrel, it's going to remove flotation as fast as you add it. Sand, rock, or something more dense (heavier) might provide better ballast without sacrificing water displacement quite as bad. But then again, you might want more barrels to make it float higher. Placing the flotation points as far apart as possible will provide some stability without ballast.

There is a VERY good discussion of buoyancy here:

<https://sawmillcreek.org/showthread.php?205711-I-need-some-help-with-a-calculation>

Connecticut River Race - guidelines, buoyancy calculator, etc. describes different types of raft - and raft materials

<http://ctriverrafttrace.org/smartphone/2016raftbuildinginfo/2016raftbuildinginfo.html>

## 5-Gallon Buckets

We definitely recommend getting buckets for free. You're not just doing yourself a favor, these buckets you get for free would probably end up in a landfill somewhere, where they slowly decay. Nobody wants plastic to get into our environment!

Other possible sources; hospitals, nursing home, schools (athletic field stripe/lines), pool supply stores, Chinese restaurants (Soy Sauces!), Bakeries, food pantries.

To save you some work, we compiled a list of stores that hand out their buckets for free. We also have a list of stores that don't hand them out. Some stores recycle their buckets, other send them back to the manufacturers, others might have their own reasons.

### **Stores that (might) hand out free buckets**

People have had success picking up five gallon buckets for free at the following stores:

- Dunkin Donuts
- Tim Hortons
- Chick-Fil-A
- Sam's Club
- Wendy's
- The bakery at Kroger
- The bakery at Walmart
- The bakery at Meijer
- [Safeway](#)

## Stores that generally don't hand out free buckets

Some places where people did not have success picking up five gallon buckets are:

- Cosco – Apparently they return them to the manufacturer.
- Walmart – Walmart tends not to be cooperative when you call them, but they do have buckets available if you visit the bakery.
- McDonalds – They said they don't give them out.
- Golden Corral – Apparently don't get any 5 gallon buckets.
- SubWay – Don't get their pickles in buckets.

This list is not complete. Hopefully some of you who managed to get their five gallon buckets for free can share your experiences in the comments below, so that we can add to it.

## If all else fails

We really recommend trying to get your bucket for free, but if the above stores don't get you anywhere, you can simply [order buckets](#) over at Amazon for a reasonable price too.