

Determination of Free SO₂ via Aspiration Method

Lab equipment needed

Valley Vintner SO₂ apparatus set
50 ml plastic graduated cylinder (sold separately)
100 ml glass volumetric flask (sold separately)

Chemical Reagents needed (Sold Separately)

1. 0.3% H₂O₂ (Recommend purchase 3% hydrogen peroxide from drug/grocery store. Use pipet to measure 10 ml into 100ml volumetric flask and make up to mark with distilled water.)
2. 0.01 M NaOH (Prepare from 0.1 M Sodium Hydroxide* using 10 ml pipet and volumetric flask.)
3. 25% w/v H₃PO₄ * (Phosphoric Acid)
4. 0.1 M HCl* (Hydrochloric Acid) and phenolphthalein indicator* to periodically standardize 0.1 M NaOH
5. SO₂ Indicator*

Analysis Procedure

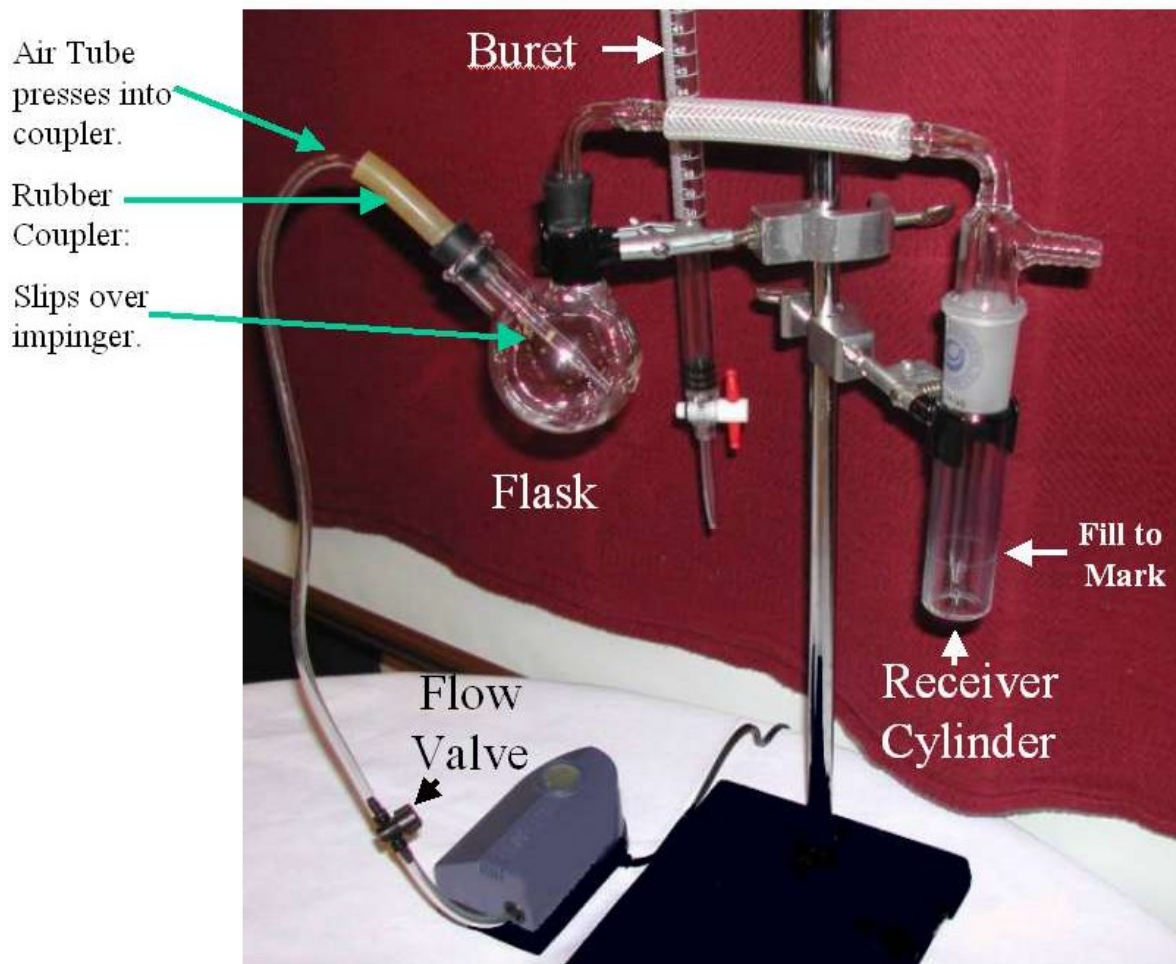
1. Set up SO₂ apparatus per picture with air tubing fitted to glass tube on side arm of round bottom boiling flask.
2. Fill buret with 0.01% NaOH.
3. Add ~ 10 ml 0.3% H₂O₂ (fill to the mark) to the ground glass receiving cylinder. Add 4 drops of SO₂ Indicator..
4. Add small amount of 0.01 NaOH (i.e. 1–2 drops using squeeze dropper) to H₂O₂ until it turns from dull grayish green color to bright Kelly green.
5. Pipet 20 ml of wine into boiling flask through top opening.
6. Using 50 ml graduated cylinder, add 10 ml of H₃PO₄ to boiling flask and immediately affix white connecting tube with rubber cork and ground glass fittings to both flask and cylinder.
7. Turn on air pump and adjust airflow using black control valve until bubbles in receiving cylinder are approximately ½ way up side of cylinder. Decrease airflow if liquid in boiling flask starts to froth up into neck of flask.
8. Aspirate sample for 15 minutes. After 15 minutes, turn off air pump and immediately remove rubber cork with tubing from boiling flask.
9. Disconnect receiving cylinder and titrate contents with 0.01 M NaOH using buret. End point is when liquid in cylinder turns from purple back to Kelly green.
10. Number of ml's to affect the change x 16 gives the amount of Free SO₂ (as ppm) in the wine.

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Notes

1. Recommend that 0.3 % H₂O₂ and 0.01 M NaOH be stored in refrigerator.
2. Recommend that new 0.01 NaOH be made up every ~30 days.
3. Standardize 0.1 M NaOH with 0.1 M HCl every time new 0.01 NaOH is made up.



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