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FREE SO₂ by AERATION OXIDATION

Equipment

- ☪ Aeration/Oxidation apparatus with flowmeter
- ☪ 10mL Buret Assembly
- ☪ Sink aspirator or other source of vacuum
- ☪ 10 mL serological pipet
- ☪ 20 mL volumetric pipet
- ☪ Pipet safety bulb

Reagents

- ☪ 3% Hydrogen Peroxide adjusted to pH 5.5 to 6.0
- ☪ SO₂ Indicator (Methyl Red + Methylene Blue in 50% Ethanol)
- ☪ 0.01N NaOH
- ☪ 25% Phosphoric Acid CAUTION: CORROSIVE

Procedure

- ☪ Fill impinger tube to the 10mL mark with 3% Hydrogen peroxide.
- ☪ Add 3 drops of the indicator. (Should turn gray-green in color).
*May need to adjust acidity of Hydrogen Peroxide with dilute NaOH or HCl.
If too purple - use dilute NaOH
If too green - use dilute HCl
- ☪ Pipet 20mL of sample into 100mL round bottom flask.
- ☪ Pipet 10mL 25% Phosphoric acid into flask with sample.
- ☪ Insert bubbler/stopper into flask.
- ☪ Connect flask to apparatus, turn on vacuum, aspirate for 10 minutes at a flow rate ca. 1000mL/min. Turn off and release vacuum. Blow out any drops left into impinger by using safety bulb on bubbler tube.
- ☪ Titrate Hydrogen peroxide solution with 0.01N NaOH to a gray-green color, ending with the same color you started with.



Inspiring innovation.



Calculations

Free SO₂ (ppm) = N NaOH x mLs NaOH x 1600

Example: If N of NaOH is 0.01, then: Free SO₂ (ppm) = mL NaOH x 16

Notes

- Standardize NaOH frequently. Store Hydrogen Peroxide in refrigerator, but warm to room temperature prior to running analysis. Make sure all tubing connections are tight.
- Hydrogen Peroxide concentration is greatly in excess and should be more than sufficient to handle any normal winery application.
- Recommended rate for aspiration is 1000 mL/min.
- Tubing on apparatus needs to be changed routinely.
- When using a one-piece unit with fixed condenser, water flow needs to be running.

Disposal

- Hydrogen peroxide: dispose with water in sink.
- Phosphoric Acid: add approximately 5 mL (or to pH >3) of Kolorsafe neutralizer and dispose with water in sink.