

**RED WINE**  
**High pH Winemaking**

Wines which have higher pH values (>3.65) have a series of potential challenges during vinification and aging. First, high pH wines have an increased chance of microbial spoilage. Traditionally, sulfur dioxide (often in the form of potassium metabisulfite) is used to keep wines stable during aging. However, as the pH of a wine increases, the effectiveness of sulfur dioxide as an antimicrobial is diminished, as the fraction of molecular SO<sub>2</sub> is negligible above 3.8 pH. Adding tartaric acid can lower the pH in many cases, but if potassium levels in the grapes or wine are high, and the titratable acidity is also high, adding tartaric acid can make the wine taste sour.

In addition to issues with microbial spoilage, wines with higher pH will take up oxygen more quickly than lower pH wines. This means wines absorb oxygen, and the oxygen reacts with wine constituents more readily.

Enartis USA has some tools which can aid in producing wines with higher pH to address the challenges mentioned above. The following protocol can be used to produce high-quality red wines with high pH:

**PROTOCOL**

WINEMAKING STAGE	CHALLENGE	SOLUTION	DOSAGE	ADDITIONAL INFORMATION
<b>Harvest/ Crush</b>	Long transport of mechanically harvested fruit leads to microbial spoilage and oxidation.	<a href="#">AST</a> is a blend of ascorbic acid, potassium metabisulfite and gallic tannin.	150 g/ton	Spread directly over the top of mechanically harvested fruit gondola to form protective layer during transport.
<b>Grape Reception/ Crush</b>	Oxidation of color and phenolics by enzymatic and chemical oxidation.	<a href="#">EnartisTan Antibotrytis</a> is a blend of tannins which inhibit microbial growth and limit enzymatic oxidation of phenolics and color.	100 g/ton	Apply at crusher or as soon as possible once fruit is received.
	Microbial populations thrive in the grape must environment due to high pH conditions, leading to stuck fermentations and spoilage.	<a href="#">EnartisStab Micro M</a> is a pre-activated chitosan that binds and destroys spoilage microbes, while allowing <i>Saccharomyces cerevisiae</i> to dominate the grape must.	15 g/hL	Avoid cold soak if possible, add EnartisStab Micro M to must with long pump over (30+min).
<b>Fermentation</b>	Fruit starts fermentation with high pH.	<a href="#">EnartisFerm ES U42</a> is a mix culture of <i>Saccharomyces uvarum</i> and <i>Saccharomyces cerevisiae</i> which produces high levels of succinic acid, lowering pH levels and increasing glycerol levels.	30 g/hL	Read special instructions on rehydration of this unique non- <i>Saccharomyces cerevisiae</i> yeast.

The above is achieved to the best of our knowledge and experience.  
 The industrial application of the advice provided does not imply any responsibility on the part of our company.

<p><b>1/3 Fermentation Progression</b></p>	<p>Red wines with high pH suffer from color loss and lack of structure and mid palate.</p>	<p><a href="#">EnartisPro Tinto</a> is a blend of condensed and ellagic tannin with polysaccharides which dramatically improves color and structure.</p>	<p>400 g/ton</p>	<p>Added after fermentation has commenced. It is best applied to the liquid phase of the must during a pump over.</p>
<p><b>Post MLF/ Aging</b></p>	<p>During aging, spoilage microbes can create proliferate, even when high levels of SO<sub>2</sub> are used.</p>	<p><a href="#">EnartisStab Micro</a> is pre-activated chitosan which inhibits wine microorganisms even in high pH situations.</p>	<p>5 - 8 g/hL</p>	<p>Periodic resuspension of stab micro can reactivate antimicrobial effect.</p>

In addition to typical parameters which are monitored during vinification and aging, the following parameters will benefit high pH winemaking:

Grape/must analysis: Potassium, malic acid, PCR for yeast and bacteria

Aging: Acetic acid, ethyl acetate, malic acid, glucose and fructose, PCR for yeast and bacteria

For more information on high pH red winemaking, check out our [webinar](#). Additionally, contact Enartis USA for any questions related to this newsletter or high pH red winemaking.