

# FLASH DÉTENTE SOLID AND LIQUID PHASE

VARIETY	TYPE OF WINE
Cabernet Sauvignon, Merlot	Red Wine
CHALLENGE(S)	OBJECTIVE
<ul style="list-style-type: none"> <li>Color Extraction</li> <li>Color Stability</li> <li>Off Aroma</li> </ul>	<ul style="list-style-type: none"> <li>Protect color and natural tannin</li> <li>Increase filterability, yield, and clarification of must</li> <li>Stabilize color and improve structure</li> <li>Encourage co-pigmentation and bank unstable color compounds</li> </ul>

## BACKGROUND

Flash détente is a variation of thermovinification where crushed grapes are rapidly heated to high temperature 158-194°F (70-90°C), then chilled instantaneously 80-95°F (30-35°C) in a high vacuum chamber. The grape skin and tissue are completely degraded allowing for phenolics, aromas, and polysaccharides to be rapidly available and released during vatting (Ribéreau-Gayon et al., 2006). The treated must can be pressed immediately or macerated for 3-4 days to dramatically increasing phenolics, reaching maximum anthocyanin and phenolic extraction. Unlike thermovinification, the short duration of thermal treatment and successive cooling reduces the thermal degradation of aromatic compounds and phenols (Morata et al., 2019).

Thermal treatments denature detrimental oxidative enzymes, and destroy microorganisms, making this treatment ideal for compromised fruit infected with *Botrytis cinerea* (Wang et al., 2016). Pomace treated with thermovinification techniques is extremely viscous and exogenous enzymes should be applied to facilitate efficient pressing and clarification. Sacrificial, condensed and co-pigmentation tannins for color stabilization and protection should be utilized to maintain an optimal ratio of anthocyanins to tannins (1:4).

## LIQUID PHASE PROTOCOL

WINEMAKING STAGE	OBJECTIVE	ENARTIS RECOMMENDATIONS	DOSAGE
GRAPE RECEPTION	<i>Sacrificial Antioxidant Color stabilization</i>	<a href="#">ENARTISTAN FERMCOLOR</a> Blend of condensed and hydrolyzable tannins from exotic wood species and ellagic tannins from chestnut.	20-40 g/hL
AFTER FLASH TREATMENT	<i>Improved filterability and clarification</i>	<a href="#">ENARTISZYM COLOR PLUS</a> EnartisZym Color Plus is a pectolytic enzyme displaying protease activity, allowing for the hydrolysis of grape proteins present in thermal treated must. It is effective in improving juice clarification (settling and centrifugation) and filterability. * Add during cooling (below 95°F, 35°C).	20 g/ton
<i>Flash water from condenser can have a high green character, amelioration should be done with chlorine free water to adjust for evaporative losses.</i>			
PRESSING	<i>Apply enzyme to must post flash release, allow maceration with enzyme in press before pressing.</i>		
CLARIFICATION	<p><i>Goal is to remove heavy solids and achieve less than 600 NTU before fermentation.</i></p> <ul style="list-style-type: none"> <li>• Vacuum Filtration: (50-180 NTU)</li> <li>• Centrifugation: (600-1,200 NTU)</li> <li>• Flotation: Warm flotation with gelatin and enzymes (150-600 NTU)</li> <li>• Cold Settling: 36-48 hours 150-600 NTU with enzymes (EnartisZym EZ Filter or EnartisZym RS)</li> <li>• EnartisZym EZ Filter should be used if the fruit is affected with <i>Botrytis cinerea</i></li> </ul> <p><i>High level of solids in liquid phase can lead to reductive volatile sulfur compounds, liquid phase must should be clarified to below 600 NTU before inoculation.</i></p>		
POST-FLASH AND SETTLING	<i>Co-pigmentation Color stability, antioxidant</i>	<a href="#">ENARTISTAN XC</a> Low molecular weight condensed tannins extracted exotic untoasted wood species. Favors co-pigment formation between alcohol extracted monocatechin fraction and the must anthocyanin fraction.	20-40 g/hL
AT YEAST INOCULATION	<i>Color and cold stability Improved mouthfeel and structure</i>	<a href="#">ENARTISPRO TINTO</a> Condensed grape seed tannin, ellagic tannin, and yeast hulls rich in mannoproteins  *homogenize with a pump-over	45 g/hL

## SOLID PHASE PROTOCOL

WINEMAKING STAGE	OBJECTIVE	ENARTIS RECOMMENDATIONS	DOSAGE
GRAPE RECEPTION	<i>Sacrificial antioxidant, color stabilization</i>	<a href="#">ENARTISTAN ROUGE</a> Blend of gallic, ellagic, and condensed tannins. Intense antioxidant and color stabilization capabilities.	120-200 g/ton
AFTER FLASH TREATMENT	<i>Improved filterability and clarification</i>	<a href="#">ENARTISZYM COLOR PLUS</a> EnartisZym Color Plus is a pectolytic enzyme displaying protease activity, allowing for the hydrolysis of grape proteins present in thermal treated must. It is effective in improving juice clarification (settling and centrifugation) and filterability. * Add during cooling (below 95°F, 35°C).	20 g/ton
<i>Flash water from condenser can have a high green character, amelioration should be done with chlorine free water to adjust for evaporative losses.</i>			
MACERATION	<i>Color stability</i>	<a href="#">ENARTISTAN FERMCOLOR</a> Blend of condensed and hydrolyzable tannins from exotic wood species and ellagic tannins from chestnut.	200 g/ton
<i>Allow for 3-4 day maceration, tasting every day until desired structure and tannin extraction is achieved.</i>			
VESSEL FILING	<i>Color and cold Stability Improved mouthfeel and Structure</i>	<a href="#">ENARTISPRO TINTO</a> Condensed grape seed tannin, ellagic tannin, and yeast hulls rich in mannoproteins *homogenize with a pump-over	45 g/hL
<i>Solid phase flash wines tend to ferment quickly, extraction of tannins during maceration window is fast, daily tasting and monitoring is critical to reduce the risk of excess tannin extraction.</i>			

**For more information call our Technical Winemaking Specialist at (707) 838-6312.**

## CITATIONS

Morata, A., González, C., Tesfaye, W., Loira, I., & Suárez-Lepe, J. A. (2019). Maceration and Fermentation: New Technologies to Increase Extraction. In *Red Wine Technology*(pp. 35-49). Academic Press.

Ribéreau-Gayon, P., Glories, Y., Maujean, A., & Dubourdieu, D. (Eds.). (2006). *Handbook of Enology, Volume 2: The Chemistry of Wine-Stabilization and Treatments* (Vol. 2). John Wiley & Sons.

Wang, J., Huo, S., Zhang, Y., Liu, Y., & Fan, W. (2016). Effect of different pre-fermentation treatments on polyphenols, color, and volatile compounds of three wine varieties. *Food science and biotechnology*, 25(3), 735-743.