WINE DOCTOR

enartis

Inspiring innovation.

YEAST

NUTRIENTS

BACTERIA

ENZYMES

TANNINS

SO_2

STABILIZING AGENTS

FINING AGENTS

SULFITING AGENTS

OAK ALTERNATIVES

We support customers from the earliest stage of harvest through aging and bottling with premium

YEAST • NUTRIENTS • **BACTERIA** • ENZYMES • **TANNINS** • SO_2

STABILIZING AGENTS • FINING AGENTS • **SULFITING AGENTS**

OAK ALTERNATIVES

This document contains tips and advice on products used to correct the most common wine defects. To evaluate their effects and determine the optimal dosage, we recommend setting up trials.

Depending on the time available for treatment, specific products will be suggested.

WHITE WINES

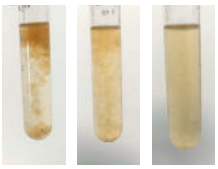
1 GRAPE RECEPTION

PROBLEMS	CAUSES	SOLUTIONS
• Oxidation • Microbiological contamination • Extraction of unwanted compounds	• Grape health • Hand vs. machine harvested • Transport and damage (temperature, transport time)	**EnartisTan Blanc, EnartisTan Antibotrytis, AST, EnartisStab Micro M, Winy**

	GOALS	STRATEGIES
2 DESTEMMING/ CRUSHING	**PREVENT OXIDATION**	**EnartisTan Blanc, AST**
3 CRUSHER	**EXTRACT VARIETAL AROMAS**	Maceration enzyme **EnartisZym Arom MP**
	PROTEIN STABILIZATION	
	! Oxidation	**EnartisTan Arom**
4 EXITING THE CRUSHER	**MUST DEPECTINIZATION**	Pectolytic enzymes **EnartisZym RS** *(difficult must)* **EnartisZym Arom MP**

PECTIN DETERMINATION TEST

Must with residual pectin



Must without pectin

Materials: Ethyl alcohol, hydrochloric acid 37%, test tubes

Method:

- Prepare one liter of acidified 96% v/v hydroalcoholic solution: 950 mL ethyl alcohol, 5 mL hydrochloric acid 37%. Add demineralized water to reach 1 L.
- In a test tube, mix 2 parts of the acidified alcohol solution with 1 part must or wine.
- If the must or wine is rich in pectins, the appearance of floccules or haze is observed.
- If the must or wine is pectin-free, no visual changes are observed.

	! High presence of pectins	Increase enzyme dose/contact times
	! Presence of glucans	**EnartisZym EZFilter** *(for grapes affected by Botrytis)*
5 STATIC CLARIFICATION OR FLOTATION	**CLARIFICATION** **ELIMINATION OF POLYPHENOLS** **PROTEIN STABILIZATION**	Fining agents **Plantis AF, Plantis AF-L, Plantis AF-Q, Claril SP, Protomix AF, Neoclar AF, Pluxcompact, Protomix G, Sil Floc**

FLOTATION vs STATIC CLARIFICATION

	Flotation	Static Clarification
<8% suspended solids	●	●
8<% suspended solids>12	●	●
>12% suspended solids *	●	●
Residual pectins	●	●

*reduce the solids content with centrifugation

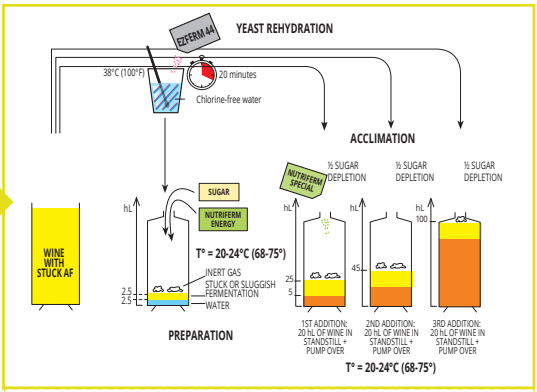
Flotation Problems	Solution 1	Solution 2
Large/heavy floccules which tend to sink	Reduce the dose of protein clarifier to decrease the size of the floccules	Sil Floc in combination with protein clarifier and bentonite
Non-compact cap	Increase the dosage of bentonite to favor the compaction of the cap	Protein clarifier in combination with Sil Floc and bentonite
high % of solids	Increase nitrogen flow Reduce or eliminate bentonite	If >8%, perform static clarification
Double layer of lees	Check for residual pectin	Reduce the dosage of bentonite

6 FILLING THE TANK	**PRESERVE AROMATIC PROFILE**	**Incanto NC Range** **EnartisPro Range** **EnartisTan Arom** **EnartisTan CIT**
	PREVENT OXIDATION	

7 FERMENTATION

GOALS	STRATEGIES
GUARANTEE REGULAR FERMENTATION	Selected yeast and nutrients

Aromatic Profile		Yeast	Nutrients
Citrus		EnartisFerm Q Citrus	Nutriferm Arom Plus
Thiolic	Tropical	EnartisFerm Aroma White	Nutriferm Arom Plus
	Herbaceous	EnartisFerm Q4	Nutriferm Energy
	Complex	EnartisFerm ES181	Nutriferm Arom Plus
Sweet Fruit		EnartisFerm Top Essence	Nutriferm Arom Plus
Floral		EnartisFerm ES U42	Nutriferm Arom Plus
Varietal		EnartisFerm Vintage White	Nutriferm Energy

Sluggish fermentation	Temperature control, oxygen, **Nutriferm No Stop** (depending on the fermentation stage)
Stuck fermentation	
Reduction	Temperature control, oxygen, **Nutriferm Special**
Unwanted fermentation	**EnartisStab Micro M** Greater guarantee of dominance of selected yeast

8 CLARIFICATION AND STABILIZATION

9 FILTRATION

PROBLEMS	CAUSES	SOLUTIONS
Haze	Metallic and protein haze	**Claril ZW, Pluxcompact**
Browning, loss of aromas	Oxidation	**Tannins and fining agents**
Unwanted MLF, organoleptic changes	Microbiological contamination	**EnartisStab Micro M**
Loss of freshness and sediment in the bottle	Precipitation of crystals (CaT, KHT)	**Cellogum LV20, Zenith, Enocristal Ca**
Aromatic changes, light-struck defect	High presence of riboflavin	**Pluxcompact**
Organoleptic defects	Off-flavors, unbalanced	**Fining agents**
Low filterability	Microbiological contamination	**EnartisStab Micro M**
	Presence of glucans and pectins	**EnartisZym EZFilter**
	Presence of suspended solids	**Fining agents**
	Presence of electrostatic charges	**Check the grounding of the tanks**

10 PRE-BOTTLING

PROBLEMS	CAUSES	SOLUTIONS
Loss of aromatic quality	Oxidation	**EnartisTan SLI, Hideki**
	Reduction	**EnartisTan Elevage, EnartisTan SLI, EnartisTan Max Nature**

TEST TO IDENTIFY THE CAUSE OF REDUCTION

	0.5 ppm Cu^{++}	2 g/hL EnartisTan Elevage	5 g/hL ascorbic acid, 5 minutes, then 2 g/hL EnartisTan Elevage
H_2S	🟢	🔴	🔴
Mercaptans	🟢	🟢	🟢
Disulfides	🔴	🔴	🟢

STRATEGY

H_2S	5-20 g/hL Revelarom
Mercaptans	2 g/hL EnartisTan Elevage, 2 g/hL EnartisTan SLI
Disulfides	5 g/hL ascorbic acid and 2 g/hL EnartisTan Elevage, 2 g/hL EnartisTan SLI

Discoloration	Pinking	**Citrostab rH**

PINKING TEST

QUICK METHOD
1. 150 mL of the test wine
2. 0.375 mL of 3% hydrogen peroxide
3. Place in laboratory oven at 40°C for 15 min.
If the wine is subject to pinking, the color will be pink at the end of the test.

Organoleptic changes	Off-flavors, unbalanced	Solutions shown in the table below

ORGANOLEPTICS CHANGES	IN TANK (treatments during wine maturation)	PRE-BOTTLING (last-touch treatments)
Bitterness	Claril SP	Surlì Velvet Citrogum
Astringency	Claril SP	Surlì Velvet EnartisTan Max Nature
Acidity	EnartisTan E	Citrogum EnartisTan SLI
Green/vegetal	Claril ZW Neoclar AF	EnartisTan Napa EnartisTan DC EnartisTan Max Nature EnartisTan VNL Enartis FT
Evoluted	Claril SP Incanto NC White	EnartisTan Unico #3 + EnartisTan FF EnartisTan SLI Hideki
Structure	EnartisTan E Incanto NC White	EnartisTan FF EnartisTan FT EnartisTan VNL

RED WINES

1 GRAPE RECEPTION

PROBLEMS	CAUSES	SOLUTIONS
• Oxidation • Microbiological contamination • Indigenous fermentation • Extraction of unwanted compounds	• Grape health • Hand vs. machine harvested • Transport and damage (temperature, transport time)	**EnartisTan Rouge, EnartisTan FP, EnartisTan Antibotrytis, AST, EnartisStab Micro M, Winy**

	GOALS	STRATEGIES
2 DESTEMMING/ CRUSHING	**PREVENT OXIDATION**	Tannin **EnartisTan Fermcolor, Incanto NC Range, EnartisTan Rouge, EnartisTan FP**
	Incomplete phenolic maturity	Vegetable/green notes **EnartisTan Color**
3 FILLING TANK	**COLOR AND TANNIN EXTRACTION**	Enzymes **EnartisZym Color, EnartisZym Color Plus**
	COLOR STABILIZATION	**EnartisTan V, EnartisTan Fermcolor, EnartisTan XC, EnartisTan Color, Incanto Range, EnartisPro Range**
4 FERMENTATION	**GUARANTEE REGULAR FERMENTATION**	Selected yeast and nutrients

Aromatic Profile	Yeast	Nutrients
Fruity	EnartisFerm ES454, EnartisFerm D20, EnartisFerm Red Fruit, EnartisFerm Q7	Nutriferm Arom Plus
Thiolic	EnartisFerm ES488, EnartisFerm WS	Nutriferm Arom Plus
Spicy	EnartisFerm VQ51, EnartisFerm Vintage Red, EnartisFerm WS	Nutriferm Energy
Floral	EnartisFerm ES U42	Nutriferm Energy

5 POST ALCOHOLIC FERMENTATION	**COLOR STABILITY**	Macro-oxygenation **EnartisTan E, EnartisTan XC, EnartisTan FT**
	MALOLACTIC FERMENTATION	Specific bacteria and nutrients

OPTIMAL BACTERIA PREPARATION PROCESS

1 Rehydration	EnartisML Silver	15-20 minutes in chlorine-free H_2O
2 Nutrients	Nutriferm ML	In pre-inoculated wine

MALOLACTIC FERMENTATION

	Easy	Difficult	Extreme
Temperature	18-22°C	12-18°C	<12°C
Alcohol	11-13.5%	13.5-15.5%	>15.5%
pH	3.4-3.6	3.0-3.4	<3.0
Free SO_2	<5ppm	5-12ppm	>12ppm
Cu, fatty acids, total polyphenols, etc.			
In difficult conditions, a starter culture that allows adaptation to the limiting parameters is recommended.			

	GOALS	STRATEGIES
POST ALCOHOLIC FERMENTATION	**ORGANOLEPTIC BALANCE**	Micro-oxygenation **Incanto Range, EnartisTan Range**
	MICROBIOLOGICAL STABILITY	**EnartisStab Micro M**
	PREVENT OXIDATION	**EnartisTan SLI, HIDEKI**

POST MALOLACTIC FERMENTATION

	Low Phenolic Structure	High Phenolic Structure
Total polyphenols (mg/L)	<1800	>2500
pH	<3.35	>3.55
Color intensity (DO420 nm + DO520 nm + DO620 nm) x 10	15	18
Hue (DO420 nm/DO520 nm)	<0.55	>0.75
Total anthocyanins (mg/L)	<250	>350
O_2 mg/L/month	**0.5-1.5**	**1.5-3.5**

EVALUATION of the analytical parameters, organoleptic profile and starting turbidity to define the correct oxygen dosage.

PARAMETERS to check daily:
- Sensory (reduction, oxidation, vegetable, "tannin evolution," volume)
- Analytical parameters (acetaldehyde, volatile acidity and dissolved O_2)

	PROBLEMS	CAUSES	SOLUTIONS
6 CLARIFICATION AND STABILIZATION	Loss of freshness and deposits in the bottle	Crystal precipitation	**Zenith**
	Aromatic and flavor changes	Microbiological contamination	**EnartisStab Micro M**
	Loss of color and deposits in the bottle	Precipitation of color material	**Maxigum Plus, Zenith Color, Claril ZR**
	Organoleptic defects	Off-flavors, unbalanced	**Fining agents**
7 FILTRATION	Low filterability	Microbiological contamination	**EnartisStab Micro M**
		Presence of glucans	**EnartisZym EZFilter**
		Presence of suspended solids	**Fining agents**

8 PRE-BOTTLING

PROBLEMS	CAUSES	SOLUTIONS
Loss of aromatic quality	Oxidation	**EnartisTan SLI, Hideki**
	Reduction	**EnartisTan Elevage, EnartisTan SLI, EnartisTan Max Nature**

TESTS TO IDENTIFY THE CAUSE OF REDUCTION

	0.5 ppm Cu^{++}	2 g/hL EnartisTan Elevage	5 g/hL ascorbic acid, 5 minutes, then 2 g/hL EnartisTan Elevage
H_2S	🟢	🔴	🔴
Mercaptans	🟢	🟢	🟢
Disulfides	🔴	🔴	🟢

STRATEGIES

H_2S	5-20 g/hL Revelarom
Mercaptans	2 g/hL EnartisTan Elevage, 2 g/hL EnartisTan SLI
Disulfides	5 g/hL ascorbic acid and 2 g/hL EnartisTan Elevage, 2 g/hL EnartisTan SLI

PROBLEMS	CAUSES	SOLUTIONS
Organoleptic changes	Off-flavors, unbalanced	Solutions shown in the table below

ORGANOLEPTIC CHANGES	IN TANK (treatments during wine maturation)	PRE-BOTTLING (last-touch treatments)
Bitterness	Incanto NC Cherry	EnartisTan DC EnartisTan MEL Surlì Velvet
Astringency	Claril ZR Incanto NC Cherry	Surlì Velvet EnartisTan Max Nature EnartisTan VNL EnartisTan MEL
Acidity	EnartisTan E	Maxigum Plus EnartisTan SLI
Green/vegetal	Neoclar AF	EnartisTan Napa EnartisTan DC EnartisTan Max Nature EnartisTan VNL
Evoluted	Plantis AF Plantis AF-L Incanto NC White	EnartisTan Unico #3 EnartisTan SLI Hideki
Structure	Incanto Toffee Incanto Black Spice Incanto Dark Chocolate Incanto NC Cherry Incanto NC Dark Chocolate	EnartisTan Napa EnartisTan Cœur De Chêne EnartisTan Unico #2 EnartisTan Rich EnartisTan TF

enartis

Inspiring innovation.