



2019 CIDER HANDBOOK OF **PRODUCTS**, **SERVICES** AND **SUPPLIES**



enartis

Inspiring innovation.

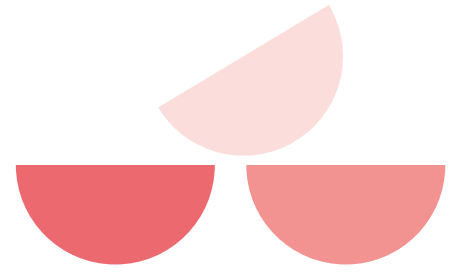
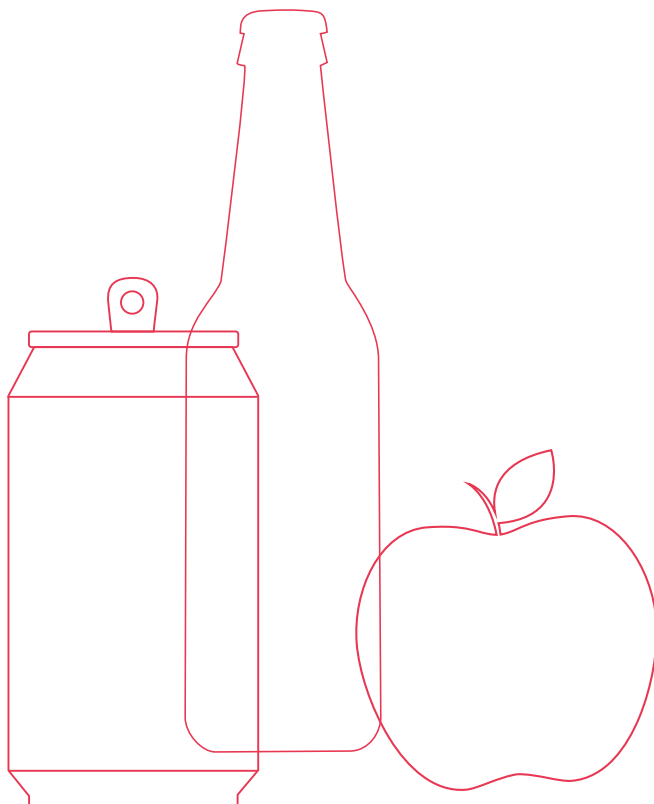


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Testing & Analytical Parameters

High-quality cider making greatly benefits from understanding the chemistry of juice prior to fermentation as well as monitoring certain analytical parameters throughout the cider making process. Performing analysis is recommended during reception and processing of fruit and juice, throughout fermentation, post-fermentation into maturation and prior to bottling. Each parameter has specific target values that are essential to craft a high-quality product which is stable over time until consumption.

°Brix is a measure of percentage of sugar in an aqueous solution (1°Brix is 1 gram of sucrose in 100 grams of solution). °Brix provides information on sugar content in apple juice, giving an estimation of potential alcohol after fermentation. It is important to measure °Brix prior to fermentation to know the starting point and again throughout fermentation to follow fermentation kinetics. Apples contain roughly 11-16 °Brix at harvest, depending on the cultivated variety, with some ranging higher or lower.

Specific Gravity is another form of dissolved solids measurement. At the end of fermentation, measuring **Glucose + Fructose** is recommended (often referred to as residual sugar) to confirm the completion of fermentation (fermentation considered complete when G+F<100 mg/100 mL).

pH has an important impact on microbial stability, oxidative stability and organoleptic profile of apple juice and cider. pH greatly impacts the texture and balance of ciders, especially with varying degrees of sweetness. Lower pH conditions help prevent development of spoilage microbes due to more effective microbial protection from SO₂ at lower pH levels. At the juice stage, pH is usually between 3.3 and 3.7, which is one of the reasons a blend of different apples is key to the final balance in quality ciders.

Titrateable Acidity (TA) is the measure of organic acids and has an important impact on cider balance. It is expressed as g/L of malic acid and levels vary between 3-8 g/L average.

- ▶ **Yeast Assimilable Nitrogen (YAN)** is a calculation of the total yeast assimilable organic and inorganic nitrogen. A successful fermentation requires 100-200 mg/L. Insufficient or too high levels of YAN may cause stress to yeast, affecting fermentation kinetics and leading to the production of off-flavors such as hydrogen sulfide (H₂S).

- ▶ **Acetic Acid** can be produced by yeast, spoilage microorganisms and oxidation reactions. If above 0.080 mg/100 mL, it can have a detrimental perception to the quality of cider. Also known as Volatile Acidity.

Malic Acid is the main organic acid present in cider. It contributes to pH, mouthfeel and organoleptic profile of cider. Additionally, it can be metabolized by lactic acid bacteria to produce lactic acid, a softer textured acid. Malolactic fermentation can be desirable to increase softness, roundness and creaminess, often found in barrel-aged ciders though it's typically considered undesirable and a potential fault.

Lactic Acid can be used to track and understand the status of malolactic fermentation. While this can be desired to soften the acid texture in certain cider styles, it is often attributed to microbial development, leading to spoilage. Verifying lactic acid content regularly (at least twice) during cellar ageing, is a proactive way to minimize unwanted microbial development and off-flavors.

- ▶ **Pectin Test** provides information on the residual content of pectin in cider. If pectins are present, clarification and filtration may be difficult. **Glucan Testing** is also recommended to reduce issues during filtration. Tip: For a quick pectin test, take 25 mL of juice, add 50 mL of acidulated 95% alcohol and wait ten minutes. Formation of gel indicates pectin presence.

Microscopic Scans give a snapshot of the microbial health of juice or cider. They are often used throughout cider making as quick quality control. Microscopic Scans provide valuable information for understanding microbial flora of a cider and ensure microbial stability during maturation.

- ▶ **PCR (Polymerase Chain Reaction)** or **Culture Plating** can be used to precisely identify and quantify microorganisms present in cider.

Alcohol content is important for TTB and FDA labeling, as well as for stability reasons. The lower the alcohol content, the more sensitive to spoilage the cider will be.

Maintaining appropriate levels of **Molecular SO₂** will help prevent spoilage and protect from oxidation reactions. Molecular SO₂ is calculated with **Free SO₂** and **pH** values. Recommended molecular SO₂ for ciders during cellar storage is 0.8 mg/L, and at packaging it is important to adjust based on package material. Canned ciders require lower levels of Free SO₂ to minimize degradation of liner material.

Turbidity is an important measure of the visual quality of cider. Unless the cider is intended to be cloudy, turbidity levels at bottling should be under 2 NTU.

Copper and **Iron** are utilized by polyphenoloxidase enzymes, such as laccase and tyrosinase, to enzymatically oxidize phenols in cider leading to premature browning. In canning, low copper and iron levels are extremely important to ensure long shelf life of packaged product.

Path to Quality

	Juice	Post-Fermentation	Pre-Bottling	Post-Bottling	Price
°BRIX	●				\$ 20.00
YEAST ASSIMILABLE NITROGEN (YAN)	●				\$ 50.00
pH	●	●	●	●	\$ 16.00
TITRATABLE ACIDITY (TA)	●	●	●		\$ 16.00
PECTIN TEST	●	●	●		\$ 31.00
GLUCOSE + FRUCTOSE		●			\$ 25.00
MALIC ACID	●	●			\$ 25.00
LACTIC ACID		●			\$ 31.00
MICROSCOPIC SCAN		●	●	●	\$ 42.00
ACETIC ACID		●	●		\$ 37.00
ALCOHOL		●	●	●	\$ 26.00
SO ₂ (FREE & TOTAL) - AERATION OXIDATION			●	●	\$ 47.00
TURBIDITY			●	●	\$ 16.00
FILTERABILITY INDEX			●		\$ 52.00
CARBONATION CHECK LEVEL			●		\$ 29.00
CARBONATION - CAN/BOTTLE LEVEL				●	\$ 52.00
BOTTLED WINE STERILITY				●	\$ 37.00
PANEL PRICING	\$ 110.00	\$ 170.00	\$ 200.00	\$ 150.00	

ANALYTICAL PANELS

Please contact us or see our current Handbook of Services and Supplies for a complete list of available analytical services.

Juice Panel for Cider Making

Essential analysis for best managing alcoholic fermentation. This panel provides a complete snapshot of fruit quality, acid balance and yeast nutritional health.

Includes: °Brix, Malic Acid, Pectin Test, pH, TA (expressed as Malic Acid), YAN.

Sample Requirement: 250 mL

Pre-Bottling Panel for Cider

All the information needed to prepare cider prior to bottling grouped into one panel.

Includes: Acetic Acid, Alcohol (by GC), Carbonation Level, Filterability Index, Microscopic Scan, Pectin Test, pH, SO₂ (Free, Total and Molecular), TA (expressed as Malic Acid), Turbidity.

Sample Requirement: 2 x 750 mL

Post-Fermentation Panel for Cider

This panel provides information needed to understand cider status after fermentation and manage quality during ageing.

Includes: Acetic Acid, Alcohol (by GC), Glucose + Fructose, Lactic Acid, Malic Acid, Microscopic Scan, Pectin Test, pH, TA (expressed as Malic Acid).

Sample Requirement: 250 mL

Post-Bottling Panel for Cider

Excellent analytical panel to ensure consistency of packaging and product quality control post-bottling.

Includes: Alcohol (by GC), Bottled Wine Sterility, Carbonation Level of Canned or Bottled Cider, Microscopic Scan, pH, SO₂ (Free, Total and Molecular), Turbidity.

Sample Requirement: 3 x Packaged Product

Monthly QC Panel

Essential for monitoring cider microbial stability during ageing.

Includes: pH, Free SO₂, Molecular SO₂, Acetic Acid, Microscopic Scan.

Sample Requirement: 250 mL

\$ 78.00

PCR Panel Determining Spoilage Microorganisms

Identify and quantify main spoilage microorganisms at the early stage of production and prevent cider spoilage and further contamination.

Includes: Brettanomyces, Lactic Acid Bacteria (Lactobacillus, Pediococcus, Oenococcus), PCR for Acetic Acid Bacteria (Acetobacter, Gluconobacter and Gluconacetobacter), Saccharomyces and Zygosaccharomyces.

Sample Requirement: 50 mL

\$ 114.00

Unfiltered Bottling Panel

Evaluates the risk of bottling cider without filtration. This panel checks for stability to identify potential for yeast or bacteria re-fermentation and microbial population.

Includes: Glucose+Fructose, Malic Acid, Turbidity, Acetic Acid, Culture for Yeast, Culture for Bacteria.

Sample Requirement: 500 mL

\$ 109.00

Canned Packaging Panel

Evaluates the key chemical parameters prior to packaging which can influence shelf life degradation in canned products. Samples submitted with greater than 18% alcohol, please request alcohol testing additionally.

Includes: Copper, Iron, SO₂ (Free and Total), Chloride, pH.

Sample Requirement: 500 mL

\$ 110.00

Nutritional Content Panel

Available upon request, please inquire for details!

Cider Sensory Improvement Panel

Helps cider makers diagnose and correct faults and improve sensory profile. After a sensory analysis and bench trials, we provide treatment options that improve and optimize a particular cider. It can be used to treat issues such as poor color, astringency, unbalanced mouthfeel, oxidation and off-flavors or off-aromas. This panel is also available for distilled beverages, wine, beer, sparkling wine and dosage determination trials.

Includes: Sensory Analysis before and after treatment, Fining Trials, Bench Trials with Tannins and/or Polysaccharides, Mini-Consult.

Sample Requirement: 3 x 750 mL

\$ 400.00

Additional Analyses

Heat Stability – Proteins	250 mL	\$ 21.00
Bentonite Fining Trial	750 mL	\$ 83.00
Copper	50 mL	\$ 29.00
Iron	50 mL	\$ 29.00
Culture for <i>Brettanomyces</i>	50 mL	\$ 28.00
Ethylphenols (4EP/4EG)	50 mL	\$ 71.00
Gluconic Acid	50 mL	\$ 31.00
Sediment/Haze Identification	1 Finished Bottle	\$ 62.00

Enartis USA offers a full range of lab equipment and supplies for cider testing. Some of the most requested supplies are outlined below. Please contact us or see our current Handbook of Services and Supplies for a complete list of available laboratory supplies.

Labware and Supplies

SUGAR TESTING – REFRACTOMETER FOR INITIAL °BRIX		
Alla France - Analog	Item #50-111-0019	\$ 82.00
Kimwipes	Item #20-141-0000	\$ 7.45
Pipette Disposable 25mL sterile	Item #20-164-0025	\$ 2.05
Beaker 5L Poly with handle	Item #20-014-5000	\$ 48.00
Graduated Cylinder 100mL Nalgene	Item #20-063-0100	\$ 43.25
Atago - Digital - PAL-1	Item #50-111-0007	\$ 380.00
SUGAR TESTING – HYDROMETER FOR °BRIX DURING FERMENTATION AND POST FERMENTATION		
0°-35° Brix with Celsius Thermometer	Item #20-126-0000	\$ 42.25
-5° to +5° Brix with Celsius Thermometer	Item #20-130-0000	\$ 42.25
0°-35° Brix with Fahrenheit Thermometer	Item #20-138-0009	\$ 42.25
-5° to +5° Brix with Fahrenheit Thermometer	Item #20-138-0005	\$ 42.25
pH METERS		
Atago – Handheld Digital	Item #50-111-0016	\$ 145.00
Orion Star A111 Benchtop	Item #50-105-0028	\$ 1,082.00
PHENOLIC ANALYSIS - JUICE AND CIDER		
Nomasense Polyscan P200	Item #50-250-0200	\$ 4,400.00
SPECTROPHOTOMETERS – ADVANCED LABORATORY ANALYSIS		
Vintessential V-120	Item #50-113-0120	\$ 1,950.00
DISCRETE ANALYZER – ADVANCED LABORATORY ANALYSIS		
Vintessential Chemwell T	Item #50-209-0002	\$ 15,000.00
SULFUR DIOXIDE ANALYSIS - AERATION-OXIDATION METHOD		
Aeration-Oxidation Setup No.3	Item #50-112-5000	\$ 891.00
SULFUR DIOXIDE ANALYSIS - RIPPER METHOD		
Sulfilyser – Semi-Automated Ripper Method	Item #50-600-0001	\$ 2,880.00
CARBONATION TESTING – GENERAL LEVELS – CARBODOSEUR		
Alla France	Item #50-001-0001	\$ 273.00
Laboratoires Dujardin-Salleron	Item #50-001-0000	\$ 278.00
CARBONATION TESTING – LABORATORY GRADE – PACKAGED BOTTLE AND CAN PIERCING		
Zahm & Nagel - Series 6000	Item #50-029-0001	\$ 1,045.00
CARBONATION TESTING – LABORATORY GRADE – TANK		
Zahm & Nagel - Series 1000	Item #50-029-0002	\$ 1,550.00

Using pectolytic enzymes on milled apples prior to pressing increases juice extraction rates, especially for cold storage apples with high pectin level due to the breakdown of cellular walls. After pressing, it is important to apply clarification enzymes to improve settling and dramatically improve filterability. Pectins make up 1-1.5% of total solids in apple juice and are usually the cause of difficult clarification and pre-bottling filtration issues. Glucans, formed by microbial colonies, are chained polysaccharides which negatively impact filtration and clarification, and require β -glucanase enzymes to cut the bonds to allow for removal. *Please contact us or see our current Handbook of Services and Supplies for a complete list of available enzymes.*

WHEN SHOULD ENZYMES BE ADDED?

Enzymes are most effective when added to juice before or during fermentation, where they will also benefit from the elevated fermentation temperature to break down pectins, glucans, cellulose and hemicellulose.

WHAT ARE THE DIFFERENCES BETWEEN POWDERED AND LIQUID FORMS OF ENZYMES?

Powdered enzymes are easy to store, have a long shelf life with limited risk of contamination and require no preservatives. Liquid enzymes are convenient to use and dose, however require cold storage and have a shorter shelf life due to possible microbiological contamination after opening.

HOW DO I DECIDE WHAT DOSAGE OF ENZYME TO USE?

Enzymes perform at an optimal combination of temperature, dosage rate and contact time. Dosage is related to the desired effect, contact time, temperature and inhibiting factors.

HOW DOES TEMPERATURE AFFECT ENZYMATIC ACTIVITIES?

Most enzymes are denatured at temperatures above 60°C (140°F) and inactivated at temperatures below 5°C (40°F). Enzymes work optimally at warmer temperatures and well at cellar temperatures between 59-86°F (15-30°C), however lower temperatures (less than 59°F) can decrease enzymatic activity and require additional contact time or higher dosage rates to complete the breakdown of pectins.

ENZYMES

EnartisZym RS

IMPROVES
FILTRATION

- Liquid pectolytic enzyme with hemicellulase and other side activities to break down the “hairy zone” of pectins
- Intense and rapid depectinization reaction
- Reduces solids content and improves filtration dramatically

Applications: Prior to fermentation in juice and post fermentation in difficult to clarify ciders.

Dosage: 3-6 mL/hL (114-227 mL/1,000 gal) for juice and cider

1 Kg (Item #35-160-0001) \$ 157.00

EnartisZym Quick

- Liquid pectolytic enzyme
- Developed for juice clarification by flotation
- High pectin-lyase content for quick depectinization

Dosage: 2-4 mL/hL (75-151 mL/1,000 gal) for juice

1 Kg (Item #35-110-0001) \$ 120.00

25 Kg (Item #35-110-0020) \$ 2,450.00

EnartisZym CDR-C

- Liquid pectolytic enzyme
- Intense pectin breakdown through depolymerization reaction
- Reduces solids and improves filtration

Applications: Addition after pressing and prior to fermentation for kinetic interaction through convective movement.

Dosage: 2-4 mL/hL (75-151 mL/1,000 gal)

0.25 Kg (Item #35-175-0250) \$ 50.00

TIP: If your cider analysis comes back POSITIVE for pectins or glucans, try our EnartisZym RS!

EnartisZym RS(P)

- Micro-granulated powdered pectolytic enzyme with hemicellulase and other side activities to break down the “hairy zone” of pectins
- Intense and rapid depectinization reaction
- Reduces solid content and improves filtration

Applications: Prior to fermentation in juice and post fermentation in difficult to clarify ciders.

Dosage: 3-6 g/hL (0.25-0.50 lb/1,000 gal) for juice and cider

0.1 Kg (Item #35-160-0100) \$ 17.50

EnartisZym Elévage

- Micro-granulated pectolytic enzyme with significant β -glucanase activity
- Enhanced break down of glucans which can lead to issues during filtration

Applications: Addition to cider only, post-fermentation.

Dosage: 2-4 mL/hL (75-151 mL/1,000 gal) for cider

0.25 Kg (Item #35-150-0250) \$ 85.00

EnartisZym Arom MP

- Micro-granulated pectolytic enzyme preparation developed to increase aromatic compound extraction, increase press extraction and improve juice clarification
- Contributes to protein stabilization

Applications: Sprayed onto milled apples prior to pressing to increase extraction of juice.

Dosage: 20-50 g/ton

0.25 Kg (Item #35-130-0250) \$ 54.00

YEAST

The choice of yeast is critical for the final quality of cider. In addition to ensuring complete conversion of sugar into alcohol, the selected yeast has an impact on aromatics, mouthfeel and flavor profile. Among the Enartis yeast portfolio, seven yeast strains have been selected for cider production. While ensuring clean and complete fermentations, these yeast strains produce appealing aroma and flavor profiles. *Please contact us or see our current Handbook of Services and Supplies for a complete list of available yeast strains.*

EnartisFerm WS

BEST
SELLER



Considered one of the most robust California yeast strains. Guarantees complete and clean fermentations even in challenging conditions. Respects cultivated variety characters, increases freshness and fruit expression, and produces round cider with a balanced mouthfeel. Low producer of H₂S.

Dosage: 20-40 g/hL (1.7 -3.3 lb/1,000 gal)

0.5 Kg	(Item #45-053-0500)	\$ 42.50
10 Kg	(Item #45-052-0010)	\$ 550.00

"WS is reliable in all fermentations, even on the most difficult ones. It is a concentration of quality and efficiency in every aspect." - Matteo Corazzolla, Cider Producer at L.M. di Maria Lucia Melchiori & C (Italy)

EnartisFerm ES Floral

Quick fermenter, delicate aromas of apple blossom, candied apple and spices. At moderate fermentation temperatures (18-24°C), shows increase in floral and fruit notes, producing elegant and complex ciders.

Dosage: 20-40 g/hL (1.7-3.3 lb/1,000 gal)

0.5 Kg	(Item #45-160-0500)	\$ 24.75
10 Kg	(Item #45-160-0010)	\$ 425.00

EnartisFerm MB15



Isolated in Sonoma County north of Gravenstein Hwy. Enhances spice and fruit aromas, while maintaining apple orchard characters. Strong fermenter, it ensures a fast and complete fermentation. Produces complex and elegant ciders with exceptional mouthfeel. Low producer of H₂S, minimal nutritional requirements.

Dosage: 20-40 g/hL (1.7 -3.3 lb/1,000 gal)

0.5 Kg	(Item #45-065-0500)	\$ 42.50
10 Kg	(Item #45-065-0010)	\$ 550.00

EnartisFerm Perlage

BEST
SELLER

Yeast selected for the production of traditional method sparkling wines. Produces refined aromas, clean fermentations in difficult conditions and complex ciders with elegant aromatics. Ferments well at lower temperatures, low nutritional requirements and minimal H₂S production in must/juice with insufficient YAN.

Dosage: 20-40 g/hL (1.7 -3.3 lb/1,000 gal)

0.5 Kg	(Item #45-180-0500)	\$ 39.50
10 Kg	(Item #45-180-0010)	\$ 490.00

EnartisFerm ES181

Yeast strain with dual ability to express thiols (β-lyase activity) and produce high content of esters. Expresses thiol precursors (grapefruit, tropical fruit, and passion fruit) and produces intense cultivar aromas. Good fermenter at low temperatures and in reductive conditions. Low producer of H₂S, medium nutritional requirements.

Dosage: 20-40 g/hL (1.7 -3.3 lb/1,000 gal)

0.5 Kg	(Item #45-120-0500)	\$ 39.50
10 Kg	(Item #45-120-0010)	\$ 490.00

EnartisFerm Q Citrus

Intensifies zesty and fresh notes of citrus, tropical fruit, flowers, peach, pear and pineapple. Low producer of H₂S. Minimal nutrition requirements, most effective in juice with little to no SO₂.

Tip: Aroma production is increased by using in combination with EnartisTan Citrus during fermentation.

Dosage: 20-40 g/hL (1.7-3.3 lb/1,000 gal)

0.5 Kg	(Item #45-302-0500)	\$ 39.50
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EnartisFerm AMR-1

Isolated from dried grapes destined for Amarone wine production. Ferments well at low temperatures (50-60°F, 10-15°C). Produces elegant, vibrantly aromatic and cultivar-driven ciders. Releases polysaccharides to balance mouthfeel and texture of finished cider. Recommended for ice cider and low temperature fermentations.

Dosage: 20-40 g/hL (1.7 -3.3 lb/1,000 gal)

0.5 Kg	(Item #45-511-0500)	\$ 39.50
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AROMATIC CIDER FERMENTATION PROTOCOL

VARIETY	TYPE OF CIDER		
Heirloom or Modern Apple	Aromatic Cider Production		
PROBLEM(S)	OBJECTIVE		
Fermentation Off Aromas Hydrogen Sulfide	Cider fermentations can be controlled to promote aromatic and vibrant ciders through minimizing oxidation, selecting aroma producing yeast, providing sufficient nutrition throughout and managing microbial contamination with Stab Micro M. To limit production of off-aromas, it is important to stagger nutrient additions both at inoculation and again at 1/3 fermentation, which has been shown to decrease hydrogen sulfide production. Analysis throughout production stages help build consistency		
CIDER MAKING	OBJECTIVE	ENARTIS RECOMMENDATIONS	DOSAGE
Juice Transfer to Fermenter	Microbial Protection	EnartisStab Micro M: Pre-activated chitosan, purified yeast hulls. Reduce spoilage microbes like <i>Brettanomyces</i> , <i>Acetobacter</i> , <i>Lactobacillus</i> and <i>Pediococcus</i>	10 g/hL
	Clarification	EnartisZym RS: Enzyme for clarification and to aid filtration. Focused pectinase, polygalacturonase, cellulase and hemicellulase side activities	5 mL/hL
	Tannin	EnartisTan Blanc: Gallic tannin for protection from oxidation and to aid clarification and filtration	10 g/hL
Inoculation	Complex Nutrient	Nutriform Arom Plus: Aroma enhancement during primary fermentation. Strengthen yeast to minimize off aromas and enhance aroma production	20 g/hL
	Yeast { Select One }	EnartisFerm WS: Clean fermentation across cider styles, increased cultivated apple variety aroma	25 g/hL
		EnartisFerm AMR-1: Intense aromatic expression to enhance apple flavor	25 g/hL
1/3 Sugar Depletion	Fermentation Nutrient	Nutriform Advance: Nutrient providing complete nitrogen balance to reduce H ₂ S production, provide detoxifying survival factors and ensure complete fermentation	20 g/hL
Post Fermentation	Antioxidant	Winy: Pure, high quality potassium metabisulfite. Microbial and oxidation protection	5-9 g/hL will add 30-50 ppm SO ₂
		Effergran: Effervescent granulated potassium metabisulfite. Requires zero tank mixing after addition!	7-13 g/hL will add 30-50 ppm SO ₂
	Microbial Protection	EnartisStab Micro M: Removes spoilage microbes such as <i>Brettanomyces</i> , <i>Acetobacter</i> , <i>Lactobacillus</i> and <i>Pediococcus</i> . Helps boost aromatics and protect until packaging	5-20 g/hL Maximum addition 20 g/hL

YEAST NUTRITION

The understanding of nutritional requirements for yeast is fundamental to accomplish successful fermentations and prevent stuck fermentations. Managing nutrient requirements allows for regular and complete fermentations, as well as minimizing sulfur compound production, such as H₂S, while enhancing positive sensory qualities. Enartis recommends a two-step nutrient addition; providing amino acids and micro-nutrients at inoculation and inorganic nitrogen with survival factors at 1/3 sugar depletion. *Please contact us or see our current Handbook of Services and Supplies for a complete list of available yeast nutrients.*

See our presentation from CiderCon 2019 or watch one of our webinars on our website for more information about yeast nutrition and cider production!

WHAT ARE THE NUTRITIONAL NEEDS OF YEAST?

Yeast Assimilable Nitrogen (YAN), vitamins (thiamine) and mineral salts (Mg, Zn) are essential for yeast activity. Additionally, sterols and long-chain unsaturated fatty acids are elements which protect yeast and help them to survive in stressful conditions. The quantity and quality of these compounds play an essential role in yeast metabolism, fermentation kinetics and the organoleptic profile of cider.

WHAT IS YEAST ASSIMILABLE NITROGEN (YAN)?

YAN is the sum of ammonium ions and alpha amino acids (except proline). Yeast use nitrogen to build proteins, cell wall components, enzyme synthesis, for growth and sugar transport. Ammonium ions are quickly and preferentially assimilated by yeast. Amino acids are used by yeast as a source of nitrogen and aromatic precursors to synthesize higher alcohols, esters and acetates.

WHAT ARE THE SOURCES OF NITROGEN IN APPLES?

Fruit provides nitrogen in the form of proteins, peptides, alpha amino acids and ammonium ions, though to a lesser degree than grapes. Nutrient strategies for fresh pressed juice can differ significantly from the strategies required for cider made from apples, processed juice (clarified, pasteurized, etc) or cider made from concentrate. Clarified juice and juice from concentrate will always have lower nutrient levels than their fresh pressed counterparts.

HOW MUCH YAN IS NEEDED?

The range of YAN can vary depending on vintage conditions, culture practices and selection of cultivated varieties. Generally, to build-up a sufficient yeast biomass for fermentation, a minimum YAN of 100 mg/L is required. The initial sugar content (°Brix) and initial YAN of juice are essential to determine the proper nutrition supplementation. The higher the initial sugar concentration, the more YAN is required to complete fermentation.

WHAT IS THE YAN CONTRIBUTION OF DAP?

10 g/hL of DAP represents 20 mg/L of YAN.

WHAT IS THE IMPACT OF INSUFFICIENT YAN?

Nitrogen deficiency often results in stuck or sluggish fermentations and off-flavor production. Low YAN levels can induce stress on yeast cells and significantly reduce their performance. It can cause insufficient yeast population, reduction of sugar transport, premature interruption of yeast metabolism and the unwanted production of off-flavors and H₂S.

WHAT IS THE RISK OF HAVING TOO MUCH YAN?

High YAN levels (>350 mg/L) lead to overpopulation of yeast which depletes must of nutrients, increases stress conditions and the production of undesirable characteristics such as higher alcohols, H₂S or urea (precursors of ethyl carbamate). High YAN, as well as late nitrogen addition, can cause microbiological issues (residual nitrogen) and stuck fermentations.

WHEN IS THE BEST TIME TO ADD NUTRIENTS?

Timing and form of nitrogen supplementation are important to manage a successful fermentation. During growth phase, yeast need amino acids, vitamins and minerals to build up biomass and healthy cells resistant to stress. Yeast assimilation of amino acids is inhibited by the presence of ethanol and ammonium ions. To optimize yeast nutrition, we recommend an addition of amino acids, such as **Nutrifer Energy** or **Nutrifer Arom Plus** at inoculation, when yeast metabolism is not affected. At 1/3 of fermentation, yeast become stressed, their activity is reduced and their nitrogen assimilation limited. To complete fermentation and increase their alcohol resistance, yeast need survival factors, oxygen, detoxifying agents and ammonia contained in **Nutrifer Advance** or **Nutrifer Gradual Release**.

YEAST NUTRITION GUIDELINES

Cider Making Stage	YAN < 80 mg/L	80 mg/L < YAN < 110 mg/L
Inoculation	30 g/hL Nutrifer Energy or 30 g/hL Nutrifer Arom Plus	20 g/hL Nutrifer Energy or 20 g/hL Nutrifer Arom Plus
1/3 Sugar Depletion	30 g/hL Nutrifer Advance	20 g/hL Nutrifer Advance
	Add Oxygen: 1-3 mg/L each day for 3-4 days. Total oxygen addition between 10-20 mg/L during fermentation.	
1/2 Sugar Depletion	20 g/hL Nutrifer No Stop	

Nutriferm Energy

- Amino acids, vitamins (thiamine), mineral salts and micro nutrients
- Shortens lag phase, prevents early formation of H₂S and acetic acid, and increases production of polysaccharides
- Vital in initial phases of yeast multiplication

Usage: Dissolve in 10 times its weight of water and add after yeast inoculation.

Dosage: 10-30 g/hL (0.4-1.3 lb/1,000 gal)

1 Kg	(Item #35-200-0001)	\$ 41.00
10 Kg	(Item #35-200-0010)	\$ 360.00

Nutriferm Arom Plus

INCREASE
AROMA

- Autolyzed yeast with an elevated content of free amino acids and thiamine
- Elevated content of selected amino acids used by yeast as precursors of aromatic compounds to strongly increase intensity, freshness and complexity
- Provides survival factors to improve yeast viability and ensure successful fermentations

Usage: Dissolve in 10 times its weight of water and add after yeast inoculation.

Dosage: 10-30 g/hL (0.8-2.5 lb/1,000 gal)

1 Kg	(Item #35-211-0001)	\$ 52.00
10 Kg	(Item #35-211-0010)	\$ 410.00

Nutriferm Advance

PREVENTS
H₂S

- Complex additive containing DAP, inactivated yeast and cellulose
- Prevents irregular fermentation kinetics while maintaining efficient sugar transport
- Improves yeast alcohol tolerance, prevents H₂S formation and exerts detoxifying action

Usage: Suspend in 10 times its weight of warm water and add at 1/3 sugar depletion.

Dosage: 20-40 g/hL (1.7-3.4 lb/1,000 gal)

1 Kg	(Item #35-215-0001)	\$ 23.50
10 Kg	(Item #35-215-0010)	\$ 165.00

Nutriferm No Stop

- Inactivated yeast and autolyzed yeast
- Helps maintain yeast membrane integrity, prevents and corrects fermentation anomalies

Usage: Dissolve in 10 times its weight of water.

Dosage: 20-40 g/hL (1.7-3.4 lb/1,000 gal)

1 Kg	(Item #35-212-0001)	\$ 26.00
10 Kg	(Item #35-212-0010)	\$ 220.00

Nutriferm Control

- Yeast hulls
- Removes toxins and promotes clean and complete fermentations

Usage: Dissolve in 10 times its weight of water.

Dosage: 10-30 g/hL (0.8-2.4 lb/1,000 gal)

5 lb	(Item #35-024-0005)	\$ 37.50
20 Kg	(Item #30-024-0020)	\$ 200.00

Nutriferm Gradual Release

- Innovative nutrient composed of DAP, gallic tannin and untoasted oak tannins
- Specific packaging that controls the release of its content during fermentation. Due to the particular permeability of the bag, yeast nutrients are gradually released into fermenting must. Release begins at end of the yeast growth phase and continues for up to 8 days
- Ensures complete fermentation, prevents H₂S production, prevents stuck or sluggish fermentation and improves aromatic cleanliness
- Facilitates nutrition management by limiting the need for daily additions during cellar operation

Usage: Anchor bag to bottom of tank before filling.

Dosage: 20-30 g/hL (1.7-2.5 lb/1,000 gal)

0.5 Kg	(Item #35-216-0500)	\$ 25.50
5 Kg	(Item #35-216-0005)	\$ 155.00

The cultivated variety of apples used for cider making determine the aromas, flavors and mouthfeel characters of the final product. For apples that are lacking in textural tannins or acidity balance, it is possible to help build a great cider through the addition of certain products. The use of tannins, polysaccharides and yeast derivatives rich in mannoproteins helps to design the organoleptic profile and balance mouthfeel during fermentation and maturation. *Please contact us or see our current Handbook of Services and Supplies for a complete list of available sensory and structuring products.*

DURING FERMENTATION

Tannins

EnartisTan Citrus

- Gallic and condensed tannins extracted from exotic species of wood
- Provides terpenes and norisoprenoids to enhance floral, citrus and fruit notes
- Enhances floral and citrus aromas, prevents oxidation during fermentation

Tip: To optimize aromatic effect, use Tan Citrus at 1/3 of fermentation in combination EnartisFerm Q Citrus.

Dosage: 2-15 g/hL (0.17-1.3 lb/1,000 gal)

1 Kg (Item #35-306-0001) \$ 190.00

EnartisTan Blanc

- Gallic tannins
- High antioxidant activity and inhibits microbial activity
- Protects cider from browning and improves filterability

Dosage: 5-20 g/hL (0.17-0.4 lb/1,000 gal)

1 Kg (Item #35-310-0001) \$ 65.00
12.5 Kg (Item #35-310-0012) \$ 675.00

IMPROVES
FILTRATION

EnartisTan Clar

- Micro-granulated ellagic tannins
- Highly reactive with proteins, facilitates clarification, improves protein stability and reduces bentonite protein fining

Dosage: 5-10 g/hL (0.4-0.8 lb/1,000 gal)

1 Kg (Item #35-315-0001) \$ 35.00
12.5 Kg (Item #35-315-0012) \$ 250.00

SIDRA
STYLE

EnartisTan Elegance

- Condensed tannins extracted from white grape skins
- Antioxidant, protects from browning and preserves aromatic freshness
- Enhances fruit and floral notes, balances mouthfeel and increases length
- Improves aromatic stability and freshness throughout ageing

Dosage: 5-15 g/hL (0.4-1.3 lb/1,000 gal)

0.25 Kg (Item #35-350-0025) \$ 49.00
1 Kg (Item #35-350-0001) \$ 185.00

Polysaccharides

EnartisPro Arom

- Yeast derivatives rich in sulfur-containing peptides
- Releases readily-soluble yeast mannoproteins that improve mouthfeel and body
- Ensures antioxidant protection
- Produces fresher, more intense and lasting aromas
- Softens astringency and balances bitterness

Dosage: 20-50 g/hL (1.7-4.2 lb/1,000 gal)

1 Kg (Item #35-400-0001) \$ 66.00

EnartisPro Blanco

- Yeast derivatives rich in sulfur-containing peptides obtained by thermal treatment
- Releases large quantities of readily-soluble mannoproteins which improve mouthfeel and body
- Ensures strong antioxidant protection
- Enhances production of tropical and spicy aromas
- Produces fresher, more intense and lasting aromas
- Softens astringency and balances bitterness

Dosage: 10-30 g/hL (0.8-2.5 lb/1,000 gal)

1 Kg (Item #35-410-0001) \$ 112.00

EnartisPro FT

- PVI/PVP (polyvinylimidazole/polyvinylpyrrolidone) and yeast derivatives rich in sulfur-containing amino acids that release large quantities of readily-soluble mannoproteins
- Removes heavy metals at the early stage of cider making and limits the damaging effects of copper and iron responsible for oxidation of fermentation aromas
- Increases expression of thiols, protects against oxidation and helps preserve fresh aromas
- Improves resistance to oxidation
- Allows for production of different product profiles from the same juice by modulating the aromatic profile

Dosage: 10-50 g/hL (0.8-4.2 lb/1,000 gal)

1 Kg (Item #35-416-0001) \$ 142.00

RECOMMENDED

When using tannins or polysaccharides during maturation or pre-bottling, bench trials are recommended to determine the correct product and addition rate.

DURING MATURATION AND PRE-BOTTLING

Tannins

EnartisTan Max Nature

- Condensed and ellagic tannins extracted from exotic species of wood
- Designed for mouthfeel and aromatic improvement
- Removes reductive characters, masks herbaceous notes and increases aromatic freshness and complexity
- Contributes to mouthfeel by increasing roundness and filling mid-palate

Dosage: 3-15 g/hL (0.25-1.3 lb/1,000 gal)

1 Kg	(Item #35-320-0001)	\$ 72.00
10 Kg	(Item #35-320-0010)	\$ 610.00

EnartisTan Elevage

- Ellagic tannins extracted from oak staves aged in open air
- Good antioxidant protection and treats reductive characters
- Imparts elegant vanilla, caramel and licorice notes

Dosage: 2-15 g/hL (0.17-1.3 lb/1,000 gal)

1 Kg	(Item #35-340-0001)	\$ 235.00
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EnartisTan SLI

- Ellagic tannins extracted from long-seasoned, untoasted oak with a unique process which avoids high temperatures
- Extraordinary capability to scavenge oxygen and radicals, chelate metals and reduce redox potential
- Eliminates reductive notes due to mercaptans
- Protects from oxidation, strengthens action of SO₂ and improves shelf life throughout maturation and at bottling

Dosage: 3-15 g/hL (0.25-1.3 lb/1,000 gal) during maturation
0.5-3 g/hL (0.04-.25 lb/1,000 gal) at bottling

0.5 Kg	(Item #35-308-0500)	\$ 187.50
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EnartisTan UVA

- Grape seed tannin obtained from mature white grapes
- Enhances apple flavors and aromas
- Enriches mouthfeel in ciders and increases complexity

Dosage: 3-10 g/hL (0.25-0.8 lb/1,000 gal)

0.25 Kg	(Item #35-355-0250)	\$ 97.50
1 Kg	(Item #35-355-0001)	\$ 370.00

EnartisTan Fresh Fruit

- Condensed tannins extracted from lemon trees and white grape skins
- Excellent antioxidant capacity
- Freshens apple aromas and imparts fresh apple texture in ciders with low tannins

Dosage: 3-10 g/hL (0.25-0.8 lb/1,000 gal)

1 Kg	(Item #35-362-0001)	\$ 405.00
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EnartisTan Skin

- Condensed tannins extracted from white grape skins
- Improves aromatic cleanliness, improves mouthfeel
- Expresses thiolic character

Dosage: 3-20 g/hL (0.25-1.7 lb/1,000 gal)

0.25 Kg	(Item #35-360-0250)	\$ 114.00
1 Kg	(Item #35-360-0001)	\$ 425.00

Unico Range

Enartis is constantly looking for new botanical species and raw materials (wood, leaf, seed, etc.) to obtain tannins with unique sensory characteristics. Developed by Enartis, the Unico range is a unique line of tannins with no close matches in the market.

Why are Unico tannins different from other tannins?

The extraction, as well as the spray-drying, is made at low temperatures (approx. 20°C or 68°F) and low pressure. This unique process, proprietary to Enartis, extracts flavors of the raw material and prevents loss of aromatic compounds and formation of off-flavors caused by high temperatures. Unico tannins have intense, distinct aromas that account for the lower addition rates compared to normal enological tannins.

Unico #1

- Ellagic tannins extracted from toasted oak selected for the quality and richness of its aromas.
- Intense and delicate vanilla, chocolate and toasted oak aromas.
- Contributes to volume and structure of cider.

Recommendations: Medium-toasted oak aromas; structure; balance mouthfeel; white, rosé and sparkling ciders.

Dosage: 0.5-5 g/hL (0.04-0.4 lb/1,000 gal)

0.25 Kg (Item #35-380-0250) \$ 330.00

Unico #2

- Condensed tannins extracted from red fruit tree wood.
- Significantly enhances red fruit aromas such as cherry, fresh berries and black currant.
- Increases softness, structure and "sweetness."

Recommendations: Red fruit aromas; freshen aromas; structure; rosé ciders.

Dosage: 0.5-5 g/hL (0.04-0.4 lb/1,000 gal)

0.25 Kg (Item #35-375-0250) \$ 196.00

Unico #3

- Condensed and hydrolyzable tannins extracted from exotic species of wood.
- Freshens cider aroma, enhances citrus, botanical and floral notes.

Tip: Particularly suitable for white, sparkling and late harvest ciders.

Recommendations: Freshen aromas; citrus, floral and botanical aromas; structure; white, rosé and sparkling ciders.

Dosage: 0.5-5 g/hL (0.04-0.4 lb/1,000 gal)

0.25 Kg (Item #35-395-0250) \$ 167.00

Polysaccharides and Gums

Critrogum

- Gum Arabic solution extracted from Acacia Seyal. The most filterable gum on the market! No membrane filter clogging effect
- Prevents precipitation of tartrates
- Improves balance and organoleptic features
- Reduces bitterness and astringency while increasing softness and body weight

Dosage: 0.5-2 mL/L (1.9-7.6 L/1,000 gal)

1 L	(Item #35-725-0001)	\$ 12.25
25 Kg	(Item #35-725-0025)	\$ 206.20
200 Kg	(Item #35-725-0200)	\$ 1,140.00
1,000 Kg	(Item #35-725-1000)	\$ 5,100.00

Aromagum

- Gum Arabic solution
- Stabilizes aromas, intensifies fruit aroma perception and maintains freshness over time after bottling

Application: When used at recommended dosages, it has a limited blocking effect on filtration membranes and can be added before microfiltration.

Dosage: 0.5-1 mL/L (1.9-3.8 L/1,000 gal)

1 L	(Item #35-720-0001)	\$ 14.00
25 Kg	(Item #35-720-0025)	\$ 256.25

Surli Velvet

BEST
SELLER

- Completely soluble yeast cell wall mannoproteins
- Enhances aromatic complexity and intensity, increases volume and roundness and reduces the sensation of astringency
- Improves colloidal structure and stability

Application: Filterable, Surli Velvet can be added immediately prior to bottling.

Dosage: 0.5-5 g/hL (0.04-0.4 lb/1,000 gal)

0.5 Kg (Item #35-455-0500) \$ 322.00

Surli Velvet Plus

- Completely soluble yeast cell wall mannoproteins, rich in antioxidant sulfur peptides
- Antioxidant properties to extend shelf life
- Enhances aromatic complexity and intensity, increases volume and roundness and reduces the sensation of astringency
- Improves colloidal structure and stability

Application: Filterable, Surli Velvet Plus can be added immediately prior to bottling.

Dosage: 1-10 g/hL (0.08-0.8 lb/1,000 gal)

0.5 Kg (Item #35-460-0500) \$ 332.00

BENEFITS AND COMPOSITION

FERMENTATION TANNINS	ANTIOXI-DANT	AROMATIC CLEANLI-NESS	STRUCTURE ENHANCE-MENT	ASTRIN-GENCY	SOFTNESS	AROMA INTENSITY	GRAPE DERIVATE	WOOD DERIVATE	AROMA CONTRIBUTION
ENARTISTAN BLANC	★★★★★	★★★★	★	★	★★	★★		•	Apple, Blossoms, Varietal character
ENARTISTAN CITRUS	★★★★	★★	★★	★★	★★	★★★★★	•	•	Citrus, White flowers, Orange blossom
ENARTISTAN CLAR	★★★	★★★	★★★	★★★	★	★		•	Wood, Chestnut
ENARTISTAN ELEGANCE	★★★★	★★★	★★	★	★★★★	★★★	•		Stonefruit, White flower

MATURATION TANNINS	ANTIOXI-DANT	AROMATIC CLEANLI-NESS	STRUCTURE ENHANCE-MENT	ASTRIN-GENCY	SOFTNESS	AROMA INTENSITY	GRAPE DERIVATE	WOOD DERIVATE	AROMA CONTRIBUTION
ENARTISTAN ÉLEVAGE	★★★	★★★	★★★	★★★	★★	★★★		•	Toasted Oak, Caramel
ENARTISTAN FRESH FRUIT	★★★	★★	★★	★★★	★★★★	★★★★	•	•	Lemon, Citrus, Fresh fruit
ENARTISTAN MAX NATURE	★★	★★★★	★	★	★★★★★	★		•	Chamomile
ENARTISTAN SLI	★★★★★	★★★★	★★	★	★★★★	★★★		•	Oak, Coconut, Vanilla
ENARTISTAN UVA	★★	★★★	★★★	★★	★★★	★	•		White flower, Honeydew
ENARTISTAN SKIN	★★	★★★	★★★	★	★★	★★★	•		Fresh fruit, Stonefruit, Passion fruit

FERMENTATION POLYSACCHARIDES	ANTIOXI-DANT	AROMATIC CLEANLI-NESS	MOUTHFEEL IMPROVE-MENT	VISCOSITY	SOFTNESS	AROMA INTENSITY	TIME OF ADDITION	COMPOSITION
ENARTISPRO AROM	★★★★	★★★	★★	★	★★★	★	Fermentation	Yeast cell walls containing antioxidant sulfur-peptides
ENARTISPRO BLANCO	★★★★★	★★★★	★★★★	★	★★★	★★★	Fermentation	Inactivated yeast
ENARTISPRO FT	★★★★★	★★★★	★★★★	★	★★★	★★★	Fermentation	PVI/PVP and yeast cell walls rich in antioxidant sulfur-peptides

PRE-BOTTLING POLYSACCHARIDES	ANTIOXI-DANT	AROMATIC CLEANLI-NESS	MOUTHFEEL IMPROVE-MENT	VISCOSITY	SOFTNESS	AROMA INTENSITY	TIME OF ADDITION	COMPOSITION
SURLI VELVET	★★	★★	★★★★	★★★	★★★★	★	Pre-Bottling	Completely soluble yeast mannoproteins
SURLI VELVET PLUS	★★★	★★	★★★★	★★★	★★★★	★★	Pre-Bottling	Completely soluble yeast cell wall mannoproteins, rich in antioxidant sulfur peptides

GUMS	ANTIOXI-DANT	AROMATIC CLEANLI-NESS	MOUTHFEEL IMPROVE-MENT	VISCOSITY	SOFTNESS	AROMA INTENSITY	TIME OF ADDITION	COMPOSITION
AROMAGUM		★★	★★★★★	★★★★★	★★★★	★★★★	Pre-Bottling	Verek Arabic gum medium hydrolysis
CITROGUM		★★	★★★	★★★★	★★★	★★	Pre-Bottling	Seyal Arabic gum high hydrolysis

Enartis offers a diverse portfolio of oak chips and mini-staves to meet all cider needs and expectations. Utilizing the Incanto N.C. range, cider makers can quickly integrate oak flavor profiles during fermentation or throughout tank maturation. With Incanto Chips and Barrel Boost, cider makers have ultimate control over their oak program and can create a unique signature for their brand or label. *Please contact us or see our current Handbook of Services and Supplies for a complete list of available oak alternatives.*

INCANTO: OUR RANGE OF OAK ALTERNATIVES

Incanto Chips and Barrel Boost Ministaves are produced from French and American oak aged 18-36 months and toasted using a unique process to ensure high quality products. The convection toasting with a progressive heating scheme allows for a deep, homogeneous and consistent toast. The process of oak selection, leaching, drying and toasting time/temperature are defined based on the final aromatic profile of the product and the consistency across lots and quality.

Incanto Oak Alternatives are available as:

INCANTO CHIPS

Size: 2-4 mm

Dosage: 1-6 g/L for ciders

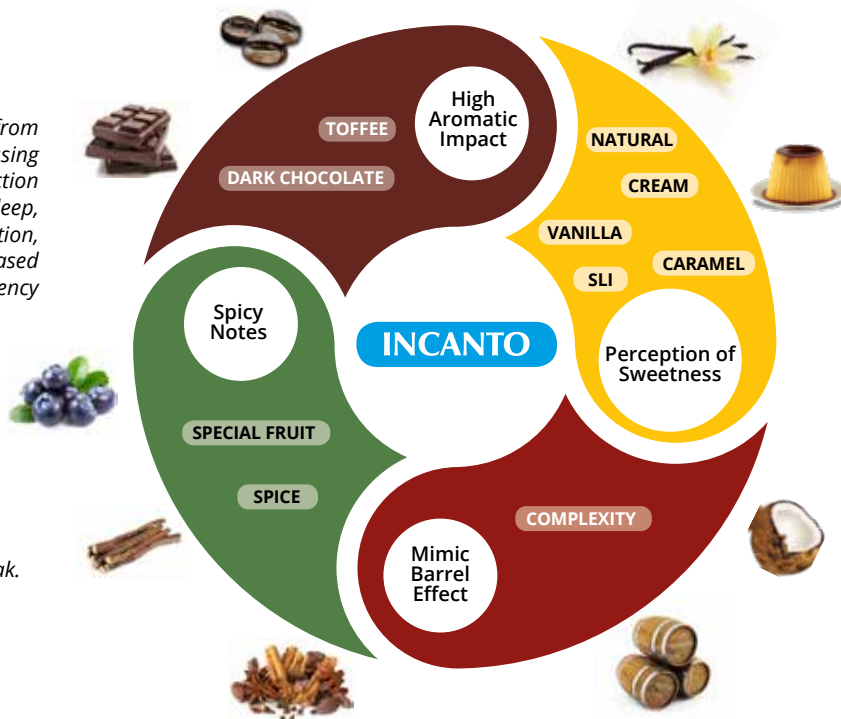
Contact time: Minimum of 4 weeks

BARREL BOOST MINI-STAVES

Size: 25 cm x 2.7 cm x 0.9 cm

Dosage: 1 Barrel Boost per barrel is equivalent to 25% new oak.

Contact time: Minimum of 3 months, optimal at 4 months



PERCEPTION OF SWEETNESS

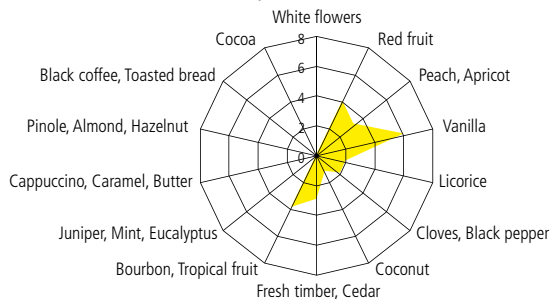
Incanto SLI

- American oak, untoasted.
- Respects aromatic characters of apples and enhances freshness and fruitiness.
- Increases volume, roundness and softens tannin structure.
- Increases ageing potential.

10 Kg Chips (Item #35-927-0010)

\$ 80.00

(Not available in Barrel Boost)



Incanto Natural

BEST SELLER

- French oak, untoasted.
- Enhances fruit, vanilla, coconut, cedar and freshness. Preserves aromatic characteristics of cider.
- Increases cider structure, volume, and smoothness and improves balance and finesse.

10 Kg Chips (Item #35-922-0010)

\$ 90.00

(Not available in Barrel Boost)

Incanto Vanilla

- American oak, medium-toasted.
- Vanilla, coconut, Bourbon, honey, tropical fruit, hazelnut, toasted almond, butter.
- Increases smoothness, volume and freshness without imparting excessive tannins.

Barrel Boost
10 Kg Chips

(Item #35-930-0005)
(Item #35-925-0010)

\$ 99.00
\$ 140.00

Incanto Cream

- French oak, medium-toast.
- Vanilla, coconut, butter, cappuccino, and licorice.
- Increases smoothness, volume and sweetness without imparting excessive tannins.

Barrel Boost
10 Kg Chips

(Item #35-930-0000)
(Item #35-920-0010)

\$ 99.00
\$ 140.00

Incanto Caramel

- French oak, medium-toast.
- Caramel, cappuccino, toasted sugar, butter, almond, toasted hazelnut, vanilla and light spice.
- Increases smoothness and sweetness.

Barrel Boost
10 Kg Chips

(Item #35-930-0001)
(Item #35-919-0010)

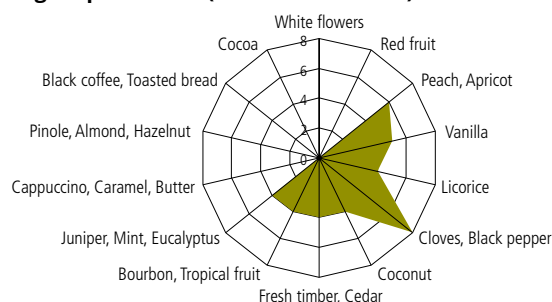
\$ 99.00
\$ 140.00

ENHANCE SPICY NOTES

Incanto Special Fruit

- French oak, medium-toast.
- Spicy, black pepper, caramel, licorice, vanilla and coconut notes. Enhances freshness, fruitiness and complexity.
- Increases smoothness, volume and structure without imparting excessive tannins.

Barrel Boost (Item #35-930-0003) \$ 99.00
10 Kg Chips (Item #35-923-0010) \$ 140.00



Incanto Spice

- French and American oak, various toast levels.
- Very complex and intense spice aroma.
- Increases smoothness and structure.

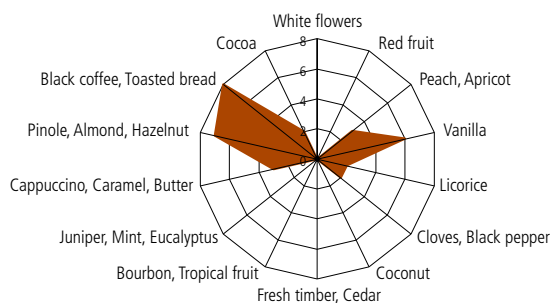
10 Kg Chips (Item #35-926-0010) \$ 215.00
 (Not available in Barrel Boost)

HIGH AROMATIC IMPACT

Incanto Toffee

- French oak, medium plus toast.
- Café macchiato, toasted bread, toasted almond, hazelnut, vanilla, and apricot.
- Very smooth, sweet and complex.

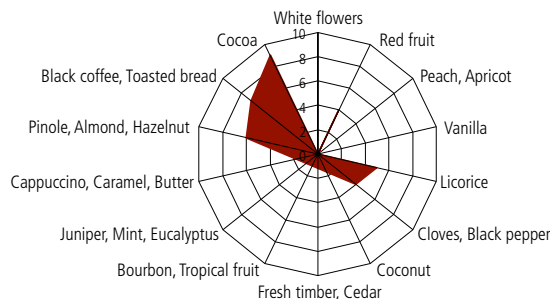
Barrel Boost (Item #35-930-0004) \$ 99.00
10 Kg Chips (Item #35-924-0010) \$ 140.00



Incanto Dark Chocolate

- French oak, medium plus toast.
- Dark chocolate, cocoa, black coffee, toasted almond, toasted hazelnut and licorice.
- Increases volume, structure and tannins.

Barrel Boost (Item #35-930-0002) \$ 99.00
10 Kg Chips (Item #35-921-0010) \$ 140.00



MIMIC BARREL EFFECT

Incanto Complexity

- French oak, medium to heavy toast.
- Complex and subtle aromatic impact: coffee, caramel, vanilla, coconut.
- Increases structure, softness and sweetness perception.

10 Kg Chips (Item #35-928-0010) \$ 100.00
 (Not available in Barrel Boost)

INCANTO RANGE	OAK	TOAST	AROMATIC IMPACT	MOUTHFEEL
INCANTO SLI	US	Untoasted	Fruit, fresh, neutral	Sweetness, round, soft
INCANTO NATURAL	FR	Untoasted	Fruit, fresh, cedar	Sweetness, structure, soft
INCANTO VANILLA	US	Medium	Vanilla, coconut, bourbon, butter	Sweetness, fresh, round
INCANTO CREAM	FR	Medium	Vanilla, stone fruit, coconut, cedar	Sweetness, soft, round, length
INCANTO CARAMEL	FR	Medium to Heavy	Caramel, toasted hazelnut, butter	Sweetness, soft, round, length
INCANTO SPECIAL FRUIT	FR	Medium Plus	Spice, chocolate, fruit, complexity	Smooth, structure, length
INCANTO SPICE	FR, US	Medium, Heavy	Black pepper, licorice, complexity	Smooth, round, structure, length
INCANTO COMPLEXITY	FR	Medium Plus	Coffee, caramel, vanilla, fruit, complexity	Round, structure, length
INCANTO TOFFEE	FR	Medium Plus	Toffee, caffè macchiato, toasted bread, hazelnut	Smooth, soft, length
INCANTO DARK CHOCOLATE	FR	Medium Plus	Cocoa, coffee, toasted almond, licorice	Volume, structure

INCANTO N.C. RANGE

Incanto N.C. (No Chips) products are soluble wood extracts containing only the active molecules used in oak powder:

- Wood tannins to protect against oxidation, improve color stability and enhance structure.
- Polysaccharides to increase volume and soften tannins.
- Aromatic compounds derived from wood and toasting.

Dosage:

5-30 g/hL for cider fermentations

Applications of Incanto N.C.

- Increase complex oak aromas
- Highlight fruit and floral notes
- Improve mouthfeel and structure
- Increase sweetness perception
- Minimize herbaceous notes in underripe grapes
- Decrease reductive characters during fermentation

Why use the Incanto N.C. Range?

- Low dosage
- Easy-to-use for facility staff
- Better integration in cider
- NO color adsorption by solids
- NO microbial contamination
- NO solids = NO damage to facility machinery

Incanto N.C.

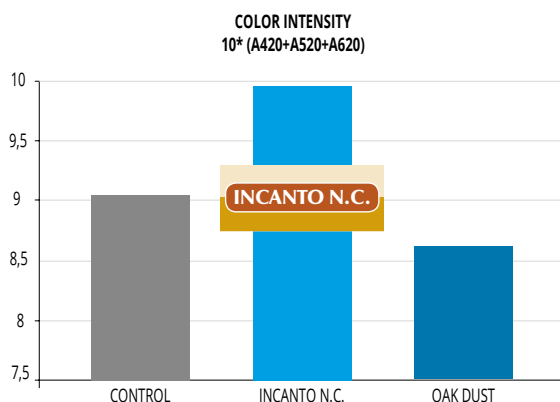
BEST
SELLER

- Inactivated yeast and tannins.
- Mimics the effect of medium-toasted oak powder.
- Enhances oak aromas and aromatic complexity, increases roundness, structure and balance.
- Improves color stability, especially in rosé cider.

Recommendations: Medium-toasted oak; color stability; complexity; volume and structure.

Dosage: 5-50 g/hL (0.4-4.2 lb/1,000 gal)

1 Kg	(Item #35-916-0001)	\$ 78.00
10 Kg	(Item #35-916-0010)	\$ 690.00



Incanto NC during fermentation improves color intensity and stability.

Incanto N.C. White

- Inactivated yeast and tannins.
- Mimics the effect of untoasted oak powder.
- Protects juice from oxidation and prevents the appearance of reductive odors. Additionally, it provides light floral and vanilla notes, increases fresh fruit aromas and enhances softness and volume.

Recommendations: Untoasted oak; antioxidant; complexity; volume and structure.

Dosage: 5-50 g/hL (0.4-4.2 lb/1,000 gal)

1 Kg	(Item #35-918-0001)	\$ 89.00
10 Kg	(Item #35-918-0010)	\$ 790.00

Incanto N.C. Cherry

- Inactivated yeast and tannins.
- Mimics the effects of oak powder.
- Promotes color stabilization, prevents oxidation, enhances fresh red fruit notes and increases cider mouthfeel volume, structure and length.

Recommendations: Color stability; antioxidant; complexity; fruity and spicy aromas; volume and structure; white, rosé and sparkling cider.

Dosage: 5-50 g/hL (0.4-4.2 lb/1,000 gal)

1 Kg	(Item #35-913-0001)	\$ 99.00
10 Kg	(Item #35-913-0010)	\$ 880.00

CLARIFICATION AIDES

The final steps before bottling a cider may include fining. Enartis has developed several fining blends targeting different aspects of preparation for bottling such as improving clarity, treatment/prevention of oxidation and removal of bitterness and astringency. *Please contact us or see our current Handbook of Services and Supplies for a complete list of available clarification aides.*

HOW DOES FINING WORK?

Each fining agent has specific properties and reacts with various cider molecules depending on its origin, density of charge, molecular weight and chemical properties. Fining is based on two main principles:

Flocculation: molecular interactions based on charge, chemical bonds, absorption or adsorption of compounds and formation of floccules.

Sedimentation: since the floccules formed are not soluble and heavier than cider, they settle with time.

HOW TO CHOOSE THE RIGHT FINING AGENT?

Set-up bench trials with different fining agents and dosages. *Please contact us or see page 23 for complete trial protocols.*

HOW SHOULD I PREPARE FINING AGENTS?

Liquid fining products are ready to use, while powdered products must be dissolved in water prior to addition to cider. In all cases, the fining agent should be added to water, not vice versa. If solutions are prepared to be used over two days, add 2 g/L of SO₂ to the solution to inhibit microbial growth.

ABOUT PVI/PVP

PVI/PVP is an adsorbent polymer (copolymers of vinylimidazole and vinylpyrrolidone) capable of removing heavy metals such as copper (Cu), iron (Fe) and aluminum (Al). Also, PVI/PVP has the ability to bind with phenolic compounds, substrates of oxidative reactions. Cider treated with PVI/PVP-based fining agents are fresher, more aromatic, more balanced, have a lower oxidation potential and improved shelf life. Enartis offers **Stabyl MET** and **Claril HM** PVI/PVP-based products, designed for specific applications and cider making stages.

Sil Floc

- Pure silica dioxide in solution
- Typical addition is 10-15 times the amount of gelatin addition
- Enhances clarification properties of protein fining agents

Dosage: 25-100 mL/hL (0.95-3.8 L/1,000 gal)

1 L	(Item #35-690-0001)	\$ 8.00
25 Kg	(Item #35-690-0025)	\$ 150.00



Sil Floc improves clarification and lees compaction



Goldenclar Instant

- Allergen-free alternative to egg albumin
- Granulated food-grade gelatin. High molecular weight, very low hydrolysis and very high charge density
- Improves clarity and filterability
- Reduces astringency and softens mouthfeel without affecting cider structure

Dosage: 2-12 g/hL (0.17-1 lb/1,000 gal)

1 Kg	(Item #35-626-0001)	\$ 41.00
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Plantis AF-P

- Pure and gluten-free potato protein. Alternative to gelatin, isinglass and potassium caseinate
- Removes catechins and small molecular weight polyphenols responsible for oxidation and astringency

Dosage: 5-30 g/hL (0.4-2.5 lb/1,000 gal)

1 Kg	(Item #35-761-0001)	\$ 98.00
12.5 Kg	(Item #35-761-0010)	\$ 920.00

Finecoll

- Granular isinglass
- Good for clarification and improving brilliance
- Reduces bitterness, oxidative and herbaceous characteristics without affecting cider structure

Dosage: 1-4 g/hL (0.08-0.3 lb/1,000 gal)

10 Kg	(Item # 35-650-0010)	\$ 1,525.00
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Claril SP

BEST
SELLER

- Bentonite, PVPP, potassium caseinate and silica
- Prevents and treats oxidation and browning in juice and cider
- Improves aromatic cleanliness and reduces bitterness

Dosage: 30-150 g/hL (2.5-12.6 lb/1,000 gal)

1 Kg	(Item #35-665-0001)	\$ 32.00
10 Kg	(Item #35-665-0010)	\$ 280.00

Claril HM

REMOVES
METALS

- Co-polymer of PVI/PVP (polyvinylimidazole/polyvinylpyrrolidone) and pre-activated chitosan
- Adsorbs heavy metals (Cu, Fe, Al) and removes hydroxycinnamic acids and low molecular weight catechins
- Prevents oxidation, browning and oxidation of aromas

Dosage: 20-50 g/hL (1.7-4.2 lb/1,000 gal)

2.5 Kg	(Item #35-661-0001)	\$ 437.50
10 Kg	(Item #35-661-0010)	\$ 1,590.00

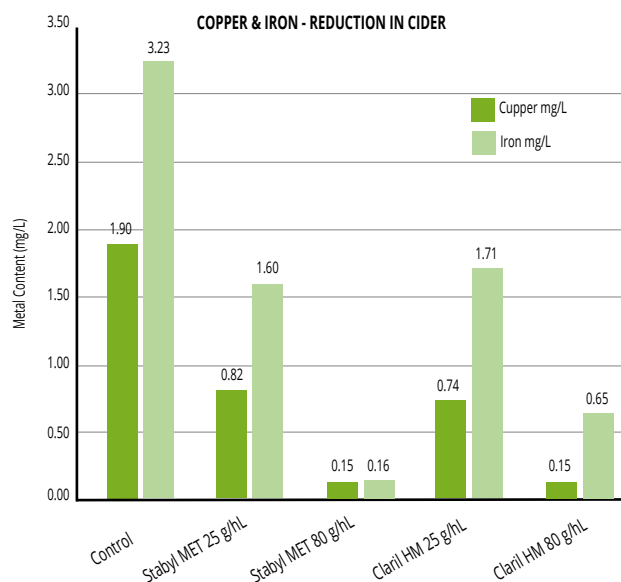
Stabyl MET

REMOVES
METALS

- Co-polymer of PVI/PVP (polyvinylimidazole/polyvinylpyrrolidone) and silica
- Absorbs heavy metals (high affinity with Cu, Fe, Zn) and removes hydroxycinnamic acids and low molecular weight catechins
- Removes excessive amounts of residual copper after copper treatment

Dosage: 20-50 g/hL (1.7-4.2 lb/1,000 gal)

2.5 Kg	(Item #35-657-0002)	\$ 550.00
10 Kg	(Item #35-657-0010)	\$ 1,900.00



Bentolit Super

- Powdered calcium bentonite sodium activated
- Excellent clarification with good protein removal

Usage: Dilute in 20 times its weight of cold water, stirring constantly. Allow to swell 3-6 hours.

Dosage: 20-120 g/hL (1.7-10 lb/1,000 gal)

1 Kg	(Item #35-675-0001)	\$ 3.25
25 Kg	(Item #35-675-0025)	\$ 50.00

Pluxcompact

- Granulated calcium bentonite sodium activated
- Generates limited quantity of highly compact lees

Usage: Dilute in 10 times its weight of cold water, stirring constantly. Allow to swell 3-6 hours.

Dosage: 20-120 g/hL (1.7-10 lb/1,000 gal)

1 Kg	(Item #35-680-0001)	\$ 3.25
20 Kg	(Item #35-680-0020)	\$ 64.00

Enoblack Perlage

- Vegetal activated carbon in pellet form (reduces spread of carbon dust)
- High decolorizing capacity
- Removes ochratoxin A (OTA)

Usage: Disperse in small quantity of water or directly into cider. Keep in suspension for 15-20 minutes.

Dosage: 5-100 g/hL (0.4-8.4 lb/1,000 gal)

1 Kg	(Item #35-701-0001)	\$ 31.00
15 Kg	(Item #35-701-0015)	\$ 390.00

Ensuring microbial stability is fundamental for quality and economic reasons. Microbial contaminations can have major negative effects on cider quality. Capable of developing at any time during the cider making process, spoilage microbes are opportunist organisms, difficult to control and eliminate. *Please contact us or see our current Handbook of Services and Supplies for a complete list of available oak alternatives.*

ANTI-MICROBIAL ACTIONS

- Elimination: Microorganisms can be physically removed from cider by filtration, centrifugation and fining agents followed by racking. Recent developments offer cider makers new tools to remove undesirable microorganisms through fining, thereby avoiding filtration and reducing the use of antimicrobial chemicals.
- Inhibition: Microbe replication is stopped or slowed, however organisms are not necessarily killed. Microbes may start to grow and multiply once the inhibitory pressure is removed. SO₂ managed with pH, acts as an inhibitor.

WHAT IS THE ROLE OF SO₂?

Cider quality can be preserved with sulfur dioxide. Sulfur dioxide acts in cider as an antioxidant, antioxidasic and antimicrobial. The antimicrobial properties of SO₂ are pH dependent: SO₂ is more efficient at lower pH. Enartis is the leading manufacturer of potassium metabisulfite and supplies it in both powder and granular forms.

ALTERNATIVES TO SO₂ FOR CIDER MAKING

In the case of microbial contamination, reduction of SO₂ use or higher pH, activated chitosan-based fining agents can remove spoilage microorganisms.

WHAT IS CHITOSAN?

Produced from the partial de-acetylation of Chitin (produced from *Aspergillus niger*), chitosan is a cationic polysaccharide that interacts with a wide spectrum of microorganisms, alters their cell wall permeability, inhibits cell growth and leads to cell death. Chitosan is widely used in food, pharmaceutical and medical industries for its antimicrobial action. The antimicrobial activity of chitosan is attributed to its positive charges (NH₃⁺ groups) that interfere with the negatively charged residues of macromolecules on microorganism cell walls.

WHAT IS PRE-ACTIVATED CHITOSAN?

Enartis developed a "pre-activation" process which increases the molecular charge, solubility and contact surface of chitosan. "Pre-activated" chitosan is very effective in eliminating potentially harmful microorganisms such as acetic acid bacteria, *Pediococcus*, *Lactobacillus*, *Oenococcus*, *Brettanomyces*, *Zygosaccharomyces*, *Schizosaccharomyces* and other non-*Saccharomyces* yeast. Its effect on *Saccharomyces cerevisiae* is insignificant and does not affect alcoholic fermentation. It reacts faster and with lower concentrations than the standard chitosan available on the market.

Standard chitosan - low surface contact

Pre-activated Enartis chitosan - high surface contact



STANDARD CHITOSAN



ENARTIS ACTIVATED CHITOSAN
(ENARTISSTAB MICRO AND ENARTIS STAB MICRO M)

WHEN TO USE ENARTISSTAB MICRO M

- Prevention of volatile acidity production: 70 g/ton of Stab Micro M after pressing
- Manage "compromised fruit" and reduce bacterial populations
- Control, delay or avoid malolactic fermentation: 10-20 g/hL of Stab Micro M during fermentation
- Limit the risk of MLF during 'prise de mousse' in traditional method sparkling cider: 5 g/hL in base cider before tirage
- Limit the risk of stuck/sluggish fermentations
- Prevent spoilage microbe development during ageing: 2-5 g/hL of Stab Micro every racking to keep your cider safe and clean

Winy

- Pure and high quality potassium metabisulfite
- Capable of scavenging oxygen, reducing oxidation, killing unwanted micro-flora, rendering polyphenols more soluble
- Acts as an antioxidasic agent against oxidases (laccase and tyrosinase) throughout cider making

Dosage: 1 g of Winy contains approx. 0.56 g of SO₂
1 g into 1 L contains approx. 560 ppm SO₂

1 Kg (Item #35-820-0001) \$ 4.50
25 Kg (Item #35-820-0025) \$ 72.50

$$\frac{(\text{ppm Total SO}_2 \text{ desired}) \times (\text{Liters of Cider})}{(0.56 \times 1000)} = \text{grams WINY to add}$$

Effergran

- Effervescent, granulated potassium metabisulfite
- Rapidly dissolves, assuring a homogeneous and rapid distribution of SO₂ without requiring pump-overs in tank volumes of up to 50,000 L (13,200 gal)

125 g (Item #35-810-0000) \$ 3.50
250 g (Item #35-815-0000) \$ 5.75
1 Kg (Item #35-810-0001) \$ 17.50

$$\frac{(\text{ppm Total SO}_2 \text{ desired}) \times (\text{Liters of Cider})}{(0.40 \times 1000)} = \text{grams EFFERGRAN to add}$$

Total SO ₂ (mg/L)	g/60 gal Barrel	g/1,000 gal	lbs/1,000 gal
10	6	94	0.21
20	11	189	0.42
30	17	284	0.63
40	23	379	0.84
50	28	473	1.05

EnartisStab Micro M

INDUSTRY
CHOICE

- Allergen-free, vegan alternative to lysozyme and SO₂ for antimicrobial properties
- Preparation of pre-activated chitosan from *Aspergillus niger* and purified yeast hulls
- Designed for treatment of juice or other turbid media prior to or during fermentation
- Interacts with a wide spectrum of microorganisms (lactic acid bacteria, acetic acid bacteria and yeast), reduces their activity and growth, and precipitates them
- Reduces sulfide defects, VA and off-flavor production
- Improves clarification and filterability

Dosage: 5-20 g/hL (0.4-1.7 lb/1,000 gal)

1 Kg (Item #35-762-0001)

\$ 280.00

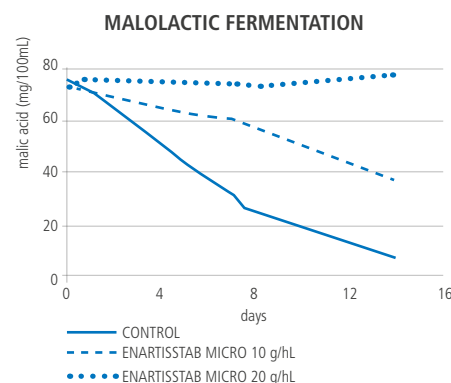
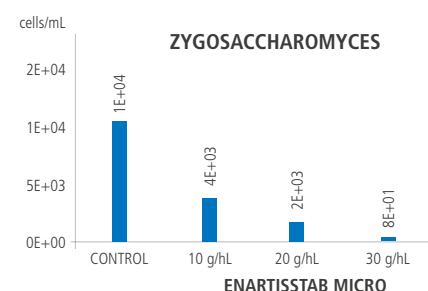
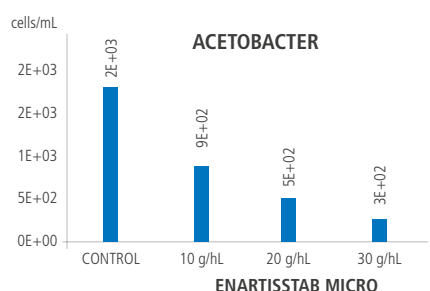
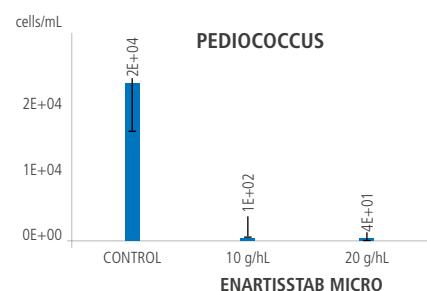
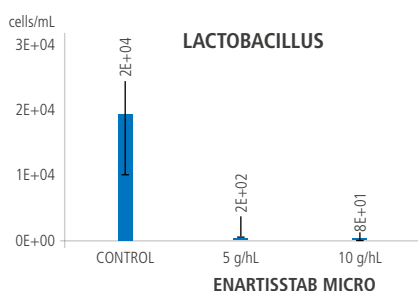
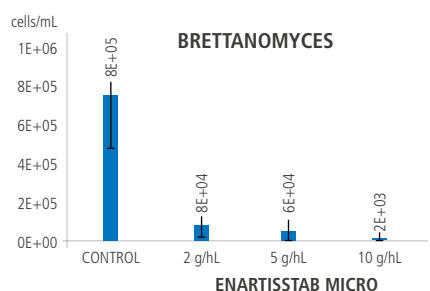
EnartisStab Micro

- Allergen-free, vegan alternative to lysozyme and SO₂ for antimicrobial properties
- Preparation of pre-activated chitosan from *Aspergillus niger*
- Removes spoilage organisms through fining
- Recommended after fermentation and clarification for cider with low turbidity
- Interacts with a wide spectrum of microorganisms (lactic acid bacteria, acetic acid bacteria and yeast), reduces their activity and growth and precipitates them
- Improves clarification and filterability

Dosage: 3-15 g/hL (0.25-1.25 lb/1,000 gal)

0.5 Kg (Item #35-761-0500)

\$ 305.00



"With Enartis products and pasteurization we have been able to effectively produce a can-stable product without sulfites." - **Trey Holt, Black Apple Crossing (USA)**

PREPARING LAB BENCH TRIALS

Bench trials are essential to determine proper dosing and the efficiency of a treatment (addition of fining agents, tannins or polysaccharides). To set-up bench trials, follow these steps:

- Prepare 1% (1g in 100 mL), 2% (2g in 100 mL) or 5% (5g in 100 mL) treatment solutions of the product to be tested:
 - For fining agents: prepare solution in water as recommended in the TDS.
 - For tannins and polysaccharides, use neutral alcohol-water solution (~13%).
 - For polysaccharides: prepare solution in water as recommended in the technical data sheet.
 - For liquid products: use solution as it is or dilute if necessary.
- Label each sample bottle. Keep one untreated sample as a control.
- Fill samples with cider and leave some space for the addition.
- Add the treatment solution. Refer to the tables below.
- Mix immediately after addition, top each bottle with cider and mix again.
- For fining agents: store in refrigerator for settling (usually 1-2 days). Let come to room temperature before evaluating.
- For tannins and polysaccharides: ciders can be tasted immediately after addition.

PRODUCT DENSITY

PRODUCT	DENSITY (Kg/dm³)		
	MINIMUM	MAXIMUM	AVERAGE
AROMAGUM	1.095	1.105	1.1
CITROGUM	1.095	1.105	1.1
CLARGEL	1.033	1.037	1.035
ENARTISZYM COLOR			1.12
ENARTISZYM QUICK			1.13
ENARTISZYM T-RED			1.13
FINEGEL	1.1	1.1	1.1
HYDROCLAR 20	1.1	1.1	1.1
HYDROCLAR 30	1.105	1.115	1.11
HYDROCLAR 45	1.155	1.165	1.16
MAXIGUM	1.095	1.105	1.1
SILFLOC	1.115	1.225	1.17
ZENITH COLOR			1.107
ZENITH UNO			1.05

ADDITIONS WITH 1% SOLUTION

cider sample (mL)	50	100	125	375	750
rate (g/hL)					
5	0.3	0.5	0.6	1.9	3.8
7	0.4	0.7	0.9	2.6	5.3
15	0.8	1.5	1.9	5.6	11.3
20	1.0	2.0	2.5	7.5	15.0

ADDITIONS WITH 2% SOLUTION

cider sample (mL)	50	100	125	375	750
rate (g/hL)					
25	0.6	1.3	1.6	4.7	9.4
30	0.8	1.5	1.9	5.6	11.3
40	1.0	2.0	2.5	7.5	15.0
50	1.3	2.5	3.1	9.4	18.8

CONVERSION CHARTS

TEMPERATURE CONVERSIONS

C° to F° = (C° x 9/5) + 32	F°	0	32	40	50	60	70	80	90	100	110	120
F° to C° = (F° - 32) x (5/9)	C°	-18	0	4	10	16	21	27	32	38	44	49

WEIGHT EQUIVALENTS

1.0 Kg	1000 g	2.2 lbs
1.0 g	1000 mg	
1.0 mg	1000 µg	
1 lb	454 g	16 oz
1 oz	28.35 g	
1 ton	2000 lbs	907 Kg

VOLUME EQUIVALENTS

1 mL	1000 µL
1 oz	29.6 mL
1 L	1000 mL
1 hL	100 L
25 hL	660 gals
1 gal	3.78 L

WEIGHT/VOLUME EQUIVALENTS

1 lb/1000 gal	0.12 g/L
	120 ppm
	12 g/hL
1 g/hL	37.8 g/1000 gal
	0.084 lb/1000 gal

VOLUME/VOLUME EQUIVALENTS

1 mL/L	100 mL/hL
	3780 mL/ 1000 gal
	3.78 L/ 1000 gal

ENARTIS PRODUCT	WATER TEMPERATURE	PRODUCT/WATER RATIO	REHYDRATION TIME
BENTOLIT SUPER	55-62°F (12-16°C)	1:20	3-6 hours
CLARIL HM	Room Temperature	1:20	1 hour
CLARIL SP	55-62°F (12-16°C)	1:10	3-6 hours
FINECOLL	Room Temperature	1:100	1-2 hours
GOLDENCLAR INSTANT	Room Temperature	1:20	-
PLANTIS AF-P	55-62°F (12-16°C)	1:10	-
PLUXBENTON N	55-62°F (12-16°C)	1:20	3-6 hours
PLUXCOMPACT	55-62°F (12-16°C)	1:10	3-6 hours
STABYL PVI/PVP	Room Temperature	1:20	1 hour

PAGE	PRODUCT	PRICE (\$)	QUANTITY
ANALYTICAL SERVICES			
4	ACETIC ACID	\$ 37.00	
4	ALCOHOL	\$ 26.00	
5	BENTONITE FINING TRIAL	\$ 83.00	
4	BOTTLED WINE STERILITY	\$ 37.00	
4	°BRIX	\$ 20.00	
5	CANNED PACKAGING PANEL	\$ 110.00	
4	CARBONATION - CAN/BOTTLE LEVEL	\$ 52.00	
4	CARBONATION CHECK LEVEL	\$ 29.00	
5	CIDER SENSORY IMPROVEMENT PANEL	\$ 400.00	
5	COPPER	\$ 29.00	
5	CULTURE FOR <i>BRETTANOMICES</i>	\$ 28.00	
4	FILTRABILITY INDEX	\$ 52.00	
5	GLUCONIC ACID	\$ 31.00	
4	GLUCOSE + FRUCTOSE	\$ 25.00	
5	HEAT STABILITY (PROTEINS)	\$ 21.00	
5	IRON	\$ 29.00	
4	LACTIC ACID	\$ 31.00	
4	MALIC ACID	\$ 25.00	
4	MICROSCOPIC SCAN	\$ 42.00	
5	MONTHLY QC PANEL	\$ 78.00	
4	PECTIN TEST	\$ 31.00	
5	PCR PANEL DETERMINING SPOILAGE MICROORGANISMS	\$ 114.00	
4	pH	\$ 16.00	
5	SEDIMENT/HAZE IDENTIFICATION	\$ 62.00	
4	SO ₂ (FREE & TOTAL) - AERATION OXIDATION	\$ 47.00	
4	TITRATABLE ACIDITY (TA)	\$ 16.00	
4	TURBIDITY	\$ 16.00	
5	UNFILTERED BOTTLING PANEL	\$ 109.00	
4	YEAST ASSIMILABLE NITROGEN (YAN)	\$ 50.00	

PAGE	ITEM #	PRODUCT	PRICE (\$)	QUANTITY
LABWARE AND SUPPLIES				
SUGAR TESTING - REFRACTOMETER FOR INITIAL °BRIX				
6	50-111-0019	Alla France - Analog	\$ 82.00	
6	50-111-0007	Atago - Digital - PAL-1	\$ 380.00	
6	20-014-5000	Beaker 5L Poly with handle	\$ 48.00	
6	20-063-0100	Graduated Cylinder 100 mL Nalgene	\$ 43.25	
6	20-141-0000	Kimwipes	\$ 7.45	
6	20-164-0025	Pipette Disposable 25 mL sterile	\$ 2.05	
SUGAR TESTING - HYDROMETER FOR °BRIX DURING FERMENTATION AND POST FERMENTATION				
6	20-126-0000	0°-35° Brix with Celsius Thermometer	\$ 42.25	
6	20-130-0000	-5° to +5° Brix with Celsius Thermometer	\$ 42.25	
6	20-138-0009	0°-35° Brix with Fahrenheit Thermometer	\$ 42.25	
6	20-138-0005	-5° to +5° Brix with Fahrenheit Thermometer	\$ 42.25	
pH METERS				
6	50-111-0016	Atago - Handheld Digital	\$ 145.00	
6	50-105-0028	Orion Star A111 Benchtop	\$ 1,082.00	
PHENOLIC ANALYSIS - JUICE AND CIDER				
6	50-250-0200	Nomasense Polyscan P200	\$ 4,400.00	

PAGE	ITEM #	PRODUCT	PRICE (\$)	QUANTITY
LABORATORY SUPPLIES				
SPECTROPHOTOMETERS - ADVANCED LABORATORY ANALYSIS				
6	50-113-0120	Vintessential V-120	\$ 1,905.00	
DISCRETE ANALYZER - ADVANCED LABORATORY ANALYSIS				
6	50-209-0002	Vintessential Chemwell T	\$ 15,000.00	
SULFUR DIOXIDE ANALYSIS - AERATION-OXIDATION METHOD				
6	50-112-5000	Aeration-Oxidation Setup No.3	\$ 891.00	
SULFUR DIOXIDE ANALYSIS - RIPPER METHOD				
6	50-600-0001	Sulfilyser - Semi-Automated Ripper Method	\$ 2,880.00	
CARBONATION TESTING - GENERAL LEVELS - CARBODOSEUR				
6	50-001-0001	Alla France	\$ 273.00	
6	50-001-0000	Laboratoires Dujardin-Salleron	\$ 278.00	
CARBONATION TESTING - LABORATORY GRADE - PACKAGED BOTTLE AND CAN PIERCING				
6	50-029-0001	Zahm & Nagel - Series 6000	\$ 1,045.00	
CARBONATION TESTING - LABORATORY GRADE - TANK				
6	50-029-0002	Zahm & Nagel - Series 1000	\$ 1,550.00	
PROCESSING FRUIT AND JUICE				
7	35-130-0250	ENARTISZYM AROM MP	0.25 Kg	\$ 54.00
7	35-175-0250	ENARTISZYM CDR-C	0.25 Kg	\$ 50.00
7	35-150-0250	ENARTISZYM ELÉVAGE	0.25 Kg	\$ 85.00
7	35-110-0001	ENARTISZYM QUICK	1 Kg	\$ 120.00
7	35-110-0020	ENARTISZYM QUICK	25 Kg	\$ 2,450.00
7	35-160-0001	ENARTISZYM RS	1 Kg	\$ 157.00
7	35-160-0100	ENARTISZYM RS(P)	0.1 Kg	\$ 17.50
FERMENTATION				
8	45-511-0500	ENARTISFERM AMR-1	0.5 Kg	\$ 39.50
8	45-120-0500	ENARTISFERM ES 181	0.5 Kg	\$ 39.50
8	45-120-0010	ENARTISFERM ES 181	10 Kg	\$ 490.00
8	45-160-0500	ENARTISFERM ES FLORAL	0.5 Kg	\$ 24.75
8	45-160-0010	ENARTISFERM ES FLORAL	10 Kg	\$ 425.00
8	45-065-0500	ENARTISFERM MB15	0.5 Kg	\$ 42.50
8	45-065-0010	ENARTISFERM MB15	10 Kg	\$ 550.00
8	45-180-0500	ENARTISFERM PERLAGE	0.5 Kg	\$ 39.40
8	45-180-0010	ENARTISFERM PERLAGE	10 Kg	\$ 490.00
8	45-302-0500	ENARTISFERM Q CITRUS	0.5 Kg	\$ 39.50
8	45-053-0500	ENARTISFERM WS	0.5 Kg	\$ 42.50
8	45-052-0010	ENARTISFERM WS	10 Kg	\$ 550.00
11	35-215-0001	NUTRIFERM ADVANCE	1 Kg	\$ 23.50
11	35-215-0010	NUTRIFERM ADVANCE	10 Kg	\$ 165.00
11	35-211-0001	NUTRIFERM AROM PLUS	1 Kg	\$ 52.00
11	35-211-0010	NUTRIFERM AROM PLUS	10 Kg	\$ 410.00
11	30-024-0005	NUTRIFERM CONTROL	5 lb	\$ 37.50
11	30-024-0020	NUTRIFERM CONTROL	20 Kg	\$ 200.00
11	35-200-0001	NUTRIFERM ENERGY	1 Kg	\$ 41.00
11	35-200-0010	NUTRIFERM ENERGY	10 Kg	\$ 360.00
10	35-216-0500	NUTRIFERM GRADUAL RELEASE	0.5 Kg	\$ 25.50
10	35-216-0005	NUTRIFERM GRADUAL RELEASE	5 Kg	\$ 155.00
11	35-212-0001	NUTRIFERM NO STOP	1 Kg	\$ 26.00
11	35-212-0010	NUTRIFERM NO STOP	10 Kg	\$ 220.00

PAGE	ITEM #	PRODUCT	SIZE	PRICE (\$)	QUANTITY
DESIGNING AROMAS, FLAVORS AND MOUTHFEEL OF CIDER					
14	35-720-0001	AROMAGUM	1 L	\$ 14.00	
14	35-720-0025	AROMAGUM	25 Kg	\$ 256.25	
14	35-725-0001	CITROGUM	1 L	\$ 12.25	
14	35-725-0025	CITROGUM	25 Kg	\$ 206.20	
14	35-725-0200	CITROGUM	200 Kg	\$ 1,140.00	
14	35-725-1000	CITROGUM	1,000 Kg	\$ 5,100.00	
12	35-400-0001	ENARTISPRO AROM	1 Kg	\$ 66.00	
12	35-410-0001	ENARTISPRO BLANCO	1 Kg	\$ 112.00	
12	35-416-0001	ENARTISPRO FT	1 Kg	\$ 142.00	
12	35-310-0001	ENARTISTAN BLANC	1 Kg	\$ 65.00	
12	35-310-0012	ENARTISTAN BLANC	12.5 Kg	\$ 675.00	
12	35-306-0001	ENARTISTAN CITRUS	1 Kg	\$ 190.00	
12	35-315-0001	ENARTISTAN CLAR	1 Kg	\$ 35.00	
12	35-315-0012	ENARTISTAN CLAR	12.5 Kg	\$ 250.00	
12	35-350-0250	ENARTISTAN ELEGANCE	0.25 Kg	\$ 49.00	
12	35-350-0001	ENARTISTAN ELEGANCE	1 Kg	\$ 185.00	
13	35-340-0001	ENARTISTAN ÉLEVAGE	1 Kg	\$ 235.00	
13	35-362-0001	ENARTISTAN FRESH FRUIT	1 Kg	\$ 405.00	
13	35-320-0001	ENARTISTAN MAX NATURE	1 Kg	\$ 72.00	
13	35-320-0010	ENARTISTAN MAX NATURE	10 Kg	\$ 610.00	
13	35-308-0500	ENARTISTAN SLI	0.5 Kg	\$ 187.50	
13	35-360-0250	ENARTISTAN SKIN	0.25 Kg	\$ 114.00	
13	35-360-0001	ENARTISTAN SKIN	1 Kg	\$ 425.00	
13	35-355-0250	ENARTISTAN UVA	0.25 Kg	\$ 97.50	
13	35-355-0001	ENARTISTAN UVA	1 Kg	\$ 370.00	
14	35-380-0250	UNICO #1	0.25 Kg	\$ 330.00	
14	35-375-0250	UNICO #2	0.25 Kg	\$ 196.00	
14	35-395-0250	UNICO #3	0.25 Kg	\$ 197.00	
14	35-455-0500	SURLÌ VELVET	0.5 Kg	\$ 322.00	
14	35-460-0500	SURLÌ VELVET PLUS	0.5 Kg	\$ 332.00	
DESIGNING AROMAS, FLAVORS AND MOUTHFEEL OF CIDER					
16	35-930-0001	INCANTO CARAMEL	Barrel Boost	\$ 99.00	
16	35-919-0010	INCANTO CARAMEL	10 Kg Chips	\$ 140.00	
17	35-928-0010	INCANTO COMPLEXITY	10 Kg Chips	\$ 100.00	
16	35-930-0000	INCANTO CREAM	Barrel Boost	\$ 99.00	
16	35-920-0010	INCANTO CREAM	10 Kg Chips	\$ 140.00	
17	35-930-0002	INCANTO DARK CHOCOLATE	Barrel Boost	\$ 99.00	
17	35-921-0010	INCANTO DARK CHOCOLATE	10 Kg Chips	\$ 140.00	
16	35-922-0010	INCANTO NATURAL	10 Kg Chips	\$ 90.00	
18	35-916-0001	INCANTO N.C.	1 Kg	\$ 78.00	
18	35-916-0010	INCANTO N.C.	10 Kg	\$ 690.00	
18	35-913-0001	INCANTO N.C. CHERRY	1 Kg	\$ 99.00	
18	35-913-0010	INCANTO N.C. CHERRY	10 Kg	\$ 880.00	
18	35-918-0001	INCANTO N.C. WHITE	1 Kg	\$ 89.00	
18	35-918-0010	INCANTO N.C. WHITE	10 Kg	\$ 880.00	
16	35-927-0010	INCANTO SLI	10 Kg Chips	\$ 80.00	
17	35-930-0003	INCANTO SPECIAL FRUIT	Barrel Boost	\$ 99.00	
17	35-923-0010	INCANTO SPECIAL FRUIT	10 Kg Chips	\$ 140.00	
17	35-926-0010	INCANTO SPICE	10 Kg Chips	\$ 215.00	

PAGE	ITEM #	PRODUCT	SIZE	PRICE (\$)	QUANTITY
DESIGNING AROMAS, FLAVORS AND MOUTHFEEL OF CIDER					
17	35-930-0004	INCANTO TOFFEE	Barrel Boost	\$ 99.00	
17	35-924-0010	INCANTO TOFFEE	10 Kg Chips	\$ 140.00	
16	35-930-0005	INCANTO VANILLA	Barrel Boost	\$ 99.00	
16	35-925-0010	INCANTO VANILLA	10 Kg Chips	\$ 140.00	
CLARIFICATION AND ADJUSTING MOUTHFEEL					
20	35-675-0001	BENTOLIT SUPER	1 Kg	\$ 3.25	
20	35-675-0025	BENTOLIT SUPER	25 Kg	\$ 50.00	
19	35-665-0001	CLARIL SP	1 Kg	\$ 32.00	
19	35-665-0010	CLARIL SP	10 Kg	\$ 280.00	
20	35-661-0001	CLARIL HM	2.5 Kg	\$ 437.50	
20	35-661-0010	CLARIL HM	10 Kg	\$ 1,590.00	
20	35-701-0001	ENOBLOCK PERLAGE	1 Kg	\$ 31.00	
20	35-701-0015	ENOBLOCK PERLAGE	15 Kg	\$ 390.00	
19	35-650-0010	FINECOLL	10 Kg	\$ 1,525.00	
19	35-626-0001	GOLDENCLAR INSTANT	1 Kg	\$ 41.00	
19	35-761-0001	PLANTIS AF-P	1 Kg	\$ 98.00	
19	35-761-0010	PLANTIS AF-P	12.5 Kg	\$ 920.00	
20	35-680-0001	PLUXCOMPACT	1 Kg	\$ 3.25	
20	35-680-0020	PLUXCOMPACT	20 Kg	\$ 64.00	
19	35-690-0001	SIL FLOC	1 L	\$ 8.00	
19	35-690-0025	SIL FLOC	25 Kg	\$ 150.00	
20	35-657-0002	STABYL MET	2.5 Kg	\$ 550.00	
20	35-657-0010	STABYL MET	10 Kg	\$ 1,900.00	
ENSURING MICROBIAL STABILITY					
21	35-810-0000	EFFERGRAN	125 g	\$ 3.50	
21	35-815-0000	EFFERGRAN	250 g	\$ 5.75	
21	35-810-0001	EFFERGRAN	1 Kg	\$ 17.50	
22	35-761-0500	ENARTIS STAB MICRO	0.5 Kg	\$ 305.00	
22	35-762-0500	ENARTIS STAB MICRO M	1 Kg	\$ 280.00	
21	35-820-0001	WINY	1 Kg	\$ 4.50	
21	35-820-0025	WINY	25 Kg	\$ 72.50	

LOCAL REPRESENTATIVES THROUGHOUT NORTH AMERICA

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Enartis USA is open Monday-Friday 8:30 AM to 5:00 PM (extended hours during harvest)

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Shipping charges and sales tax (as required) are additional. Due to manufacturers' changes, our prices may change without prior notice.

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