

“Pop” Bottles

Purpose

To demonstrate an exothermic reaction between hydrogen and oxygen.

Materials

hydrogen gas

oxygen gas

soda bottles wrapped in duct tape

bunsen burner

rubber stoppers

matches

Procedure

1. The bottles are filled via water displacement. Fill the bottle with water.
2. Fill the bottle with 2 parts hydrogen gas, one part oxygen gas. Use rubber stoppers to cap the bottles before removing them from the water container.
3. Shake the stoppered bottle gently to determine if there is any water in the bottle. If there is, the bottle will not work and must be made over again.
4. To ignite, remove the rubber stopper and place the mouth of the bottle by the flame of the bunsen burner.

Additional Information

1. A small kickback can be expected from the bottles. Therefore **do not hold the bottle at the base.**
2. For a larger effect, you can use a 2 L bottle covered in duct tape. A small open space from the top is used as a “window” when filling the bottle. This bottle can be released as it is inserted into the flame to add drama and illustrate the kickback from the explosion.

Question for the Students

1. Write a balanced chemical equation for the reaction.

Reference

University of Illinois, Urbana-Champaign.