



DRIVING CHARDONNAY STYLE: CLASSIC CALIFORNIA CHARDONNAY
Enhancing Buttery, Toast, Cream and Butterscotch Notes

VARIETY	TYPE OF WINE
Chardonnay	Premium Chardonnay
CHALLENGES (S)	OBJECTIVE
<ul style="list-style-type: none"> • Neutral Aroma • Lacking Mouthfeel • Thin • Acidic 	Utilize specific nutrients, yeast and vinification strategies to produce a high quality, rich, buttery California Style Chardonnay.

BACKGROUND

California Chardonnay is a staple in the broad range of Chardonnay wine styles. Consumers are demanding this rich, opulent style more than ever and producers have an unprecedented set of enological tools available to deliver this style without the high costs associated with the traditional fermentation in barrel. Diacetyl (butterscotch, yeasty, buttery, toasty) is the chemical compound responsible for driving this style and is produced from citric acid metabolism by select lactic acid bacteria.

Increasing Mouthfeel and Diacetyl (2,3-butanedione):

- Choice of yeast strain and lower Inoculation rate (10⁴-10⁵ CFU/mL).
- Temperature above 64°F (18°C).
- Mitigate contact with lees (longer contact with lees decreases the levels of diacetyl).
- Semi-aerobic environments can increase the concentration of diacetyl
 - Redox 300mV and 2-4 mg/L oxygen (Nielsen and Richelieu, 1999).
- Sulfite wines once desired level of buttery character is reached.
 - SO₂ reacts with diacetyl in a reversible manner, revealing this character during maturation.
- **WARNING:** Citric acid additions can increase the production of acetic acid and vary among strain selection.

*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.*

PROTOCOL

WINEMAKING STAGE	OBJECTIVE	ENARTIS RECOMMENDATIONS	DOSAGE
GRAPE PROCESSING	<i>Antimicrobial, Antioxidant</i>	WINY: Pure high quality potassium metabisulfite (KMBS).	35 g/ton
SETTLING	<i>Clarification</i>	ENARTISZYM RS Pectolytic enzyme with cellulase and hemicellulase side activity, formulated for difficult to clarify white juices.	2 mL/hL
	<i>Antimicrobial Copper Removal</i>	ENARTIS STAB MICRO M Preparation of pre-activated chitosan and yeast hulls. Removes native bacteria flora and spoilage organisms for increased winemaking control and selectivity.	15 g/hL
REHYDRATION NUTRIENTS	<i>Yeast Nutrient Supplementation</i>	NUTRIFERM ENERGY Complex nutrient containing amino acids, vitamins, and micronutrients essential for yeast multiplication and growth.	15 g/hL
ALCOHOLIC FERMENTATION	<i>Yeast Rehydration and Inoculation</i>	ENARTISFERM VINTAGE WHITE Saccharomyces cerevisiae recommended to produce Chardonnay fermented and aged in barrel.	20 g/hL
	<i>Mouthfeel Colloid Stability</i>	ENARTISPRO UNO Yeast cell walls rich in soluble mannoproteins. Softens wine and increases roundness.	20 g/hL
1/3 THROUGH ALCOHOLIC FERMENTATION	<i>Nutrient Supplementation</i>	NUTRIFERM ADVANCE Complex additive containing DAP, inactivated yeast and cellulose.	20 g/hL
<p><i>After alcoholic fermentation is complete, rack of the fermentation lees as yeast and some bacteria can metabolize diacetyl. Perform gentle mixing/stirring with added yeast hulls to promote semi-aerobic conditions to favor the production of diacetyl (redox 300mV and 2-4 mg/L oxygen).</i></p>			
MALOLACTIC FERMENTATION	<i>Mouthfeel Diacetyl Microbial Stabilization</i>	ENARTISML MCW Robust strain of Oenococcus oeni freeze dried for direct inoculation. Produces high diacetyl and contributes to buttery, cream character in wine.	Volume dependent
	<i>Mouthfeel Colloid Stability</i>	SURLI ONE Enzymatically treated yeast hulls for increasing wine volume and mouthfeel, shortening the window for maturation on lees.	20 g/hL
<p><i>In the case of low malic acid, supplement with food grade L-malic acid to target 4 g/L (L-malic is assemimeable, D-malic in not and will contribute to increase total acidity). Track malic acid consumption diligently, once malic acid is depleted, diacetyl levels typically peak and will be begining to diminish with prolonged malolactic bacteria activity. Add sulfite once desired level of diacetyl is achieved.</i></p>			

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WINEMAKING STAGE	OBJECTIVE	ENARTIS RECOMMENDATIONS	DOSAGE
AFTER DESIRED MLF	<i>Oak Aromatics Increasesweetness</i>	INCANTO TOFFEE Medium plus toasted French oak chips with notes of toasted hazelnut, almond, vanilla, and apricot.	1-4 g/L
	<i>Antioxidant, Antimicrobial</i>	WINY: Pure high quality potassium metabisulfite (KMBS).	0.5 ppm molecular SO ₂

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

CITATIONS

Nielsen, J.C. and Richelieu, M., 1999. Control of flavor development in wine during and after malolactic fermentation by *Oenococcus oeni*. Appl. Environ. Microbiol., 65(2), pp.740-745.

Sumby, K.M., Grbin, P.R. and Jiranek, V., 2014. Implications of new research and technologies for malolactic fermentation in wine. Applied microbiology and biotechnology, 98(19), pp.8111-8132.

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