

pH of Wines

pH is a measure of the number of hydrogen ions present in a solution. The pH value depends on the quantity of acids present, the strength of the acids and the effects of minerals (especially potassium) and other materials in the wine. A solution with a pH of 7 is neutral (neither acidic or alkaline). A solution with a pH below 7 is acidic, and more so as the pH value gets lower. A pH above 7 is alkaline. Most wines have a pH between 3 and 4.

TA measures the acid concentration in musts and wines, while pH measures the relative strength of those acids. Generally, a wine with a high titratable acidity (TA) will have a low pH. But there is no direct relationship between pH and TA, so each should be measured.

pH has several impacts on the quality of a wine. An appropriate pH improves the chemical and biological stability, improves the longevity and aging ability of wine, and improves and protects a wine's color. pH helps us determine how much sulfur dioxide (SO₂) is needed to protect the wine from spoilage and oxidation. A lower pH requires less SO₂.

Measurement of pH

A pH meter is the most reliable method of measurement. An electronic pH meter should be calibrated using standard pH buffer solutions (usually 7.0 and 3.0) before measuring a wine's pH. Follow the manufacturer's instruction for calibration method.

pH should be measured before fermentation, before and after malolactic fermentation, before and after cold stabilization, and after any acid adjustments. To improve the accuracy of the pH measurement, any carbon dioxide present in the sample should be removed by a vigorous stirring. Alternatively, apply a little heat to accelerate dissipation of the gas, then let the sample cool back down to room temperature before taking a reading.

If you get a surprising pH reading, check the calibration of the meter before doing anything to the wine.

Recommended Ranges of pH

White wines generally have a lower pH than red wines. Within each color category, a sweet wine generally needs more acid (lower pH) than a dry wine to provide balance in the wine's taste.

White wines usually have a pH between 3.1 and 3.4.

Red wines usually have a pH between 3.3 and 3.8.

Fruit wines usually fall within these ranges, but since they are generally sweet, they tend to the lower end of the range.

Adjusting pH

If the pH is too low, the TA is probably too high. If the pH is too high, the TA is probably too low. It is safer to measure TA and adjust for it since there is a direct relationship between the amount of additive and the change in TA. There is not a similar direct relationship between the amount of additive and the change in pH. It is safest to make adjustments on a small volume (bench trial), checking both TA and pH, then verify the results by tasting before scaling up to the full volume of wine being adjusted.

Reference: <https://winemakermag.com/article/547-phiguring-out-ph>