

Extension #2: What Is the Life of a PETE Bottle?

The HOP 2 Kit contains a preform of a 1 liter bottle to show students. Injecting hot PETE plastic into a metal mold and then cooling them produces these test-tube-like objects. These machines produce preforms by the hundreds per minute. The preforms are shipped to the bottling companies. When the bottler wants to fill them with soda, the preform is heated to soften the plastic and then blown with air into the 1-liter size using another metal mold.

Since PETE is a thermoplastic, which means it can be reheated and reused, one can heat the empty soda bottle by pouring boiling water in it as it sits in a sink. The bottle will soften and deform.

What happens to them when they are recycled? Is the cap of a two-liter soda bottle made of the same type of plastic as the bottle? Students can check this by using their flowchart and doing an analysis on the two plastics. (The cap is #5, and the bottle is #1.)

Recycled PETE is made into flakes, then pellets and finally spun into fiberfill for carpeting or jackets. This can be demonstrated by placing a piece of aluminum foil on a hot plate. Add pieces of cut-up PETE bottle (1 cm square) to the foil and heat to melt the pieces. When they start to melt, use forceps to pull the melted piece off the foil and look for long strands of melted plastic hanging from the piece. These strands are PETE fibers. For sanitary reasons, recycled PETE is NOT used for more 2-liter bottles. Students might like to write a story about the “Life of a Two-Liter Bottle” since there is so much interest in this technology. They might consider the transportation and storage of soda bottles as part of their story.