Titration using a pH Meter

By Steve Kroll

Materials Needed:

- 50 ml beaker
- 20 cc syringe
- Stir plate & small magnetic stirrer (optional)
- pH meter with 4 and 7 pH buffer solutions
- 0.2N sodium hydroxide (NaOH) solution

Procedure:

1. Calibrate the pH meter using buffer solutions of pH 4 and 7.
2. Pour a 20 ml sample of must or wine into a 50 ml beaker. If necessary, strain the sample so that no particulate is present. If using a stir plate, drop magnetic stirrer into beaker and place beaker on plate.
3. Immerse the electrode in the sample, making sure the stir bar does not interfere or make contact with electrode.
4. Draw 15-20 cc NaOH solution into the syringe.
5. Slowly release the NaOH solution into the sample. Occasionally let the meter stabilize before continuing.
6. Once the pH reading nears 7, slow the release of NaOH to just a few drops at a time. Once the pH reads 8.2, **STOP**.
7. Looking at the markings on the syringe, make note of how many cc of NaOH solution was added to the sample.
8. Using the formula given below, calculate the titratable acidity (TA).

Formula:

$$\textbf{TA in grams per liter} = (N \times 15) \div S$$

N = cc of NaOH used
S = wine/must sample size in ml

Example: If 10 cc of NaOH is used to titrate a 20 ml sample, then the calculation is 10 x 15 ÷ 20. The resulting TA is 7.5 g/L. (Tip: sometimes TA is expressed as a percentage. To do so, simply move the decimal one place to the left. In the example given, this would be .75%)