



Notes from MoreWine! on Frozen Fruit: Important to Read!

Making wine from Frozen Fruit is nearly identical to traditional wine making from fresh fruit, with a couple key exceptions. This paper is intended to give you the essential information that is specific to working with Brehm Frozen Must. For a more complete overview of the winemaking process, we really recommend that you read our Guide to Red Winemaking or our Guide to White Winemaking. These are simple, yet thorough, step-by-step guides that will help you make world-class wines at home. They are available as free .pdf downloads from our website at www.MoreWineMaking.com or as a very nice spiral bound version for \$9.95 (Red Wine BK598, White Wine BK597).

A Little Background On How The Grapes Are Frozen

Red grapes are hand harvested into 1/2 ton bins in the evening or early morning. Brehm Vineyards works closely with individual Vineyard Managers to select the optimum time & date of harvest – one of the most important decisions in the winemaking process. The grapes are taken from the vineyard to Brehm's processing station upon harvest. The cool-harvested fruit is immediately refrigerated. At dawn the following day the grapes are destemmed and crushed, with the least maceration possible. The must is then packaged 5 gallons at a time in 6 gallon pails. The pails are then transported to the freezer facility. On occasion SO₂ will be added to the grapes, though Brehm Vineyards tries to avoid this whenever possible. As the grapes are processed, a representative sample is taken. That evening the sample will be tested for Brix, pH, and total acidity.

White grapes are harvested in the same manner as red grapes. From the vineyard they go directly, whole berry, into a horizontal pneumatic bladder press. They are pressed at low pressure and pumped into stainless steel tanks. The juice is chilled and held at or below 40°F for two to three days. Once the gross sediment has fallen, 20 liters (5+ gallons) is pumped into 6-gallon pails and taken to the freezer. SO₂ is usually added to Riesling grape juice. Brehm Vineyards takes care to minimize any chemical addition to the juice, believing that this is the winemaker's option.

The freezing of the grape must/juice within the pail gradually happens from the outside to the center of the pail. As the cold enters from the sides, it freezes the water and drives the

acids and sugars to the center of the pail. The freezing process actually concentrates the sugars and acids at the center, while purifying the water.

Receiving Your Grapes

It has been Brehm's experience over the years that occasionally a pail of frozen grapes will slightly implode during the defrosting cycle causing the pail to appear dented. There is nothing wrong with the pail or the grapes within. This is the natural consequence of the ice thawing. **Please do note** that you should not leave these pails upside down

How to Thaw Your Grapes

Once you receive the grapes via UPS in the insulated container, you will need to let the pails of grapes thaw, which should take 1-3 days depending on how long they traveled to reach you. Room temperature, 60° - 70°F / 21°C, is ideal for thawing as well as for conducting the primary fermentation. When you receive your grapes, take the lids off and inspect the grapes for any freezer burned or moldy grapes. Remove any grapes that are questionable.

Once the must begins to thaw, make sure your hands are clean and then go ahead and mix the grapes in the bucket thoroughly. The temperature of the must should still be cold. Stirring the grape must will help speed the thawing process.

Under no circumstances should you let your grapes thaw slowly in a refrigerated environment. If you let the grapes thaw out slowly, you greatly increase your chance of allowing bacteria, fungi or mold to take hold and contaminate your grape must. Your goal is to thaw your grapes quickly and evenly so that the grapes get to proper fermentation temperature as soon as possible.

Once the grapes are completely thawed, pour the contents of each pail into your fermentor. Make sure that you scrape out everything that remains in the pail, especially the syrupy 'stuff' at the bottom (which is a combination of sugars and cream of tartar that settle on the bottom of the pail during the freezing / thawing process). Add this to the fermentor. Add a half-gallon of must back into the shipping pail and swirl this must in the pail until the pail is clean. Your goal is to dissolve any acids and sugar residue in the pail back into the must or juice. Add all the must from the shipping pails back into the fermentor. Now mix the must together thoroughly. Cover your fermentor so that no contaminants can fall into the must. The cover should not be air tight so as to allow the CO₂ from the fermentation to escape.

Testing/Adjusting your must

It should be noted that the TA, pH, and sugar levels that are listed on the pail are pretty accurate, and generally representative of the entire harvest lot. However, you might want to test your own. If you do, please mix the pail thoroughly and allow it to fully warm so that all of the solids dissolve back into solution. It is difficult to obtain an accurate reading of sugar, TA and pH from freshly thawed juice or grapes. This is caused by the differentiation of the sugars and acids during the freezing and thawing process.

White juice figures noted on Brehm Vineyards' web site are quite accurate. These white samples are taken from the tank before freezing. It is a uniform sample. Red must is periodically sampled during destemming. The process Brehm employs achieves a reasonably accurate proportion of skins and juice. Each individual sample taken only represents a few vines. Many of these samples are combined into a larger lot for analysis. However, each pail is in fact different from the next, as is each sample. On average, Brehm's published analysis is close to accurate for all the pails.

Acid Adjustment – If Needed:

Ultimately, the correct acid level for a wine is determined by taste (yours). However, acid levels do have an important impact on the pH of the wine. The pH of the wine has a direct impact on the microorganisms that can thrive in the wine and the effectiveness of SO₂ additions. So, if the acidity is way outside the range that is considered normal, you may want to adjust it prior to fermentation.

For more detailed information on Acid Adjustments we strongly suggest you read the section 2.3B in MoreWine's free Guide to Red Wine Making.

Interesting Technique!: There is a unique way to lower acid with frozen juice. When transferring the must from the shipping pail to your fermentor, instead of trying to include the cream of tartar (which is some of the acid from the grapes) at the bottom of the pail, you can withhold it from your juice. To do this, minimize any stirring of the juice from the outset. Siphon the juice in the pail from the sediment and into the fermentor. Take the sediment, along with the juice at the very bottom of the pail, and put it all in a half-gallon jug. Keep it cold, and let the sediment settle to the bottom of this container. Rack the juice off once again to get the juice and sugars and leave the solids behind. Now you can adjust your acid back up to the desired level with how much of the sediment you add back! Be aware that this acid is tartaric acid in the form of cream of tartar, malic acid will not settle out of the juice in this way.

SO₂ Additions:

Brehm Vineyards tries to provide you with grapes or juice with no SO₂ added unless they determine there is a real need. They do always add SO₂ to Riesling juice.

The absence of SO₂ may cause white juice to oxidize a little,

turning it a little brown. Do not worry! It is important that you NOT add SO₂ to white juice when you receive it. The fermentation of the juice requires oxygen. The yeast will consume the oxygen in the juice and the oxidized phenolics will fall out before the end of fermentation, to reveal a golden/green wine. An addition of SO₂ before this is accomplished risks maintaining these brown oxidized components in the wine. You will later add SO₂ after fermentation is over.

Red grapes should have SO₂ added when thawing.

For more detailed information on SO₂ Management refer to section 10.7 of MoreWine!'s guide to Red Wine Making.

Sugar Adjustments if Needed:

Having to add sugar (called chaptalization) to Brehm grapes is fairly rare. More commonly, you may want to try to reduce the sugar concentration a bit. The Brehm statistics on the label will alert you that your grapes might have excessive sugar (above 25 brix). You may choose to test your specific bucket(s) to see exactly what the sugar level is. If you do, MAKE SURE that the defrosted must is extremely well mixed before testing sugar. Using a refractometer (MT700), test the sugar level. If your sugar reading is above 25° brix, you will need to add water to dilute the sugars. When doing this, it is important to remember to add about 6 g/L of tartaric acid to the water that you use for the dilution, so that you do not dilute the must's acidity as well. Note that high sugar levels are very common in premium California grapes and that must dilution is practiced by many of the finest wineries in California.

For detailed information on Dilution and Chaptalization of Musts please read Chapter 10.1 of MoreWine!'s Guide to Red Wine Making.

Yeast Notes:

It is **HIGHLY** recommended that the must be inoculated with commercial-quality wine yeast. MoreWine! always gives you our top three yeast recommendations for every Brehm Fruit varietal, just check the must's description on our website for our recommendations.

For full details on rehydrating and feeding yeast please refer to section 10.4 of our Guide to Red Wine Making.

Commonly Used Wine Terminology:

Must: Crushed grapes before or during ferment

SO₂(Sulfur dioxide): Serves as an antibiotic and antioxidant, protecting wine from spoilage by bacteria and oxidation.

pH: pH measures the quantity of acids present, the strength of the acids, and the effects of minerals and other ingredients in the wine. Wine pH depends on three main factors: the total amount of acid present, the ratio of malic acid to tartaric acid, and the amount of potassium present.

TA (total acidity) : The measure of all a wine's acids taken together, without regard for their strength or the presence of factors which may mitigate that strength.

Maceration: The process where the phenolic materials of the grape — tannins, coloring agents (anthocyanins) and flavor compounds— are leached from the grape skins, seeds and stems into the must.

Tartaric Acid: A naturally occurring grape acid. Tartaric acid is added to wine to increase acidity levels and decrease pH levels when necessary.

Malic Acid: A naturally occurring grape acid that decreases with ripening. It is one of the principal components of a wine's total acidity. Undesirable in high concentrations it is often reduced through malolactic fermentation to lactic acid.

Rack: In winemaking, transferring the product from one container to another is referred to as racking.

Phenolics: A group of chemical compounds occurring naturally in all plants. In wine, phenols are derived from grape skins, stems, and seeds.

Chaptalization: The addition of sugar to wine before or during fermentation.

Refractometer: In winemaking a refractometer is used to measure the brix level (sugar level) in your grapes or wine.