



PLASTIC FREE HAWAII

# Plastics: Sink or Float?

## Marine Debris Density Investigation

Kōkua Hawai'i Foundation's Plastic Free Hawai'i program seeks to minimize single-use plastics on our islands by educating and empowering schools, businesses, and community members across Hawai'i.

### OBJECTIVE:

Students will discover how different kinds of plastic may sink or float in water to think critically about the impact that plastic pollution has on our ocean ecosystem.

### LENGTH OF ACTIVITY:

15-30 minutes

**GRADES:** Grade 3 and up.

### BACKGROUND INFORMATION:

This activity examines if different types of plastic sink or float, and allows students to critically think about the impact that plastics have once they enter the ocean. The ocean is home to millions of species, and ocean health is essential to balance Earth's ecosystems. When plastic finds its way into our oceans, it photodegrades into smaller pieces, and never fully decomposes. Plastic is mistaken for food by marine life.

There are 7 different types of plastic, with resin codes labeled 1-7, and each has a different density and buoyancy. Whether an object sinks or float in a liquid depends mainly on two factors: density and buoyancy. Density is the measure of how "dense" or solid an object is. Objects with more density weigh more. Depending on the density of the plastic, it is either more or less buoyant. Marine debris can float, sink or be partially submerged, polluting the whole ocean and harming sea creatures from the surface to the ocean floor.

### KEY TERMS:

Buoyancy: [\[Need definitions here\]](#)

Density:

Plastic:

Plastic Resin Code:

Photodegradation:

### MATERIALS LIST:

- A clear bucket or bin (5-gallon bucket or smaller) filled with water up to 3 inches from the top
- Common plastics of various densities (bottle cap, bottle, toy, bag, etc.)
- At least one of each plastic resin code (Plastics #1 through #7)
- Laminated plastic resin code sign
- Scrap paper & pens/pencils
- 7 trays/large plates to separate the different types of plastic

### PREPARATION & SETUP:

1. Set the bucket filled with water on a table.
2. Put labels on each tray (#1-7).
3. Separate the plastics by their resin codes (#1-7) and place on labeled trays.

### PROCEDURE:

1. Have each student guess on a scrap paper whether they think each plastic item will float, sink, or sink half way down. If it's a small group, they can guess out loud.
2. Have the students place each item into the bucket, and record the results. Wait about a minute as some items may take longer to submerge/sink.
3. Complete the Activity Worksheet [\[Algalita POPS summit has one we can adapt\]](#) and have a discussion as a class or in small groups about the results.

Plastic Free Hawai'i is a program of

kōkua hawaii foundation



[www.kokuahawaiifoundation.org/plasticfree](http://www.kokuahawaiifoundation.org/plasticfree)



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## Plastics: Sink or Float Activity

### SAMPLE QUESTIONS:

1. What surprised you?
2. What does it mean if some plastics sink and some float?
3. What types of animals could eat those plastic items at the various levels?
4. How could this activity be used to identify microplastics?
5. What is the density of salt water compared to fresh water? [add follow up question on why this is relevant. How would this difference affect whether plastic debris sink or float in fresh water versus salt water?]

### EXTENSION ACTIVITIES:

1. Monterey Bay Aquarium's Plastics in the Water Column Lesson: <https://www.montereybayaquarium.org/-/m/pdf/education/curriculum/aquarium-6-8-plastics-in-the-water-column.pdf>
2. Microplastics identification activity (Jaelyn please summarize here)

#### Plastic Free tips to share with your students after the lesson:

- Practice the 4Rs: Refuse, Reduce, Reuse, Recycle — in that order!
- Bring your own reusable water bottle, bag, utensil, and containers so you can refuse plastic!
- Choose products sold in reusable or compostable containers.
- Reduce your demand on commercial fish/seafood.
- Pick up plastic and litter from the beach!

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Discuss the ways in which your school community can reduce single-use plastics on campus.

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Think outside the box by merging science and math with the arts to find creative ways to share what you've learned and be part of the solution.

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Combine these individual faces together to make a class or school-wide collage of faces and enter the Plastic Free Hawaii School Mural Contest.

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Put your ideas into action by launching a Plastic Free Hawaii School Campaign.

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E-mail [plasticfree@kokuahawaiiifoundation.org](mailto:plasticfree@kokuahawaiiifoundation.org) for support or with questions.

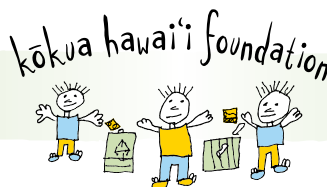
For more information visit:

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This lesson was inspired by Washed Ashore's Integrated Arts Marine Debris Curriculum: Extension Lesson 1 Let's Face It. View lesson plans at [www.washedashore.org/iamdc](http://www.washedashore.org/iamdc).

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