

Name _____

Period _____

Partner _____

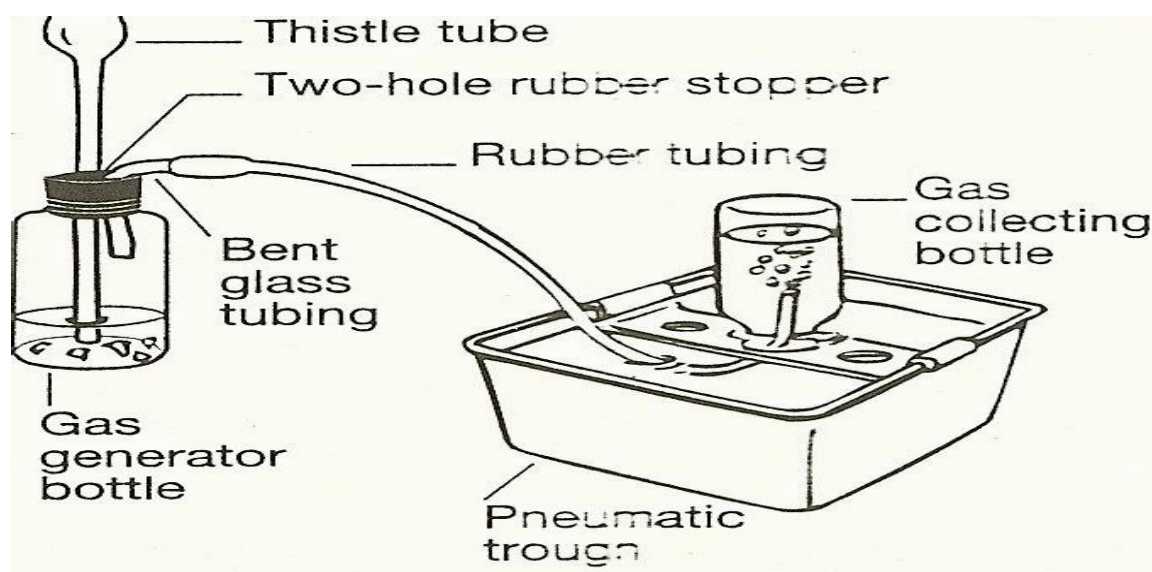
Date _____

Chemical Properties of Gases

Pre-Lab Questions

- 1) Write the chemical equation for the decomposition of H_2O_2 with MnO_2 as a catalyst.
- 2) Write the chemical equation for the reaction of Zn with HCl.
- 3) What are the three things you need to have a fire?
- 4) What are the four things you need to have an explosion?
- 5) How does a carbon dioxide fire extinguisher work?
- 6) What was the Hindenberg?
- 7) What are the two fuels used to power the space shuttle during launch? How does it work?

Procedure



- 1) Set up the gas collection apparatus as pictured.
- 2) Have the instructor place some dry ice into your gas generator bottle. Warm the outside of the bottle with your hand and allow the dry ice to sublime.
- 3) Collect the gas by water displacement in a gas collecting bottle as pictured.
- 4) Remove the gas collecting bottle, keeping it inverted to prevent the gas from floating away, and hold it at arm's length.
- 5) Light a wooden splint with a match, blow it out and stick the still glowing splint into the gas collection bottle. Record your observations.
- 6) Clean the gas generator bottle.

- 7) Have the instructor place some liquid nitrogen into your gas collecting bottle and allow it to evaporate and collect the gas by water displacement.
- 8) Test the gas the using the same procedure you used in steps 4 and 5 above. Clean the bottle and proceed to the next step.
- 9) Collect some Helium from a tank by air displacement.
- 10) Test the gas the using the same procedure you used in steps 4 and 5 above. Clean the bottle and proceed to the next step.
- 11) Place half a scoop of MnO_2 into the gas generating bottle and add 30 mL of H_2O_2 stopper the bottle quickly and collect the gas by water displacement.
- 12) Test the gas the using the same procedure you used in steps 4 and 5 above. Clean the bottle and proceed to the next step.
- 13) Place 1 piece of zinc into the gas generating bottle and add 30 mL of 1.0 M HCl stopper the bottle quickly and collect the gas by water displacement.
- 14) Test the gas the using the same procedure you used in steps 4 and 5 above. Clean up!

Data Table

Gas	Results of Glowing Splint Test
Carbon Dioxide	
Nitrogen	
Helium	
Oxygen	
Hydrogen	

Post Lab Questions

- 1) What is Dalton's Law?

- 2) What is a wet gas? Did it affect your results?

- 3) Did you collect a pure gas or a mixture? How do you know? If a mixture, which gases were mixed?

- 4) What are the gases that make up the mixture we commonly call air?

- 5) What would happen if we had no nitrogen in our atmosphere but had pure oxygen instead?

- 6) What would happen if our atmosphere had helium instead of nitrogen?