

# BREWChatter

GRAINS HOPS BEER FUN

## Acid Test Kit Titration Instructions

BC-AcidTestKit

\$12.99

### Contents:

1 – 10 cc Syringe

1 – Test Jar

1 – Bottle (120 mL) of Sodium Hydroxide

1 – Bottle (15 mL) of Phenolphthalein

Acid balancing your wine contributes to suitable varietal character, a balanced sweet to acid ratio, proper fermentation and enhances proper aging. There are three main types of acidity found in fruit wines:

**Volatile Acidity** – The acid produced during and after fermentation that may change throughout the winemaking process. Because of its minor contribution to the overall acid content, we will not concern ourselves with this type of acid.

**Free Acidity** – This acid is 'unbound' and is made up of free hydrogen ions. It is the type of acidity commonly measured with add test papers. Because free acid may comprise only a small part of the total acid, pH papers do not give very meaningful results with fruit musts.

**Fixed Acidity** – This important part of overall acid content represents acidity (hydrogen ions) bound up in more complex systems called buffers. The buffering capacity of juice or must is a measure of its resistance to pH changes.

### Desirable Acid Contents of Different Musts:

*White Grape 0.70 – 0.80%*

*Red Grape 0.65 – 0.75%*

*Rose Grape 0.60 – 0.65%*

*Dessert Grape 0.50 – 0.75%*

*Sherry 0.50 – 0.65%*

*Sparkling 0.70 – 0.90%*

*Most Other Fruits 0.55 – 0.65%*

### Procedure for White or Light Colored Wines

Use the syringe to add 15 mL of wine or must to the test jar. Rinse the syringe well. Place the jar on a white piece of paper. Add 4 drops of phenolphthalein and swirl to mix. Draw 10 mL of Sodium Hydroxide into the syringe. Add 1 mL at a time to test the solution. Swirl sample as drops are added. Pink streaking will disappear upon swirling. Continue adding Sodium Hydroxide until the pink solution continues after swirling. Do not add more. You have reached the end point. Record the total number of mL's used to reach the end point. Each mL of Sodium Hydroxide equals 0.10% acidity.

Therefore, if you added 6 mL's of Sodium Hydroxide, the must has 0.60% acidity.

### **Procedure for Red or Dark Colored Wines**

Use the syringe to add 15 mL of wine or must to the test jar. Rinse the syringe well. Place jar on a white piece of paper. Add 20 mL of distilled water to the test jar. By diluting your sample, it will be easier to see the color streaking necessary to determine the end point. If your wine is quite dark, you can add more water. Do not exceed 50 mL. Add 4 drops of phenolphthalein and mix. Draw 10 mL of Sodium Hydroxide into the syringe. Add 1 mL at a time to test solution. Swirl as drops are added. Count the number of mL's required to turn the test solution a dark, brownish-gray color.

NOTE: Color of the end point solution may vary depending on the initial color intensity of your must. Continue adding Sodium Hydroxide until the dark, brownish-gray solution continues after swirling. Do not add more. You have reached the end point. Record the total number of mL's used to reach the end point. Each mL of Sodium Hydroxide equals 0.10% acidity. Therefore, if you added 6 mL's of Sodium Hydroxide, the must has 0.60% acidity.

### **Correcting Acidity on the Must for All Wines**

Now that you know the acid level of your must, you should adjust it to the suggested level per wine style listed above.

If you need to RAISE the acidity of the must or wine, you have a few options.

#### **Method 1 – Blending**

Blending should be one of the first options to be considered. Natural acids are always preferred to manufactured acids when balancing wines.

#### **Method 2 – Tartaric Acid**

Tartaric acid is the dominant and most desirable of the three acids found in grapes, and is therefore the preferred acid for raising acidity. It is also the safest to add in that some will precipitate as potassium bitartrate during cold stabilization in case you over-corrected. To raise acidity by 0.10%, add  $\frac{3}{4}$  teaspoon (3.8 g) per gallon. Keep in mind that you may have to make more additions after cold stabilization.

#### **Method 3 – Acid Blends**

A mixture of Tartaric, Malic and Citric acids. It is comparable in strength to Tartaric acid, but due to the presence of citric acid, it is generally used in white wines after primary fermentation and malolactic fermentation are completed. If the acid level needs a significant increase, Tartaric is preferable.

If you need to LOWER the acidity of the must or wine, you have a few options.

#### **Method 1 – Amelioration (Dilution with Water) (Pre-Fermentation Only)**

Dissolve 6.5 cups of corn sugar in enough water to make 1 gallon of sugar solution. One gallon of this solution added to 5 gallons of must reduces the acidity by 0.14%. Because you are adding sugar to your must, make sure you take another gravity reading before fermentation.

#### **Method 2 – Potassium carbonate – K<sub>2</sub>CO<sub>3</sub> – For Finished Wine**

To lower acidity by 0.10%, add two-thirds of a teaspoon (3.8 g) Potassium carbonate per gallon. This will require cold stabilization to force a complete precipitation. Excessive doses of potassium carbonate can initiate the tartrate precipitation process, so it is advisable to add a half dose initially and then test the acid level after 2 weeks of cold stabilization. Total acid should not be lowered by more than 0.3 – 0.4% to avoid the possibility of removing all of the Tartaric acid. Add to 5 to 10% of the

total volume, then mix that back in to the bulk while constantly stirring.

### **Method 3 – Calcium carbonate – CaCO<sub>3</sub> – For Must**

To lower acidity by 0.1%, add one teaspoon (2.4 – 2.8 g) Calcium carbonate per gallon of must. Precipitates will be formed, which will eventually settle. For this reason, this method is best used in the must rather than in the finished wine. Do not exceed 3 teaspoons per gallon, as flavor may be affected. Because a great deal of foaming can occur due to the chemical reaction, do not add powder directly to the entire volume of the must. Rather, calculate the amount required for your 5 gallons of must and add it to a large mixing container. Stir in 2 pints (32 oz) of must. While stirring constantly, slowly add the 2 pints (32 oz) of treated must back into the rest.

### **General Safety**

- *Keep all chemicals out of reach of children*
- *Never consume wine sample of which acid testing chemicals have been added*
- *Always discard samples*
- *Store in a cool, dry place to prolong reagent shelf life*
- *In the event of an accident or suspected poisoning, immediately call the Poison Control Center*
- *Avoid contact between reagent chemicals and skin, eyes, nose and mouth*
- *Wear safety goggles or glasses when handling reagent chemicals*
- *Wipe up any chemical reagent spills, liquid or powder, as soon as they occur*
- *Thoroughly rinse test jar before and after each test*
- *Tightly close all reagent containers immediately after use*
- *Avoid prolonged exposure of equipment and reagents to direct sunlight*
- *Protect them from extremely high temperatures and protect them from freezing temperatures.*