

What water bottle keeps water cold the longest?

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### Acknowledgements

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### Purpose

The purpose of my experiment was to find out what water bottle athletes as well as many others can use to keep water the coldest the longest in races or competitions.

### Hypothesis

After looking over all the different things that makes each and every single water bottle unique, my hypothesis is that the Hydro Flask will result in keeping water cold the longest because of all of its special features, as well as the price being one of the most expensive water bottles.

According to research, water bottles come with many different prices and have specific elements of each bottle that makes them special. For example, the Takeya Actives bottles are stainless steel with promises to keep water colder longer. It doesn't condensate on the outside of the bottle, and it is leak free. The flip lock top helps prevent leaks. It has silicone bumpers on the outside and bottom to stop denting and also stop the loud noise when it is dropped. The silicone also helps it fit perfect in cup holders.

The Hydro Flask brand bottle has many special elements, such as its insulation. Unlike most bottles that are aluminum, this bottle is made of stainless steel and is double insulated. This strong bottle does not dent easily. It offers different tops and lids to suit how a person might prefer to drink. It is travel safe and friendly, and it can keep liquid cold or hot. But what makes Hydro Flasks so expensive? One study says these bottles are pricey because they can be durable enough to stay cold in the wilderness for a few days. (O'Neill, 2020)

The polar bottle is an insulated sports bottle that is durable and easy to grab from its outside stick. It's comfortable to use as well as being leak free. They are dishwasher safe but it is recommended to put them in certain places in the washer.

Just like the Hydro Flask people are always questioning whether the Yeti is really worth the price. Many websites say the Yeti is a "beast" when it comes to testing water bottles. They say that from looking at their tests it performed incredibly. It is tough and insulated to keep a cold everyday water bottle. It also is shown to keep a cool temperature for water or anyday liquid. The Yeti has been recommended as being "bomb proof". (Burkhardt, 2020)

The Thermo Flask is the cheapest bottle of them all but yet is very similar to a Hydro Flask. It looks almost the same and people describe it being like a knock-off Hydro Flask. But

from personal experience it seems to work just fine and keep up with some of the higher priced water bottles. The Thermo Flask has pretty much the same technology as the Hydro flask. For example it has double vacuum sealing technology, is insulated, and made of the same materials. The biggest difference between the Hydro Flask and the Thermo Flask is the price. The Thermo Flask can keep liquids cold for up to or over 24 hours while it also can keep things hot for up to or over 12 hours!

Now let's dive into how these bottles are made! A hydro flask is made by the manufacturer of Laikoe. They are produced in China. The type of stainless steel used in the process of making is known as 304 or 18/8. It contains 18 percent Chromium, eight percent nickel, two percent manganese, one percent silicon, and 0.08 percent carbon.

The thermo flask is made in a very similar way. Yeti is made in the United States in Iowa and Wisconsin and also in the Philippines. However their coolers are made in China.

Polar bottles are next, they claim to be proud to produce their products in the Boulder warehouse in Colorado. There is not much information on polar bottles unfortunately. Takeya Actives are designed in the United States, specifically California. However they are made in China, but their parent company is Takeya Japan.

### Materials

- 10 cups of cold water
- 10 ice cubes
- A measuring cup
- A cold thermometer

- A large pitcher
- Hydro Flask Water Bottle
- Thermo Flask Water Bottle
- Polar Bottle
- Yeti Water Bottle
- Takeya Actives Water Bottle

### Procedure

- Get out all 5 water bottles
- Then fill the pitcher with 10 cups of unfiltered cold water
- Stir in 10 ice cubes until fully melted

- Take the temperature of the water in pitcher and record
- Pour 1 cup from pitcher into each water bottle
- 4 hours later measure the temperature again
- Later record the temperature again
- Record the temperature for the final time at 6:00

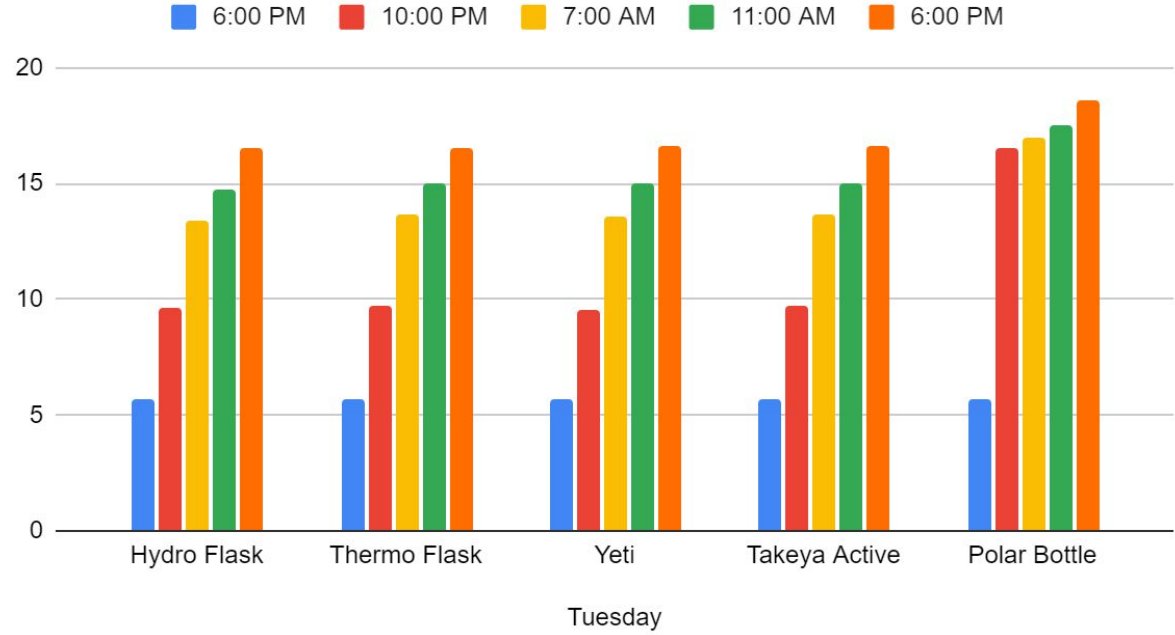
Tuesday	6:00 PM	10:00 PM	7:00 AM	11:00 AM	6:00 PM
Hydro Flask	5.7	9.6	13.4	14.7	16.5
Thermo Flask	5.7	9.7	13.7	15	16.5
Yeti	5.7	9.5	13.6	15	16.6
Takeya Active	5.7	9.7	13.7	15	16.6
Polar Bottle	5.7	16.5	17	17.5	18.6



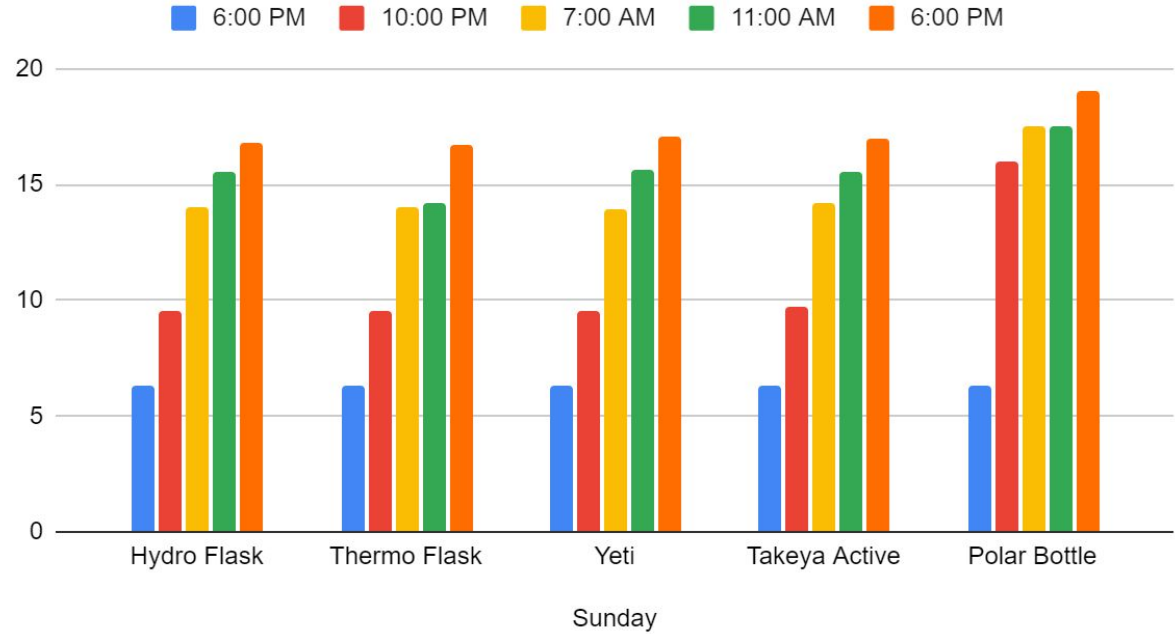
Sunday	6:00 PM	10:00 PM	7:00 AM	11:00 AM	6:00 PM
Hydro Flask	6.3	9.5	14	15.5	16.8
Thermo Flask	6.3	9.5	14	14.2	16.7
Yeti	6.3	9.5	13.9	15.6	17.1
Takeya Active	6.3	9.7	14.2	15.5	17
Polar Bottle	6.3	16	17.5	17.5	19

Monday	6:00 PM	10:00 PM	7:00 AM	11:00 AM	6:00 AM
Hydro Flask	4.5	8.5	14	15.5	15.8
Thermo Flask	4.5	8.5	13.8	15.5	15.8
Yeti	4.5	8.8	14.4	15.8	16.2
Takeya Active	4.5	9	14.5	16.1	16.5
Polar Bottle	4.5	15.8	12.4	18	18

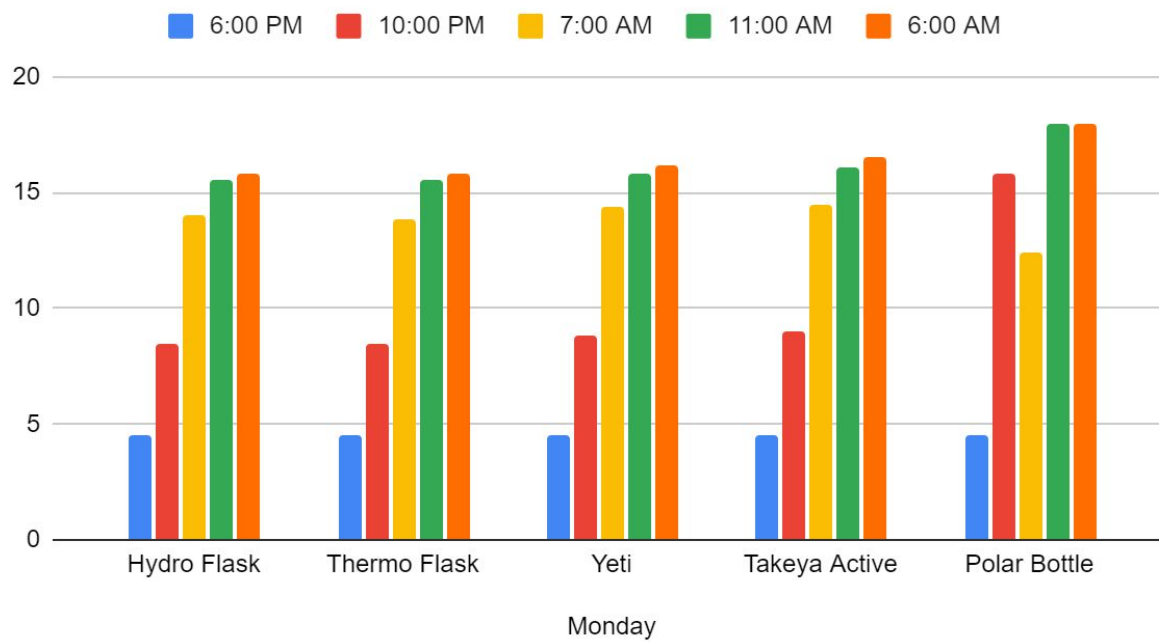
### Test 1: What water bottle keeps coldest the longest?



### Test 2: What water bottle keeps coldest the longest?



### Test 3: What water bottle keeps coldest the longest?



## Results

The results of my experiment looked a little bit like this. The first run of my experiment the Hydro flask won, but not by much. It was extremely close between the hydro flask and the thermo flask. The second go of the test the Hydro flask and Thermo flask had a tie, with the exact same number. The last and final run day of testing my experiment the Hydro flask and Thermo flask tied yet again! My final answer was that the Thermo flask had technically won once, but the thermo flask was tied 2 times! The price difference of the two is a big gap. Considering the results, I personally would get the Thermo flask. It works almost just as well and is significantly cheaper.

### Conclusion

In conclusion, 2 of the water bottles had the same end temperature. They both ended up being 60.6 degrees fahrenheit. The two water bottles that were the same temperature were Thermo Flask and Hydro Flask. They were produced in similar ways, making them both have the same end temperature. The Thermo Flask had a better price out of the two so i would recommend the Thermo Flask because it had the same quality for a better price.

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