Cider Handbook of Services and Supplies **2018**




VINQUIRY LABORATORIES by enartis USA

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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 SO_2 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.

Titratable 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 150-200 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 (H_2S).

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.

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. *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 SO_2** will help prevent spoilage and protect from oxidation reactions. Molecular SO_2 is calculated with **Free SO_2** and **pH** values. Recommended molecular SO_2 for ciders is 0.8 mg/L.

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.

Filterability Index shows the risk for a clogged filter pre-bottling or during bottling. Completing this test is recommended during the final stages prior to bottling to minimize downtime.

PATH TO QUALITY

	Juice	Post-Fermentation	Pre-Bottling	Post-Bottling	Price
°BRIX	★				$ 19.00
YEAST ASSIMILABLE NITROGEN (YAN)	★				$ 48.00
pH	★	★	★	★	$ 15.00
TITRATABLE ACIDITY (TA)	★	★	★		$ 15.00
PECTIN TEST	★	★	★		$ 30.00
GLUCOSE + FRUCTOSE		★			$ 24.00
MALIC ACID	★	★			$ 24.00
LACTIC ACID		★			$ 30.00
MICROSCOPIC SCAN		★	★	★	$ 40.00
ACETIC ACID		★	★		$ 35.00
ALCOHOL		★	★	★	$ 25.00
SO_2 (FREE & TOTAL) - SEGMENTED FLOW			★	★	$ 35.00
TURBIDITY			★	★	$ 15.00
FILTERABILITY INDEX			★		$ 50.00
CARBONATION CHECK LEVEL			★		$ 28.00
CARBONATION – CAN/BOTTLE LEVEL				★	$ 50.00
BOTTLED WINE STERILITY				★	$ 35.00
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

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

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, SO_2 (Free, Total and Molecular), TA (expressed as Malic Acid), Turbidity.

Sample Requirement: 2 x 750 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, SO_2 (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 SO_2, Molecular SO_2, Acetic Acid, Microscopic Scan.

Sample Requirement: 250 mL

$ 75.00

COMPLETE NUTRITIONAL PANEL

Comprehensive panel to meet the Nutritional Facts requirements as set by the FDA for labeling of ciders. Not required for TTB labeling.

Includes: Ash, Calories by Calculation, Cholesterol, Fat by Gravimetry, Fiber by 2011.15 Codex Definition, Metals Screen (Na, Ca, Fe, K), Moisture by Karl Fischer, Protein by Kjeldahl, Specific Gravity, Sugar Profile, Vitamin D.

Sample Requirement: 750 mL

$ 1,310.00

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

$ 110.00

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

$ 105.00

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

$ 275.00

ADDITIONAL ANALYSES

Heat Stability – Proteins	250 mL	**$ 20.00**
Bentonite Fining Trial	750 mL	**$ 80.00**
Copper	50 mL	**$ 28.00**
Culture for *Brettanomyces*	50 mL	**$ 27.00**
Ethylphenols (4EP/4EG)	50 mL	**$ 68.00**

LABORATORY SUPPLIES

VINQUIRY LABORATORIES by enartis USA

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.*

SUGAR TESTING – REFRACTOMETER FOR INITIAL °BRIX		
Alla France - Analog	Item #50-111-0019	$ 80.00
Atago - Analog - Master Alpha	Item #50-111-0011	$ 300.00
Alla France - Digital	Item #50-111-0018	$ 295.00
Atago - Digital - PAL-1	Item #50-111-0007	$ 370.00
SUGAR TESTING – HYDROMETER FOR °BRIX DURING FERMENTATION AND POST FERMENTATION		
0°-35° Brix with Celsius Thermometer	Item #20-126-0000	$ 41.00
-5° to +5° Brix with Celsius Thermometer	Item #20-130-0000	$ 41.00
0°-35° Brix with Fahrenheit Thermometer	Item #20-138-0009	$ 41.00
-5° to +5° Brix with Fahrenheit Thermometer	Item #20-138-0005	$ 41.00
pH METERS		
Atago – Handheld Digital	Item #50-111-0016	$ 140.00
Orion Star A111 Benchtop	Item #50-105-0028	$ 1,050.00
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	$ 1,905.00
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	$ 865.00
SULFUR DIOXIDE ANALYSIS - RIPPER METHOD		
Manual Ripper Method Setup	Item #50-112-0015	$ 615.00
Sulfilyser – Semi-Automated Ripper Method	Item #50-600-0001	$ 2,800.00
CARBONATION TESTING – GENERAL LEVELS – CARBODOSEUR		
Alla France	Item #50-001-0001	$ 265.00
Laboratoires Dujardin-Salleron	Item #50-001-0000	$ 270.00
CARBONATION TESTING – LABORATORY GRADE – PACKAGED BOTTLE AND CAN PIERCING		
Zahm & Nagel - Series 6000	Item #50-029-0001	$ 1,015.00
CARBONATION TESTING – LABORATORY GRADE – TANK		
Zahm & Nagel - Series 1000	Item #50-029-0002	$ 1,500.00

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. It is important to choose the proper enzymatic activities to not overly degrade fruit prior to pressing, leading to difficulty in pressing. After pressing, it is important to apply clarification enzymes to improve settling and 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. *Please contact us or see our current Handbook of Services and Supplies for a complete list of available enzymes.*

FROM WHERE ARE ENZYMES EXTRACTED?
Enzymes used in cider making are produced by diverse species of fungi such as *Aspergillus, Rhizopus* and *Trichoderma*, except for lysozyme which is extracted from egg whites.

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

ENARTIS ZYM CDR-M
- Liquid pectolytic enzyme
- Increases juice extraction from milled apples at pressing
- Initiates pectin breakdown and clarification

Applications: *Addition after milling, prior to pressing.*
Dosage: *50-100 mL/ton - Higher doses recommended on late harvest and/or cold storage fruit*

0.25 Kg **(Item# 35-176-0250)** **$ 50.00**

ENARTIS ZYM 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**

ENARTIS ZYM RS
- Liquid pectolytic enzyme with hemicellulasic 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: *1-3 mL/hL (38-114 mL/1,000 gal) for juice*
3-6 mL/hL (114-227 mL/1,000 gal) for cider

1 Kg **(Item #35-160-0001)** **$ 153.00**

ENARTIS ZYM RS(P)
- Micro-granulated powdered pectolytic enzyme with hemicellulasic 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: *1-3 g/hL (0.08-0.25 lb/1,000 gal) for juice*
3-6 g/hL (0.25-0.50 lb/1,000 gal) for cider

0.1 Kg **(Item #35-160-0100)** **$ 17.00**

ENARTIS ZYM CARACTÈRE
- Micro-granulated powdered pectolytic enzyme with hemicellulasic and ß-glucosidasic activities
- Reduces cider viscosity and improves filterability
- Increases aromatic intensity and complexity

Applications: *Addition to cider only, post-fermentation.*
Dosage: *3-6 g/hL (0.25-0.50 lbs/1,000 gal) for cider*

0.25 Kg **(Item #35-125-0250)** **$ 62.50**

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, six 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.*

ENARTIS FERM WS

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 H_2S.

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)**

ENARTIS FERM PERLAGE

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 H_2S 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)**	**$ 39.40**
10 Kg	**(Item #45-180-0010)**	**$ 485.00**

ENARTIS FERM Q CITRUS

Intensifies zesty and fresh notes of citrus, tropical fruit, flowers, peach, pear and pineapple. Low producer of H_2S. Minimal nutrition requirements.

Tip: *Aroma production is increased by using in combination with Enartis Tan Citrus during fermentation.*

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

0.5 Kg	**(Item #45-302-0500)**	**$ 39.70**

ENARTIS FERM 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**

ENARTIS FERM 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 H_2S, 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**

ENARTIS FERM ES 181

Yeast strain with dual ability to express thiols (ß-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 H_2S, 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**

ENARTIS FERM 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**

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 H_2S, 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.

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 140 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 H_2S.

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, H_2S 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 **Nutriferm Energy** or **Nutriferm 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 **Nutriferm Advance** or **Nutriferm Gradual Release**.

NUTRIFERM ENERGY

- Amino nitrogen, vitamins, mineral salts and micro-nutrients
- Shortens lag phase, prevents early formation of H_2S 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: *5-15 g/hL (0.4-1.3 lb/1,000 gal)*

1 Kg	**(Item #35-200-0001)**	**$ 40.00**
10 Kg	**(Item #35-200-0010)**	**$ 350.00**

NUTRIFERM AROM PLUS

- Amino nitrogen, vitamins, mineral salts and micro-nutrients
- 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)**	**$ 50.50**
10 Kg	**(Item #35-211-0010)**	**$ 400.00**

NUTRIFERM ADVANCE

- Complex additive containing an inorganic nitrogen source from diammonium phosphate, as well as yeast hulls and cellulose to assist yeast through to end of fermentation
- Prevents irregular kinetics while maintaining efficient sugar transport
- Improves yeast alcohol tolerance, prevents H_2S 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)**	**$ 23.00**
10 Kg	**(Item #35-215-0010)**	**$ 160.00**

NUTRIFERM NO STOP

- Purified yeast hulls rich in sterols and unsaturated long-chain fatty acids
- 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)**	**$ 25.25**
10 Kg	**(Item #35-212-0010)**	**$ 215.00**

NUTRIFERM CONTROL

- Yeast cell walls
- 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)*

1 lb	**(Item #30-024-0000)**	**$ 8.50**
20 Kg	**(Item #30-024-0020)**	**$ 190.00**

NUTRIFERM GRADUAL RELEASE

- Innovative nutrient composed of 90% DAP, as well as 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 H_2S 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)**	**$ 25.00**
1 Kg	**(Item #35-216-0001)**	**$ 45.00**
5 Kg	**(Item #35-216-0005)**	**$ 150.00**

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.

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 18 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 SO_2 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.

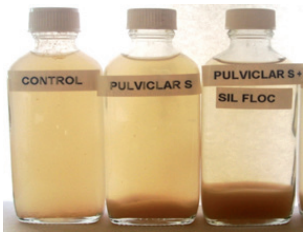
ENARTIS PRODUCT	WATER TEMPERATURE	PRODUCT/WATER RATIO	REHYDRATION TIME
BENTOLIT SUPER	55-62°F (12-16°C)	1:20	3-6 hours
CLARIL HM	Room Temperature	1:20	1 hour
CLARIL SP	55-62°F (12-16°C)	1:10	3-6 hours
FINECOLL	Room Temperature	1:100	1-2 hours
GOLDENCLAR INSTANT	Room Temperature	1:20	-
PLANTIS AF-P	55-62°F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

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)**	**$ 9.00**
25 Kg	**(Item #35-690-0025)**	**$ 150.00**



Sil Floc improves clarification and lees compaction

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)*

0.25 Kg	**(Item #35-650-0250)**	**$ 65.00**
1 Kg	**(Item #35-650-0001)**	**$ 210.00**

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)**	**$ 40.00**

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)**	**$ 95.00**
12.5 Kg	**(Item #35-761-0010)**	**$ 900.00**

CLARIL SP

- 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)**	**$ 31.00**
10 Kg	**(Item #35-665-0010)**	**$ 270.00**

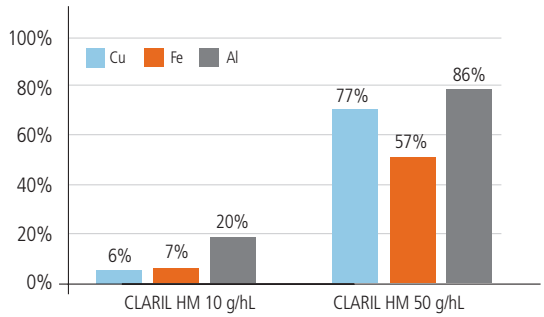
CLARIL HM

- 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)**	**$ 425.00**
10 Kg	**(Item #35-661-0010)**	**$ 1,550.00**

FINING WITH CLARIL HM CAN REDUCE RESIDUAL METAL IN CIDER



STABYL MET

- 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)**	**$ 537.50**
10 Kg	**(Item #35-657-0010)**	**$ 1,850.00**

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)**	**$ 3.20**
25 Kg	**(Item #35-675-0025)**	**$ 48.75**

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)**	**$ 3.20**
20 Kg	**(Item #35-680-0020)**	**$ 62.00**

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)**	**$ 30.00**
15 Kg	**(Item #35-701-0015)**	**$ 375.00**

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

ENARTIS TAN 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 Enartis Ferm Q Citrus.*
Dosage: *2-15 g/hL (0.17-1.3 lb/1,000 gal)*

1 Kg	**(Item #35-306-0001)**	**$ 185.00**

ENARTIS TAN AROM

- High molecular weight, hydrolysable tannins and yeast hulls
- Highly reactive tannin, strong antioxidant effect, inhibits oxidative enzymes and facilitates clarification

Tip: *Use in combination with Enartis Ferm ES Perlage or Enartis Ferm ES 181 to increase thiol expression.*
Dosage: *2-20 g/hL (0.17-1.7 lb/1,000 gal)*

1 Kg	**(Item #35-500-0001)**	**$ 160.00**

ENARTIS TAN CLAR

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

Dosage: *4-10 g/hL (0.3-0.8 lb/1,000 gal)*

1 Kg	**(Item #35-315-0001)**	**$ 34.00**
10 Kg	**(Item #35-315-0012)**	**$ 250.00**

ENARTIS TAN 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)**	**$ 47.50**
1 Kg	**(Item #35-350-0001)**	**$ 180.00**

POLYSACCHARIDES

ENARTIS PRO 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)**	**$ 65.00**

ENARTIS PRO 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)**	**$ 110.00**

ENARTIS PRO 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: *30-80 g/hL (2.5-6.7 lb/1,000 gal)*

1 Kg	**(Item #35-416-0001)**	**$ 140.00**

DURING MATURATION AND PRE-BOTTLING

TANNINS

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

ENARTIS TAN 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)**	**$ 70.00**
10 Kg	**(Item #35-320-0010)**	**$ 600.00**

ENARTIS TAN 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)**	**$ 230.00**

ENARTIS TAN 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 SO_2 and improves shelf life throughout maturation and at bottling

Dosage: *3-15 g/hL (.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)**	**$ 185.00**

ENARTIS TAN 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)**	**$ 96.25**
1 Kg	**(Item #35-355-0001)**	**$ 365.00**

ENARTIS TAN 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)**	**$ 395.00**

POLYSACCHARIDES AND GUMS

CITROGUM

- 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)**	**$ 12.00**
25 Kg	**(Item #35-725-0025)**	**$ 200.00**
200 Kg	**(Item #35-725-0200)**	**$ 1,100.00**
1,000 Kg	**(Item #35-725-1000)**	**$ 5,000.00**

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)**	**$ 13.50**
25 Kg	**(Item #35-720-0025)**	**$ 250.00**

SURLI VELVET

- Completely soluble yeast cell wall polysaccharides
- 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: *0.50-5 g/hL (0.04-0.4 lb/1,000 gal)*

0.5 Kg	**(Item #35-455-0500)**	**$ 320.00**

SURLI VELVET PLUS

- Completely soluble yeast polysaccharides rich in sulfur-containing peptide
- 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, Surlì 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)**	**$ 327.50**

BENEFITS AND COMPOSITION

FERMENTATION TANNINS	ANTIOXI-DANT	AROMATIC CLEANLI-NESS	STRUCTURE ENHANCE-MENT	ASTRIN-GENCY	SOFTNESS	AROMA INTENSITY	GRAPE DERIVATE	WOOD DERIVATE	AROMA CONTRIBUTION
ENARTIS TAN AROM	★★★★★	★★	★★	★★	★★	★★★★		•	*Pineapple, Passion fruit, Grapefruit*
ENARTIS TAN CITRUS	★★★★	★★	★★	★★	★★	★★★★★	•	•	*Citrus, White flowers, Orange blossom*
ENARTIS TAN CLAR	★★★	★★★	★★★	★★★	★	★		•	*Wood*
ENARTIS TAN 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
ENARTIS TAN ÉLEVAGE	★★★	★★★	★★★	★★★	★★	★★★		•	*Toasted Oak, Caramel*
ENARTIS TAN FRESH FRUIT	★★★	★★	★★	★	★★★★	★★★★	•		*Lemon, Citrus, Mint, Fresh fruit*
ENARTIS TAN MAX NATURE	★★	★★★★	★	★	★★★★★	★		•	*Chamomile*
ENARTIS TAN SLI	★★★★★	★★★★	★★	★	★★★★	★★★		•	*Oak, Coconut, Vanilla*
ENARTIS TAN UVA	★★	★★★	★★★	★★	★★★	★	•		*White flower, Honeydew,*

FERMENTATION POLYSACCHARIDES	ANTIOXI-DANT	AROMATIC CLEANLI-NESS	MOUTHFEEL IMPROVE-MENT	VISCOSITY	SOFTNESS	AROMA INTENSITY	TIME OF ADDITION	COMPOSITION
ENARTIS PRO AROM	★★★★	★★★	★★	★	★★★	★	*Fermentation*	*Yeast hulls rich in mannoproteins containing sulfur peptides*
ENARTIS PRO BLANCO	★★★★★	★★★★	★★★★	★	★★★	★★★	*Fermentation*	*Yeast hulls rich in mannoproteins containing sulfur peptides*
ENARTIS PRO FT	★★★★★★	★★★★	★★★★	★	★★★	★★★	*Fermentation*	*Yeast hulls rich in mannoproteins containing sulfur peptides and PVI/PVP*

PRE-BOTTLING POLYSACCHARIDES	ANTIOXI-DANT	AROMATIC CLEANLI-NESS	MOUTHFEEL IMPROVE-MENT	VISCOSITY	SOFTNESS	AROMA INTENSITY	TIME OF ADDITION	COMPOSITION
SURLÌ VELVET	★★	★★	★★★★	★★★	★★★★	★	*Pre-Bottling*	*Yeast mannoproteins*
SURLÌ VELVET PLUS	★★★	★★	★★★★	★★★	★★★★	★★	*Pre-Bottling*	*Yeast mannoproteins*

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. 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.

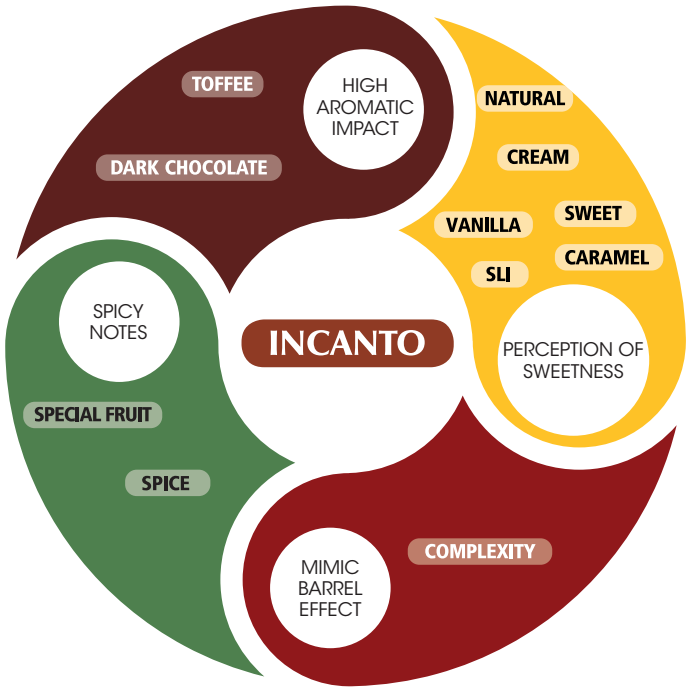
INCANTO: OUR RANGE OF OAK ALTERNATIVES

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: 1-2 g/L for light cider; 1-4 g/L for heavy cider
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 60 gallons is equivalent to 25% new oak.
Contact time: Minimum of 3 months, optimal at 4 months



PERCEPTION OF SWEETNESS

NEW

INCANTO SLI

- American oak, untoasted
- Respects aromatic characters 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

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

10 Kg Chips **(Item #35-922-0010)** **$ 80.00**
(Not available in Barrel Boost)

INCANTO VANILLA

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

Barrel Boost	**(Item #35-930-0005)**	**$ 98.00**
10 Kg Chips	**(Item #35-925-0010)**	**$ 135.00**

INCANTO CREAM

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

Barrel Boost	**(Item #35-930-0000)**	**$ 98.00**
10 Kg Chips	**(Item #35-920-0010)**	**$ 135.00**

INCANTO CARAMEL

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

Barrel Boost	**(Item #35-930-0001)**	**$ 98.00**
10 Kg Chips	**(Item #35-919-0010)**	**$ 135.00**

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)**	**$ 98.00**
10 Kg Chips	**(Item #35-923-0010)**	**$ 135.00**

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)**	**$ 210.00**

(Not available in Barrel Boost)

MIMIC BARREL EFFECT

INCANTO COMPLEXITY

NEW

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

10 Kg Chips	**(Item #35-928-0010)**	**$ 95.00**

(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)**	**$ 98.00**
10 Kg Chips	**(Item #35-924-0010)**	**$ 135.00**

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)**	**$ 98.00**
10 Kg Chips	**(Item #35-921-0010)**	**$ 135.00**

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-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, caffé macchiato, toasted bread, hazelnut	Smooth, soft, length
INCANTO DARK CHOCOLATE	FR	Medium-Plus	Cocoa, coffee, toasted almond, licorice	Volume, structure

ENSURING MICROBIAL STABILITY

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.

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. SO_2, managed with pH, acts as an inhibitor.

WHAT IS THE ROLE OF SO_2?

Cider quality can be preserved with sulfur dioxide. Sulfur dioxide acts in cider as an antioxidant, antioxidasic and antimicrobial. The antimicrobial properties of SO_2 are pH dependent: SO_2 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 SO_2 FOR CIDER MAKING

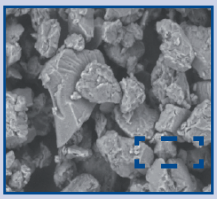
In the case of microbial contamination, reduction of SO_2 use or higher pH, activated chitosan-based fining agents can remove spoilage microorganisms.

WHAT IS CHITOSAN?

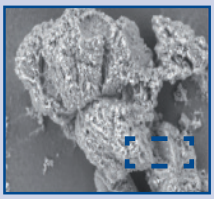
Produced from the partial de-acetylation of Chitin (produced from *Aspergillus niger*), chitosan is a cationic polysaccharide that interacts with a wide spectrum of microorganisms, alters their cell wall permeability, inhibits cell growth and leads to cell death. Chitosan is widely used in food, pharmaceutical and medical industries for its antimicrocidal action. The antimicrobial activity of chitosan is attributed to its positive charges (NH_3+ 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 molecularcharge, 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
(ENARTIS STAB MICRO AND ENARTIS STAB MICRO M)

WHEN TO USE ENARTIS STAB 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/sliggish 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 SO_2*
1 g into 1 L contains approx. 560 ppm SO_2

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

$$\frac{(\textit{ppm Total } SO_2 \textit{ desired}) \times (\textit{Liters of Cider})}{(0.56 \times 1000)} = \textit{grams WINY to add}$$

EFFERGRAN

- Effervescent, granulated potassium metabisulfite
- Rapidly dissolves, assuring a homogeneous and rapid distribution of SO_2 without requiring pump-overs in tank volumes of up to 50,000 L (13,200 gal)

125 g	**(Item #35-810-0000)**	**$ 3.38**
250 g	**(Item #35-815-0000)**	**$ 5.50**
1 Kg	**(Item #35-810-0001)**	**$ 17.00**

$$\frac{(\textit{ppm Total } SO_2 \textit{ desired}) \times (\textit{Liters of Cider})}{(0.40 \times 1000)} = \textit{grams EFFERGRAN to add}$$

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

ENARTIS STAB MICRO M

- Allergen-free, vegan alternative to lysozyme and SO_2 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)*

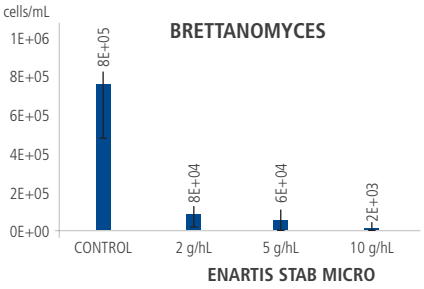
1 Kg **(Item #35-762-0001)** **$ 275.00**

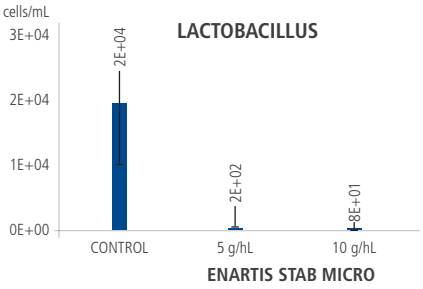
ENARTIS STAB MICRO

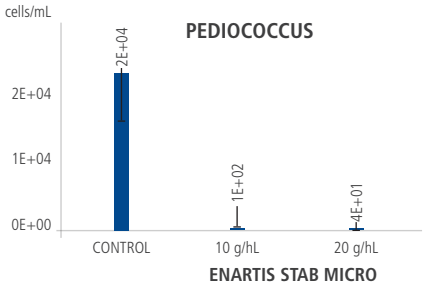
- Allergen-free, vegan alternative to lysozyme and SO_2 for antimicrobial properties
- Preparation of pre-activated chitosan from *Aspergillus niger*
- Removes spoilage organisms through fining
- Recommended after fermentation and clarification with low turbidity
- Interacts with a wide spectrum of microorganisms (lactic acid bacteria, acetic acid bacteria and yeast), reduces their activity and growth and precipitates them
- Improves clarification and filterability

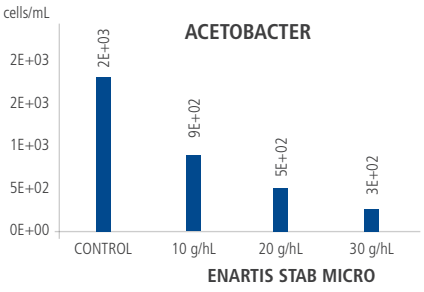
Dosage: *3-20 g/hL (0.25-1.7 lb/1,000 gal)*

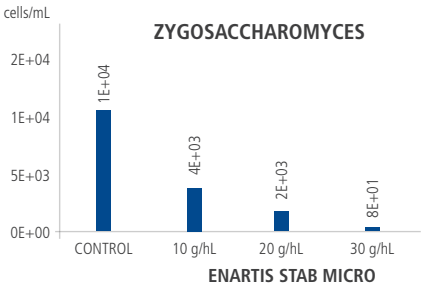
0.5 Kg **(Item #35-761-0500)** **$ 300.00**

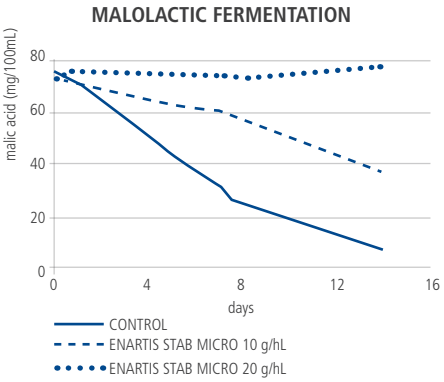












GENERAL TOOLS

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 wine and leave some space for the addition.
- Add the treatment solution. Refer to the tables below.
- Mix immediately after addition, top each bottle with wine 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: wines can be tasted immediately after addition.

ADDITIONS WITH 1% SOLUTION

wine sample (mL) / rate (g/hL)	50	100	125	375	750
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

wine sample (mL) / rate (g/hL)	50	100	125	375	750
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

PRODUCT DENSITY

	DENSITY (kg/dm³)		
PRODUCT	**MINIMUM**	**MAXIMUM**	**AVERAGE**
AROMAGUM	1.095	1.105	1.1
CELLOGUM L	1.05	1.05	1.05
CELLOGUM LV 20	1.1	1.1	1.1
CITROGUM	1.095	1.105	1.1
CLARGEL	1.033	1.037	1.035
ENARTIS ZYM COLOR			1.12
ENARTIS ZYM QUICK			1.13
ENARTIS ZYM 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

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	33.8 oz
1 hL	100 L	26.4 gal
25 hL	660 gals	
1 gal	3.78 L	128 oz

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

PAGE	PRODUCT	PRICE ($)	QUANTITY
ANALYTICAL SERVICES			
5	BENTONITE FINING TRIAL	$ 80.00	
5	CIDER SENSORY IMPROVEMENT PANEL	$ 275.00	
5	COMPLETE NUTRITIONAL PANEL	$ 1,310.00	
5	COPPER	$ 28.00	
5	CULTURE FOR BRETTANOMICES	$ 27.00	
5	ETHYLPHENOLS	$ 68.00	
5	HEAT STABILITY (PROTEINS)	$ 20.00	
4	JUICE PANEL FOR CIDER MAKING	$ 95.00	
5	MONTHLY QC PANEL	$ 75.00	
5	PCR PANEL DETERMINING SPOILAGE MICROORGANISMS	$ 110.00	
4	POST-BOTTLING PANEL FOR CIDER	$ 115.00	
4	POST-FERMENTATION PANEL FOR CIDER	$ 150.00	
4	PRE-BOTTLING PANEL FOR CIDER	$ 175.00	
5	UNFILTERED BOTTLING PANEL	$ 105.00	

PAGE	ITEM #	PRODUCT	PRICE ($)	QUANTITY
LABORATORY SUPPLIES				
SUGAR TESTING – REFRACTOMETER FOR INITIAL °BRIX				
6	50-111-0019	Alla France - Analog	$ 80.00	
6	50-111-0011	Atago - Analog - Master Alpha	$ 300.00	
6	50-111-0018	Alla France - Digital	$ 295.00	
6	50-111-0007	Atago - Digital - PAL-1	$ 370.00	
SUGAR TESTING – HYDROMETER FOR °BRIX DURING FERMENTATION AND POST FERMENTATION				
6	20-126-0000	0°-35° Brix with Celsius Thermometer	$ 41.00	
6	20-130-0000	-5° to +5° Brix with Celsius Thermometer	$ 41.00	
6	20-138-0009	0°-35° Brix with Fahrenheit Thermometer	$ 41.00	
6	20-138-0005	-5° to +5° Brix with Fahrenheit Thermometer	$ 41.00	
pH METERS				
6	50-111-0016	Atago – Handheld Digital	$ 140.00	
6	50-105-0028	Orion Star A111 Benchtop	$ 1,050.00	
PHENOLIC ANALYSIS - JUICE AND CIDER				
6	50-250-0200	Nomasense Polyscan P200	$ 4,400.00	
SPECTROPHOTOMETERS – ADVANCED LABORATORY ANALYSIS				
6	50-113-0120	Vintessential V-120	$ 1,905.00	
DISCRETE ANALYZER – ADVANCED LABORATORY ANALYSI				
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	$ 865.00	
SULFUR DIOXIDE ANALYSIS - RIPPER METHOD				
6	50-112-0015	Manual Ripper Method Setup	$ 615.00	
6	50-600-0001	Sulfilyser – Semi-Automated Ripper Method	$ 2,800.00	
CARBONATION TESTING – GENERAL LEVELS – CARBODOSEUR				
6	50-001-0001	Alla France	$ 265.00	
6	50-001-0000	Laboratoires Dujardin-Salleron	$ 270.00	
CARBONATION TESTING – LABORATORY GRADE – PACKAGED BOTTLE AND CAN PIERCING				
6	50-029-0001	Zahm & Nagel - Series 6000	$ 1,015.00	
CARBONATION TESTING – LABORATORY GRADE – TANK				
6	50-029-0002	Zahm & Nagel - Series 1000	$ 1,500.00	

INDEX AND ORDER FORM

PAGE	ITEM #	PRODUCT	SIZE	PRICE ($)	QUANTITY
PROCESSING FRUIT & JUICE					
7	35-125-0250	ENARTIS ZYM CARACTÈRE	0.25 Kg	$ 62.50	
7	35-175-0250	ENARTIS ZYM CDR-C	0.25 Kg	$ 50.00	
7	35-176-0250	ENARTIS ZYM CDR-M	0.25 Kg	$ 50.00	
7	35-160-0001	ENARTIS ZYM RS	1 Kg	$ 153.00	
7	35-160-0100	ENARTIS ZYM RS(P)	0.1 Kg	$ 17.00	
FERMENTATION					
8	45-511-0500	ENARTIS FERM AMR-1	0.5 Kg	$ 39.50	
8	45-120-0500	ENARTIS FERM ES 181	0.5 Kg	$ 39.50	
8	45-120-0010	ENARTIS FERM ES 181	10 Kg	$ 490.00	
8	45-065-0500	ENARTIS FERM MB15	0.5 Kg	$ 42.50	
8	45-160-0500	ENARTIS FERM ES FLORAL	0.5 Kg	$ 24.75	
8	45-160-0010	ENARTIS FERM ES FLORAL	10 Kg	$ 425.00	
8	45-065-0010	ENARTIS FERM MB15	10 Kg	$ 550.00	
8	45-180-0500	ENARTIS FERM PERLAGE	0.5 Kg	$ 39.40	
8	45-180-0010	ENARTIS FERM PERLAGE	10 Kg	$ 485.00	
8	45-302-0500	ENARTIS FERM Q CITRUS	0.5 Kg	$ 39.70	
8	45-053-0500	ENARTIS FERM WS	0.5 Kg	$ 42.50	
8	45-052-0010	ENARTIS FERM WS	10 Kg	$ 550.00	
10	35-215-0001	NUTRIFERM ADVANCE	1 Kg	$ 23.00	
10	35-215-0010	NUTRIFERM ADVANCE	10 Kg	$ 160.00	
9	35-211-0001	NUTRIFERM AROM PLUS	1 Kg	$ 50.50	
9	35-211-0010	NUTRIFERM AROM PLUS	10 Kg	$ 400.00	
10	30-024-0000	NUTRIFERM CONTROL	1 lb	$ 8.50	
10	30-024-0020	NUTRIFERM CONTROL	20 Kg	$ 190.00	
9	35-200-0001	NUTRIFERM ENERGY	1 Kg	$ 40.00	
9	35-200-0010	NUTRIFERM ENERGY	10 Kg	$ 350.00	
10	35-216-0500	NUTRIFERM GRADUAL RELEASE	0.5 Kg	$ 25.00	
10	35-216-0001	NUTRIFERM GRADUAL RELEASE	1 Kg	$ 45.00	
10	35-216-0005	NUTRIFERM GRADUAL RELEASE	5 Kg	$ 150.00	
10	35-212-0001	NUTRIFERM NO STOP	1 Kg	$ 25.25	
10	35-212-0010	NUTRIFERM NO STOP	10 Kg	$ 215.00	
CLARIFICATION AND ADJUSTING MOUTHFEEL					
12	35-675-0001	BENTOLIT SUPER	1 Kg	$ 3.20	
12	35-675-0025	BENTOLIT SUPER	25 Kg	$ 48.75	
12	35-665-0001	CLARIL SP	1 Kg	$ 31.00	
12	35-665-0010	CLARIL SP	10 Kg	$ 270.00	
12	35-661-0001	CLARIL HM	2.5 Kg	$ 425.00	
12	35-661-0010	CLARIL HM	10 Kg	$ 1,550.00	
12	35-701-0001	ENOBLACK PERLAGE	1 Kg	$ 30.00	
12	35-701-0015	ENOBLACK PERLAGE	15 Kg	$ 375.00	
11	35-650-0250	FINECOLL	0.25 Kg	$ 65.00	
11	35-650-0001	FINECOLL	1 Kg	$ 210.00	
12	35-626-0001	GOLDENCLAR INSTANT	1 Kg	$ 40.00	
12	35-761-0001	PLANTIS AF-P	1 Kg	$ 95.00	
12	35-761-0010	PLANTIS AF-P	12.5 Kg	$ 900.00	
12	35-680-0001	PLUXCOMPACT	1 Kg	$ 3.20	
12	35-680-0020	PLUXCOMPACT	20 Kg	$ 62.00	
11	35-690-0001	SIL FLOC	1 L	$ 9.00	
11	35-690-0025	SIL FLOC	25 Kg	$ 150.00	
12	35-657-0002	STABYL MET	2.5 Kg	$ 537.50	
12	35-657-0010	STABYL MET	10 Kg	$ 1,850.00	

PAGE	ITEM #	PRODUCT	SIZE	PRICE ($)	QUANTITY
DESIGNING AROMAS, FLAVORS AND MOUTHFEEL OF CIDER					
14	35-720-0001	AROMAGUM	1 L	$ 13.50	
14	35-720-0025	AROMAGUM	25 Kg	$ 250.00	
14	35-725-0001	CITROGUM	1 L	$ 12.00	
14	35-725-0025	CITROGUM	25 Kg	$ 200.00	
14	35-725-0200	CITROGUM	200 Kg	$ 1,100.00	
14	35-725-1000	CITROGUM	1,000 Kg	$ 5,000.00	
13	35-400-0001	ENARTIS PRO AROM	1 Kg	$ 65.00	
13	35-410-0001	ENARTIS PRO BLANCO	1 Kg	$ 110.00	
13	35-416-0001	ENARTIS PRO FT	1 Kg	$ 140.00	
13	35-500-0001	ENARTIS TAN AROM	1 Kg	$ 160.00	
13	35-306-0001	ENARTIS TAN CITRUS	1 Kg	$ 185.00	
13	35-315-0001	ENARTIS TAN CLAR	1 Kg	$ 34.00	
13	35-315-0012	ENARTIS TAN CLAR	12.5 Kg	$ 250.00	
13	35-350-0250	ENARTIS TAN ELEGANCE	0.25 Kg	$ 47.50	
13	35-350-0001	ENARTIS TAN ELEGANCE	1 Kg	$ 180.00	
14	35-340-0001	ENARTIS TAN ÉLEVAGE	1 Kg	$ 230.00	
14	35-362-0001	ENARTIS TAN FRESH FRUIT	1 Kg	$ 395.00	
14	35-320-0001	ENARTIS TAN MAX NATURE	1 Kg	$ 70.00	
14	35-320-0010	ENARTIS TAN MAX NATURE	10 Kg	$ 600.00	
14	35-308-0500	ENARTIS TAN SLI	0.5 Kg	$ 185.00	
14	35-355-0250	ENARTIS TAN UVA	0.25 Kg	$ 96.25	
14	35-355-0001	ENARTIS TAN UVA	1 Kg	$ 365.00	
14	35-930-0001	INCANTO CARAMEL	Barrel Boost	$ 98.00	
14	35-919-0010	INCANTO CARAMEL	10 Kg Chips	$ 135.00	
17	35-928-0010	INCANTO COMPLEXITY	10 Kg Chips	$ 95.00	
14	35-930-0000	INCANTO CREAM	Barrel Boost	$ 98.00	
14	35-920-0010	INCANTO CREAM	10 Kg Chips	$ 135.00	
17	35-930-0002	INCANTO DARK CHOCOLATE	Barrel Boost	$ 98.00	
17	35-921-0010	INCANTO DARK CHOCOLATE	10 Kg Chips	$ 135.00	
16	35-922-0010	INCANTO NATURAL	10 Kg Chips	$ 80.00	
16	35-927-0010	INCANTO SLI	10 Kg Chips	$ 80.00	
17	35-930-0003	INCANTO SPECIAL FRUIT	Barrel Boost	$ 98.00	
17	35-923-0010	INCANTO SPECIAL FRUIT	10 Kg Chips	$ 135.00	
17	35-926-0010	INCANTO SPICE	10 Kg Chips	$ 210.00	
17	35-930-0004	INCANTO TOFFEE	Barrel Boost	$ 98.00	
17	35-924-0010	INCANTO TOFFEE	10 Kg Chips	$ 135.00	
14	35-930-0005	INCANTO VANILLA	Barrel Boost	$ 98.00	
14	35-925-0010	INCANTO VANILLA	10 Kg Chips	$ 135.00	
14	35-455-0500	SURLÌ VELVET	0.5 Kg	$ 320.00	
14	35-460-0500	SURLÌ VELVET PLUS	0.5 Kg	$ 327.50	
ENSURING MICROBIAL STABILITY					
18	35-810-0000	EFFERGRAN	125 g	$ 3.38	
18	35-815-0000	EFFERGRAN	250 g	$ 5.50	
18	35-810-0001	EFFERGRAN	1 Kg	$ 17.00	
19	35-761-0500	ENARTIS STAB MICRO	0.5 Kg	$ 300.00	
19	35-762-0001	ENARTIS STAB MICRO M	1 Kg	$ 275.00	
18	35-820-0001	WINY	1 Kg	$ 4.50	
18	35-820-0025	WINY	25 Kg	$ 72.50	

enartis USA

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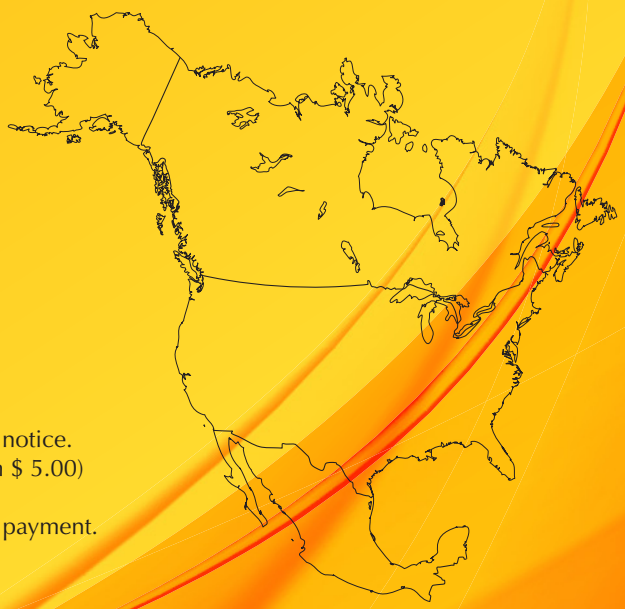

LOCAL REPRESENTATIVES THROUGHOUT UNITED STATES, CANADA AND MEXICO

HOURS

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(extended hours during harvest)

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