Sulfur Dioxide Procedure
Aeration-Oxidation

Free Sulfur Dioxide (FSO_2)

1. Fill burette with standardized 0.01 N Sodium Hydroxide (NaOH) and record the initial reading.
2. Make sure the glassware and solutions are cold. Place the bottom flask in an ice-bath during the free SO_2 determination if necessary.
3. To one pear shaped flasks add 10 mL of 0.3% Hydrogen Peroxide (H_2O_2) and 3-4 drops of Methylene Blue Methyl Red mixed indicator. Adjust the starting color of the solution to pale green using a small amount of 0.01 N NaOH.
4. Attach the flask to upper position on the apparatus.
5. Add to the other pear shaped flask 10 mL of 25% Phosphoric acid (H_3PO_4) and accurately pipette 20 mL of wine sample.
6. Attach flask to the lower position on the apparatus.
7. Set the timer for 15 minutes, and switch on the vacuum pump at 1 L/min, let the sample aspirate.
8. When aspiration is complete, remove the upper flask from the apparatus. The contents of the upper flask should be a shade of purple.
9. Be sure an initial burette reading has been taken, then titrate the flask back to an olive green color.
10. Record final burette reading.
11. Subtract the initial burette reading from the final reading and multiply by 16. This is the free SO_2 in parts per million (ppm or mg/L). The multiplier is 16 only when the NaOH solution is 0.01 N.

Bound Sulfur Dioxide

12. Turn on the condenser water flow and plug in the heating mantle.
13. Reattach the upper flask. Add heat source to the lower flask containing the wine sample and aspirate sample for another 15 minutes.
14. After aspiration first remove the upper flask, then turn off the heat and lastly shut off the vacuum pump.
15. Record the initial reading on the burette, then titrate back to olive green.
16. Record final burette reading.
17. Subtract the initial reading from the final reading and multiply by 16. This is the bound SO_2 concentration in ppm. (The multiplier is 16 only when the NaOH solution is 0.01 N)

Total Sulfur Dioxide (TSO_2)

18. Add the concentrations calculated in steps 11 and 17. This value is the total SO2 concentration of the wine sample in ppm.