Supplemental Worksheet for Experiment 15

Thames & Kosmos Fuel Cell Car & Experiment Kit Lab Manual - Page 61

Quantitative Measurement of Gas Generation Rates

(For more accurate results, do experiment 11 first)
Experiment 11 - explained how to adjust the tank readings
Experiment 12 - explained how to fill the fuel cell with water
Experiment 13 - explained how to use the fuel cell to split water into H_2 and O_2
Experiment 14 - explained how to test for hydrogen and oxygen

The **purpose** of this experiment is to measure the rate that hydrogen and oxygen gas are produced by the fuel cell.

1. Follow the assembly procedures as explained and illustrated in the T&K lab manual for experiment 15 (pgs. 61 & 62). To collect the following data you must have the gas tanks in the car with the tubes pressed in and connected to the fuel cell. The fuel cell is filled with distilled water. Make sure you have double checked all wires and connections as shown in Fig. 95 (pg. 62) in the lab manual.

2. In this experiment, you will need a timer and someone to watch the oxygen tank and someone to watch the hydrogen tank. The tank watchers can also write down their data or have someone else record the results in the data table below. If you don't have enough people, just do the hydrogen tank first and then refill everything and then do the oxygen tank second.

3. The timer starts timing when the first bubbles enter the tanks. The recorders enter the data under the tank reading column for either hydrogen or oxygen. Be ready as soon as the light shines on the solar panel.

Hydrogen Data Table

Time (sec.)	Hydrogen Tank reading	Corrected value (ml)	Time (sec.)	Hydrogen Tank reading	Corrected value (ml)
15			105		
30			120		
45			135		
60			150		
75			165		
90			180		

Oxygen Data Table

Time (sec)	Oxygen Tank reading	Corrected value (ml)	Time (sec)	Oxygen Tank reading	Corrected value (ml)
15			105		
30			120		
45			135		
60			150		
75			165		
90			180		

4. After all of the tank readings have been recorded, take out the calibration table from experiment 11 and convert each of the tank readings to milliliters (ml). Enter the ml values into the tables above.

5. Now graph the data on the next page. Use two colors: one color for hydrogen and a different color for oxygen. Time in seconds is on the x-axis and gas volume in milliliters (ml) is on the y-axis.