Oenology product catalogue

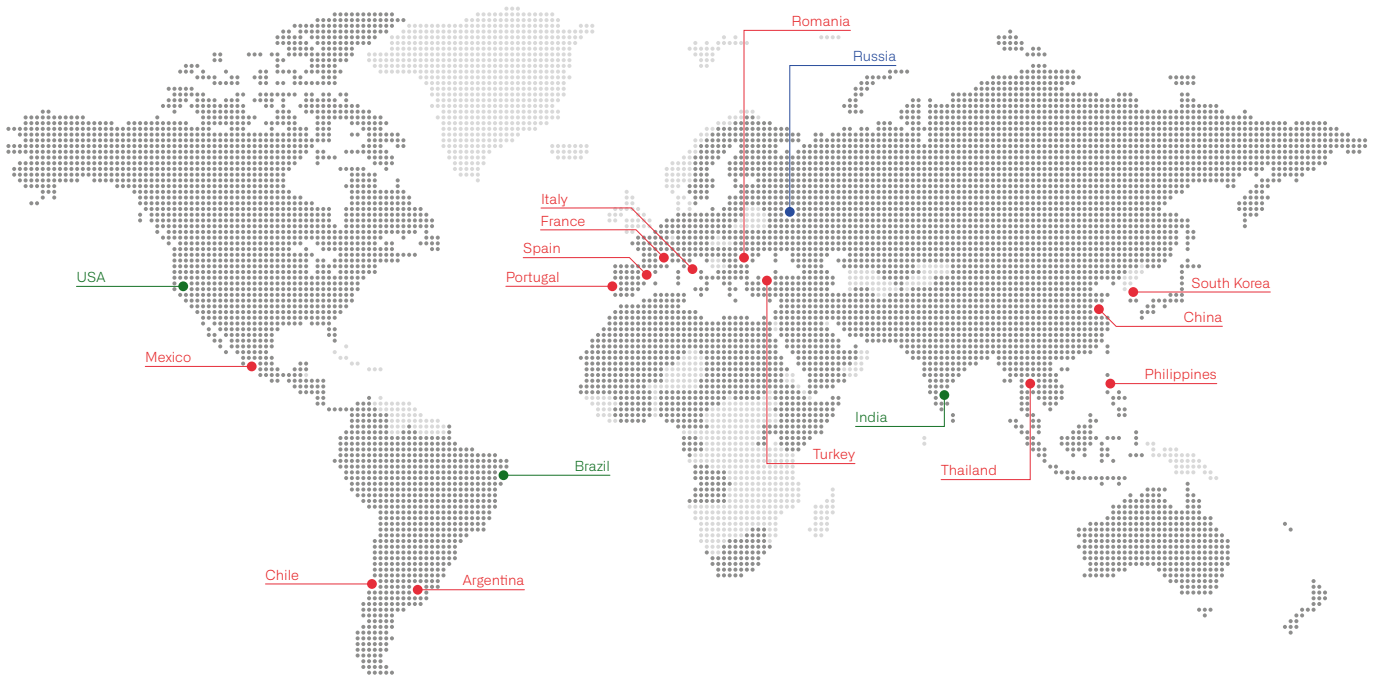
BioSystems

Food & Beverage analysis

human - centred biotech

BioSystems

A global  biotechnology company that develops analytical  solutions in the way you  need.



● Companies ● Joint ventures ● Representation office

13 + 110

Companies
+3 joint ventures
+1 representation office

Distributors

>700 + 25K

Professionals
at your service

Users

Summary

Oenology

Analytical solutions

Since 2008, we have offered solutions for oenological analysis, to improve the quality and safety of wine.

We want to help professionals in the wine industry, developing and validating analytical systems together with our users and customers around the world.

Our goal is to accompany our users, facilitating decision-making during winemaking.

Take care of your wine,
we take care of its analysis.

Benefits of our systems

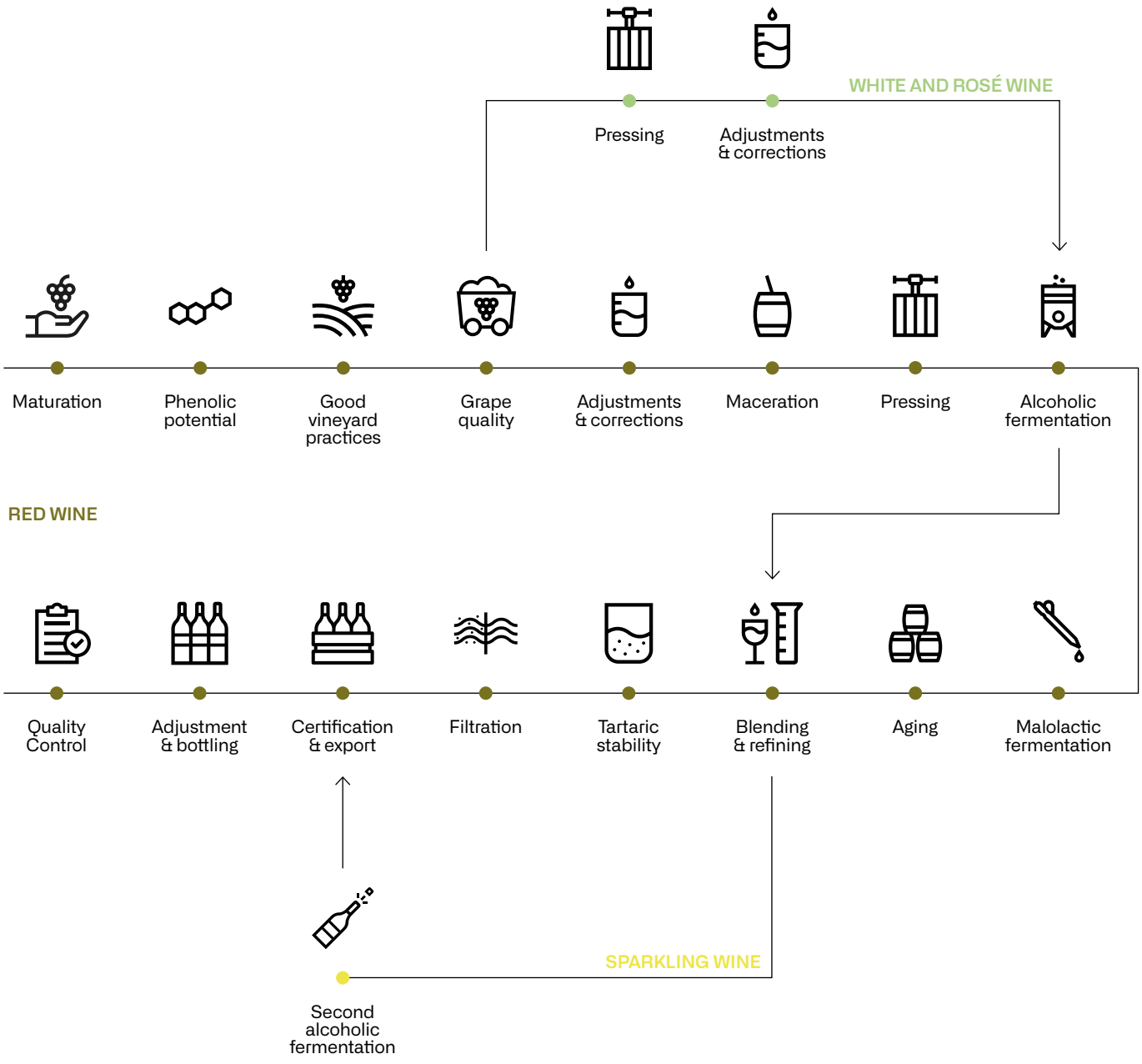
Official methods.
Some of the methods used are included in the compendium of analytical methods of the OIV (international organization of the vine and the wine). If this is not the case, we have comparative studies with the official methods or the more commonly used methods.

Simplified protocols.
- Robust kits, with long shelf life and dedicated bottles to use in Biosystems analyzers
- Calibrators included
- Automatic pre and post-dilutions
- Minimal handling of liquids, most components are ready for use

Flexible ranges and sensitivities.
Our systems allow modifications to the working protocols, to automatically adapt to different needs, limits or requirements. Due to this flexibility, you can work with different sample types simultaneously.

Winemaking process

A correct analysis provides information to make the best decisions at each stage, allowing you to create, precisely and exactly, the type of wine you want.



Application table

KIT	MUST						
	Maturation	Phenolic potential	Good vineyard practices	Grape quality	Adjustments & corrections	Maceration	Alcoholic fermentation
Acetaldehyde				•			
Total Acidity							
Acetic Acid				•		•	•
Ascorbic Acid					•		
Citric Acid					•		
Gluconic Acid				•		•	
L-Lactic Acid				•			•
L-Malic Acid	•		•	•	•		•
Sorbic Acid							
Tartaric Acid	•			•	•		
Ammonia	•		•		•		•
Anthocyanins		•			•	•	
Calcium							
Catechins					•	•	
CO_2							
Copper			•				
Colour		•	•		•	•	
ELISA Ochratoxin							
ELISA Proteins							
Glucose-Fructose	•			•	•		•
Glucose-Fructose-Sucrose							
Gluten							
Glycerol	•			•			•
Iron			•				
Histamine							
PAN	•		•		•		•
pH							
Total Polyphenols		•			•	•	
Potassium	•		•				
Free Sulfite			•		•		
Total Sulfite			•		•		








WINE							SPARKLING W.
Malolactic fermentation	Aging	Blending & refining	Tartaric stability	Filtration	Certification & export	Adjustment & bottling	2nd Alcoholic Fermentation
	•						
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Must

Maturation

The harvest is one of the most important stages of wine production. It begins by taking representative samples to carry out the ripening controls of the vineyards and ends with the grape receiving at the winery. The results obtained provide crucial information to be able to organize the harvest and the receival of grapes into the winery.

Sugar concentration
With our **D-Glucose/D-Fructose** kit you can continuously monitor the concentration of sugars in the bunches, directly related to the potential alcoholic strength. Check your refractometer against interference that may come from the use of potassium salts in the field.

Acidity degradation
We offer you the possibility of monitoring the degradation of the main acids during the ripening period. In sparkling, white and rosé wines, it is important to measure **Tartaric Acid** and **L-Malic Acid** to achieve a better final balance.

Botrytis noble
Glycerol production in late harvests is an indicator of a desired *Botrytis noble* infection.

Phenolic potential

Grape ripening is complex and not based solely on one factor. Can be:

- Technological: controlled by quantifying the sugar and acidity values of the must extracted from the pulp.
- Phenolic: based on the state of maturity of the skins and seeds, very important for the aromatic and taste potential of the final wine.

The objective is to extract information about the aromatic potential, extractable polyphenols, the tannins of the skins or the seeds and their maturation state.

Total Polyphenols

To know the optimal state of phenolic maturation of your grape, quantify the **Total Phenolic Index** with automated direct reading at 280 nm, or measure it with our **Total Polyphenols** reagent by the Folin-Ciocalteu method.

Skin Maturation

The result of the **free Anthocyanins** obtained through a rapid extraction of the colour of the grapes (methods such as Glories) allows knowing the state of maturation of the skins.

Colour potential

It is possible to know the potential of the colour by measuring the **COLOR ICM** at the time of harvest after a quick colour extraction.

Good practices in the vineyard

The following applications can be useful to identify critical control points due to practices carried out in the vineyard throughout the year and their effects on vine health and grape quality, whether from their own vineyards or from grape suppliers, in order to achieve the desired grape.

Nitrogen Deficiency

Nitrogen is the main fertilizer in the vineyard and is transmitted directly to the grape. A fertilizer deficiency, combined with over-ripening, decreasing the assimilable nitrogen for the **yeast** (**PAN** and **Ammonia**). This deficit can hinder yeast biomass production and slow down the end of fermentation; to avoid this, it will be necessary to invest in oenological additives to increase those levels.

Potential salt precipitations

Ions are also important parameters in the vineyard and a secondary indicator of the state of maturation of the grape. Measuring the concentrations of **Calcium** and **Potassium** allows us to have an idea of the possible problems that we must deal with in the winery, such as precipitates due to excess fertilizer or over-ripening and/or excessive pressing of the grapes.

Vineyard treatments

Rainy years and ECO productions increase the amount of **Copper** and Sulphites in the vineyards. Both are applied as antifungals and to keep the vineyards and grapes in perfect health.

Yeast stress

Quantities of **free sulfur dioxide** greater than 30-40 mg/L and **Copper** above 3 mg/L hinder fermentation and can cause a quality reduction due to production of hydrogen sulfide and **acetaldehyde** because of yeast stress during the fermentation process.

High quality grapes

An **ICM Colour** separation of the grape can be what differentiates a good grape from an excellent one to vinify the best batches separately.

Grape quality

Grapes of different qualities arrive at the winery. It is then when the segmentation and selection of the grapes is done and this is key to good winemaking practice. The batches of lower quality or with faults can be separated correctly thanks to the help of the analysis.

It is possible to control the reception of grapes with a reliable analytical system. Through good laboratory practice using control samples to verify the correct function of you instrumentation. This can be easily managed through your instruments software. Seamlessly allowing for export and printing of results for internal and external customers.

Probable Alcoholic Degree (GAP)

The level of sugars in the must is directly proportional to the potential alcoholic strength; with the **D-Glucose-Fructose** kit it can be quantified.

Acidity balance

The main organic acids present in the grape, **Tartaric Acid** and **L-Malic Acid**, provide information on the level of acidity of the vintage. This will allow you to decide whether to sacrifice a bit of potential alcoholic strength, harvesting earlier, to obtain a better balance in your musts.

Grape health

The state of health of the grape is critical to decide its treatment during the vinification phases. Accurately measuring the level of **D-Gluconic** and **Acetic Acid** helps to take action, separate batches by quality, and even penalize or discard some of them.

Musts affected by Botrytis Cinerea are grapes of poor quality and should be separated from good quality lots. A grape with a high Gluconic acid level can have fermentation and clarification problems during all the stages of vinification; it increases the level of glucans, which hinders all physical processes in the cellar, from pressing to filtration for bottling.

Some markets and origin denominations penalize or prohibit the sale of wines with certain levels of Gluconic Acid. Likewise, all the Regulatory Councils establish maximum limits for the Acetic Acid present in wine.

Adjustments and corrections

GAP adjustment
The potential alcoholic strength is directly related to the amount of sugars in the must. Once quantified, it can be adjusted with sugar and monitor these corrections with the **Sucrose-Glucose-Fructose** kit, which can also monitor **Sucrose** levels separately. If a correction is made with must or RCM (rectified concentrated must), it can be quantified with the **Glucose-Fructose** kit.

Acidity Balance
Acidity corrections must be carried out with strict measure, since the OIV allows maximum levels for organic acid to be added. **Tartaric Acid, Malic Acid** and **Lactic Acid** are the acids commonly used in must.

Yeast nutrition
Starting the fermentation with an adequate amount of **PAN** (Organic Nitrogen) and **Ammonium** (Inorganic Nitrogen) in the wort is key to having a fermentation without slowdowns and helps the yeasts to produce biomass in the exponential phase of the fermentation. Knowing the amount of Nitrogen present in the must can help you decide how much PAN and Ammonium to add and identify batches that do not have that need to save time and costs.

Preservatives and dosage
Ascorbic acid and sulfite are used as preservatives. Ascorbic acid is combined to minimize the use of sulfites, but in excess it can be oxidized, so correct application prevents further oxidation of the must/wine.

Sulfites are used before clarification and during the deburring of white/rosé must to protect it from oxidation. Quantifying it is important, since a minimum quantity is necessary to maintain the must with good quality and without fermentation, but an excess of **free sulfite** (>40 ppm) makes alcoholic fermentation difficult.

Clarifiers and dosage
The musts can come from different fractions, such as the flower must or the press. Normally, it is in the latter where the quantification of **Catechins**, **Colour** and **IPT** guides the winemaker in the clarifications. Whether by deburring or floating, it is vital to use the right products to eliminate the bitterness coming from the proanthocyanidins of the stem, seeds or skins. Quantifying these parameters also allows us to assess how to change the fractions or the pressing that is being applied.

Wine

Maceration

During the alcoholic fermentation you can obtain data of interest for the racking decisions and the maceration time of the must with the skins.

Colour extraction

Colour is one of the main analysis to be considered to measure phenomena of combination and stabilization of polyphenolic compounds. It is an analysis to assess the copigmentation effect of **Anthocyanins** during alcoholic maceration.

Bitterness

Catechins are a tannic indicator that monitors the extraction stage, a process that increases with the proportion of alcohol in the medium. Together with the quantification of **tannins**, it is a key analyte to prevent excess extraction and bitterness.

Racking

The **IPT** (**Total Polyphenol Index**) is the most used measure for racking decisions, mainly thanks to its simplicity, since it is a direct reading at 280nm.

Alcoholic fermentation

You can monitor the alcoholic fermentation carried out by your spontaneous or selected yeasts, to control microbiological deviations, as well as slow finishes, and even the dreaded stops.

End of alcoholic fermentation

Enzymatic analysis is a crucial tool for oenology due to its precision. The **D-Glucose/D-Fructose** sugars quantify the progress and completion of fermentation. Densitometers have limitations at the end of fermentation and interference caused by carbon dioxide.

Microbiological contamination

In all wine fermentations, small amounts of **acetic acid** are synthesized secondarily. However, a large increase in it can alert us to microbiological contamination.

Simultaneous malolactic

Although in alcoholic fermentation, **L-Malic** and **L-Lactic** are not the main parameters, controlling them allows avoiding an unwanted simultaneous MLF. In addition, in recent years, certain biotechnological innovations have been made to acidify wines during this phase, with co-inoculations that synthesize **L-Lactic acid**, giving even more meaning to monitoring it.

Selected yeasts

Glycerol and **Acetaldehyde** are parameters used to compare different yeast strains.

Glycerol, secondarily synthesized, is valued for adding body to the wine.

Acetaldehyde, produced by yeast, reports on the stress suffered during fermentation. Yeasts that produce lower levels are more valued. This parameter is also related to the amount of sulfite used in the previous phases; the more sulfite used, the greater the production of acetaldehyde.

Malolactic fermentation

Avoiding problems of subsequent fermentation or unwanted microbiological contamination is possible thanks to the enzymatic measurement of the complete degradation of L-Malic.

End of malolactic fermentation

L-Malic Acid is metabolized by lactic acid bacteria during the malolactic fermentation stage, generating **L-Lactic acid**. The most important indicator to assess the course and completion of malolactic fermentation is the L-malic acid degradation.

Avoid Malolactic Fermentation

For oenological reasons, in some white and rosé wines and in most sparkling wines, malolactic fermentation is avoided. In these cases, the **L-Lactic** present in the wine becomes a quality parameter, and its presence indicates the development of an unwanted fermentation.

Microbiological contamination

Acetic acid is monitored to control microbiological contamination, either during the pre-ferment agent production process (starters), such as during the malolactic fermentation, or at the end of it.

Sulfite Dosage

As it is a specific microbiological process, low amounts of sulfite are used when preparing the starter. However, its excess can hinder the implantation of lactic acid bacteria in the medium. Therefore, it is important to quantify the **Free** and **Total sulfite** of the wines to be fermented.

Aging

The aging is a process of refining the bouquet where the wine is still unprotected and can be attacked by different microorganisms. Therefore, it is important to take precautions, analyzing biochemical markers, which indicate microbiological contamination.

The resting period of the wine can be done in different materials and with different methods. The most common and most followed throughout the industry has been aging in oak barrels and other types of wood.

Acetic acid contamination

Acetic acid bacteria are found in their most suitable environment, since breeding is an oxidation process. For this reason, it is very important to constantly control the acetic acid in the wine, since its appearance can spoil all the previous production work. To prevent this problem and others, such as Brettanomyces, it is important to constantly fill and sulphate batches.

Microbiological contamination

Sulfite in its **free** composition is vital during this stage of the process. Amounts above 10-15 mg/L are needed for it to act as an antiseptic.

Dose of sulfite

The frequency and quantity of added sulphites is something to consider for bottled wines. The control of **total Sulphite** helps us to be within the legal limit established before pre-bottling and bottling.

Avoid overoxidation

Aging, as an oxidative process, also oxidizes alcohol. Due to this, it is the interest of the industry in the quantification of **Acetaldehyde**, which in abundance gives an unwanted smell of butter.

These aromas are sought after and more highly valued in some special vinification wines, such as in the Côte du Jura, or in Jerez, where acetaldehyde levels can triple the values of a still wine.

Controlled oxidation

Oxidation also affects polyphenols and their combinations. Therefore, the **Colour Index** measurement is also a clear marker of how the colour of a wine will vary and its suitability for shorter or longer aging.

Allergens

Flour is used in the assembly of these barrels, which may contain **Gluten** (allergen). In addition, the aging conditions can generate another dangerous component in the wine, **histamine**, which can be quantified through the ELISA method.

Pre-bottling

After blending, the wine is taken to the line to be bottled. But before that, it must go through a clarification and filtration process to avoid problems in the bottle, related to precipitation or re-fermentation.

Precipitation

By offering quantification of all the main **Ions** in the wine, we help you prevent the precipitation of **Copper, Iron, Potassium** and **Calcium**. This quantification provides information for the use of clarifying agents and types of filtration to be used to refine the process. In some cases, Copper and Iron have maximums set by the OIV.

Process control

During the wine stabilization and filtration phases, it is advisable to monitor the parameters that are affected during these refining processes. The most important are **Tartaric Acid**, as well as the amounts of **Potassium** and **Calcium**. The concentrations vary depending on the physical-chemical processes to which they are subjected before bottling.

Certification & exportation

Some parameters are critical to allow the commercialization of wine.
In addition, certain requirements may vary or be more demanding, depending on the countries where it is exported, or the areas where it is made or even the exporter that is used.
At BioSystems we help you quantify many of these critical analytes, to avoid problems such as shipments blocked due to non-compliance at borders, or withdrawals of batches of wine from the market.

Certification and validation

Gluconic and **acetic acid** have a legal limit for bottling wine. They are also important parameters in the business of buying and selling bulk must and wine. Certain DO's are quite demanding for both parameters.

Some ECO certifications or wine importing countries require maximum **total** and **Free Sulfite** in the product. In more extreme cases, they may prohibit the use of some preservative additives, such as **Citric Acid** or **Sorbic Acid,** making their sale difficult or impossible.

Ocratoxin is also required for analysis by the OIV, due to its carcinogenic nature. It can be quantified by ELISA test or also a qualitative rapid tests are available.

Bottling

Bottling is the last stage of wine production. A complete quality control of the product, before and after bottling, helps to highlight or identify incidents during this stage. Likewise, it is important to evaluate the constancy of the wine in different conditions and over time.

Final quality check

Once the wine is in the buffer tank, waiting to be processed before bottling, we can measure **all the parameters**. Similarly, different representative samples are analyzed at the end of the bottling line.

Sparkling Wine

Secondary alcoholic fermentation

In the second fermentation of sparkling wines, whether in the bottle or in tanks, the sugar must be adjusted. This adjustment in the base wine has a proportional relationship with the pressure (CO_2) obtained in the final sparkling wine.

Quantifying these analytes, in addition to acidity and nitrogen corrections, is vital to carry out this fermentation.

Tirage
The sugars or must added in this second fermentation can be quantified to adjust the tanks in the tirage tank, or the adjustment of sugar per bottle/tank. For this purpose, we have the **Sucrose/D-Glucose/ D-Fructose** kit, which also quantifies **Sucrose**, together with D-Glucose/D-Fructose.

Base wine
The adjustments can range from modifying some organic acids such as **Citric, Lactic, Tartaric** and **Malic Acids**, to correcting the inorganic Nitrogen, **Ammonium**, adding a nutritional input for the yeast inoculated in this fermentation.

Analysers

SPICA

Benchtop automatic chemical analyser

Highlights

- Speed 140 cycles/hour.
- Mean Throughput 50 results/hour.
- LED optical technology (including 280nm) + Hard Coating Filter.
- Automatic pre and post-dilutions.
- Mixing of dilutions and reactions.
- Greater flexibility in protocols and handling of volumes of reagents and samples.
- High load of samples and reagents with 105 positions and segmented racks.
- Connectivity and remote control.
- Warming-up without waiting times.
- Intelligent and assisted analysis to offer the best results.
- Modular and upgradeable.
- Compact system with low maintenance.

List of references

Description	Code	Format
SPICA analyser	83100	-
Table with wheels	AC17345	1 unit
Reaction rotors	AC11485	10 units
Open adapter	AC16360	90 units
Sample cup adapter	AC17268	45 units
Concentrated washing solution	AC16434	500 mL
Acid washing solution (WS1)	AC17201	4 x 20 mL
Alkaline washing solution (WS2)	AC17205	4 x 15 mL
Paediatric sample cups	AC10770	1000 units
60 mL reagent flasks + caps	AC16362	10 units
20 mL reagent flasks + caps	AC1636	10 units
Opaque reagent flasks 60 mL + caps	AC16364	10 units
Opaque reagent flasks 20 mL + caps	AC16365	10 units

It has been never so easy; first assisted analytical system.

Y15/Y15c/Y25

Benchtop automatic chemical analyser

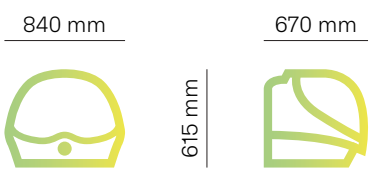
Highlights

- Speed of 150 cycles/hour (Y15) and 240 cycles/hour (Y25).
- Mean throughput of 60 results/hour (Y15) and 100 results/hour (Y25).
- Y15c and Y25 have a reagent cooling system (20 –30 positions).
- High sample and reagent loading capacity (48-72 samples).
- Continuous loading of samples.
- Different protocols available and adjustable volumes of reagents and samples.
- Automatic pre and post-dilutions.
- Bottles designed for the analyzer.
- Low water consumption (0.5-1 L/h).
- Compact system with low maintenance.

List of references

Description	Code	Format
Y15 analyser	83106	-
Y15C analyser	83106C	-
Y25 analyser	83107	-
Reaction rotors	AC11485	10 units
Concentrated washing solution	AC16434	500 mL
Sample cups	AC10770	1000 units
50 mL reagent flasks + caps	BO11493	10 units
20 mL reagent flasks + caps	BO11494	10 units
Opaque reagent flasks 50 mL + caps	BO13442	10 units
Halogen lamp Y15 6V/10W	LA10429U	1 unit
Halogen lamp Y25 12V/20W	LA10418U	1 unit

Y15/Y15c



Y25

A compact system with maximum robustness that adapts to your laboratory.

Y200

Benchtop automatic chemical analyser

Highlights

- Speed of 200 cycles/hour.
- Mean throughput 200 results/hour.
- LED optical technology + Hard Coating Filter.
- Automatic pre and post-dilutions.
- Mixer of dilutions and reactions.
- High capacity of samples and reagents (88 positions), the highest degree of flexibility.
- Dedicated reagents with barcode.
- High precision dispensing.
- Reaction rotor washing station and continuous evaluation of the state of the cuvettes.
- Compact system with low maintenance.
- Full integration capability in LIS (ASTM, HL7).

List of references

Description	Code	Format
Y200 analyser	83200	-
Table with wheels + PC support	AC17346	1 unit
Table with wheels	AC17345	1 unit
Reaction rotors	AC11485	10 units
Concentrated Washing Solution	AC16434	500 mL
Acid Washing Solution (WS1)	AC17201	4 x 20 mL
Alkaline Washing Solution (WS2)	AC17205	4 x 15 mL
Sample cups	AC10770	1000 units
60 mL reagent flasks + caps	AC16362	10 units
20 mL reagent flasks + caps	AC16363	10 units
Opaque reagent flasks 60 mL + caps	AC16364	10 units
Opaque reagent flasks 20 mL + caps	AC16365	10 units
Open adapter	AC16360	90 units
Closed adapter	AC16361	45 units
Sample tube adapter	AC17268	45 units

We understand your needs. We guarantee maximum flexibility with maximum performance.

Y400

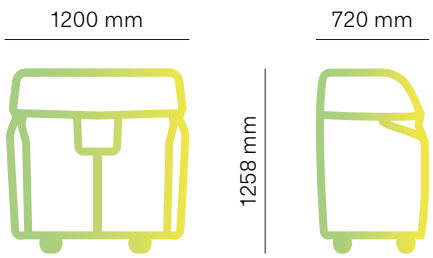
Automatic chemical analyser

Highlights

- Speed of 400 cycles/hour.
- Mean throughput 400 results/hour.
- LED optical technology + Hard Coating Filter.
- Automatic pre and post-dilutions.
- Mixer of dilutions and reactions.
- Segmented sample rotor for continuous sample loading.
- 88 refrigerated reagents on board (6 - 11°C) for 20 and 60 mL barcode reagent bottles.
- Reaction rotor washing station and continuous evaluation of the state of the cuvettes.
- Dynamic baseline with SMART LED technology.
- Full integration capability in LIS (ASTM, HL7).
- Minimum maintenance by the user.

List of references

Description	Code	Format
Y400 analyser	83400	-
Extra sample segments + sample cup adapters (Y400)	AC17457	3 units
Reaction rotors	AC11485	10 units
Concentrated washing solution	AC16434	500 mL
Acid washing solution (WS1)	AC17201	4 x 20 mL
Alkaline washing solution (WS2)	AC17205	4 x 15 mL
Concentrated alkaline washing Solution (WS3)	AC17800	2 x 60 mL
Sample cups	AC10770	1000 units
60 mL reagent flasks + caps	AC16362	10 units
20 mL reagent flasks + caps	AC16363	10 units
Opaque reagent flasks 60 mL + caps	AC16364	10 units
Opaque reagent flasks 20 mL + caps	AC16365	10 units




Our main goal is to optimise the laboratory workflow and improve the user experience.
BioSystems

Reagents

Enzymatic and chemical

Organic acids	Code	Presentation
ACETIC ACID		
Y15/Y25 automated system	12810	100 mL
SPICA/Y200/Y400 automated system	23810	225 mL
LIQUID ACETIC ACID		
Y15/Y25 automated system	12930	100 mL
SPICA/Y200/Y400 automated system	23930	225 ml
ASCORBIC ACID		
Y15/Y25 automated system	12828	90 mL
CITRIC ACID		
Y15/Y25 automated system	12825	50 mL
D-GLUCONIC ACID		
Y15/Y25 automated system	12811	100 mL
SPICA/Y200/Y400 automated system	21811	150 mL
L-LACTIC ACID		
Y15/Y25 automated system	12802	100 mL
SPICA/Y200/Y400 automated system	21802	150 mL
L-MALIC ACID		
Y15/Y25 automated system	12803	100 mL
SPICA/Y200/Y400 automated system	23803	225 mL
SORBIC ACID		
Y15/Y25 automated system	12880	50 mL
TARTARIC ACID		
Y15/Y25 automated system	12808	100 mL

Sugars	Code	Presentation
D-GLUCOSE/D-FRUCTOSE		
Y15/Y25 automated system	12800	120 mL
SPICA/Y200/Y400 automated system	23800	216 mL
SUCROSE/D-GLUCOSE/D-FRUCTOSE		
Y15/Y25 automated system	12819	60 mL

Nitrogenous compounds and sulphites	Código	Presentation
AMMONIUM		
Y15/Y25 automated system	12809	100 mL
SPICA/Y200/Y400 automated system	21809	150 mL
PRIMARY AMINO NITROGEN (PAN)		
Y15/Y25 automated system	12807	100 mL
SPICA/Y200/Y400 automated system	21807	150 mL
FREE SULPHITE		
Y15/Y25 automated system	12813	265 mL
SPICA/Y200/Y400 automated system	21813	250 mL
TOTAL SULFITE		
Y15/Y25 automated system	12806	200 mL
SPICA/Y200/Y400 automated system	21806	225 mL

Ions	Code	Presentation
CALCIUM		
Y15/Y25 automated system	12824	80 mL
COPPER		
Y15/Y25 automated system	12814	100 mL
IRON		
Y15/Y25 automated system	12817	100 mL
POTASSIUM		
Y15/Y25 automated system	12823	80 mL

Other parameters	Code	Presentation
ACETALDEHYDE		
Y15/Y25 automated system	12820	50 mL
TOTAL ACIDITY (WINE/JUICE)		
Y15/Y25 automated system	12846	100 mL
SPICA/Y200/Y400 automated system	21846	150 ml
ANTHOCYANS		
Y15/Y25 automated system	12831	100 mL
CATECHINS		
Y15/Y25 automated system	12834	100 mL
COLOR		
Y15/Y25 automated system	12816	80 mL
CARBON DIOXIDE		
Y15/Y25 automated system	12832	50 mL
GLYCEROL		
Y15/Y25 automated system	12812	100 mL
pH		
Y15/Y25 automated system	12876	100 mL
POLYPHENOLS		
Y15/Y25 automated system	12815	80 mL
TOTAL POLYPHENOL INDEX (TPI)*		
Sistema Automatizado SPICA		

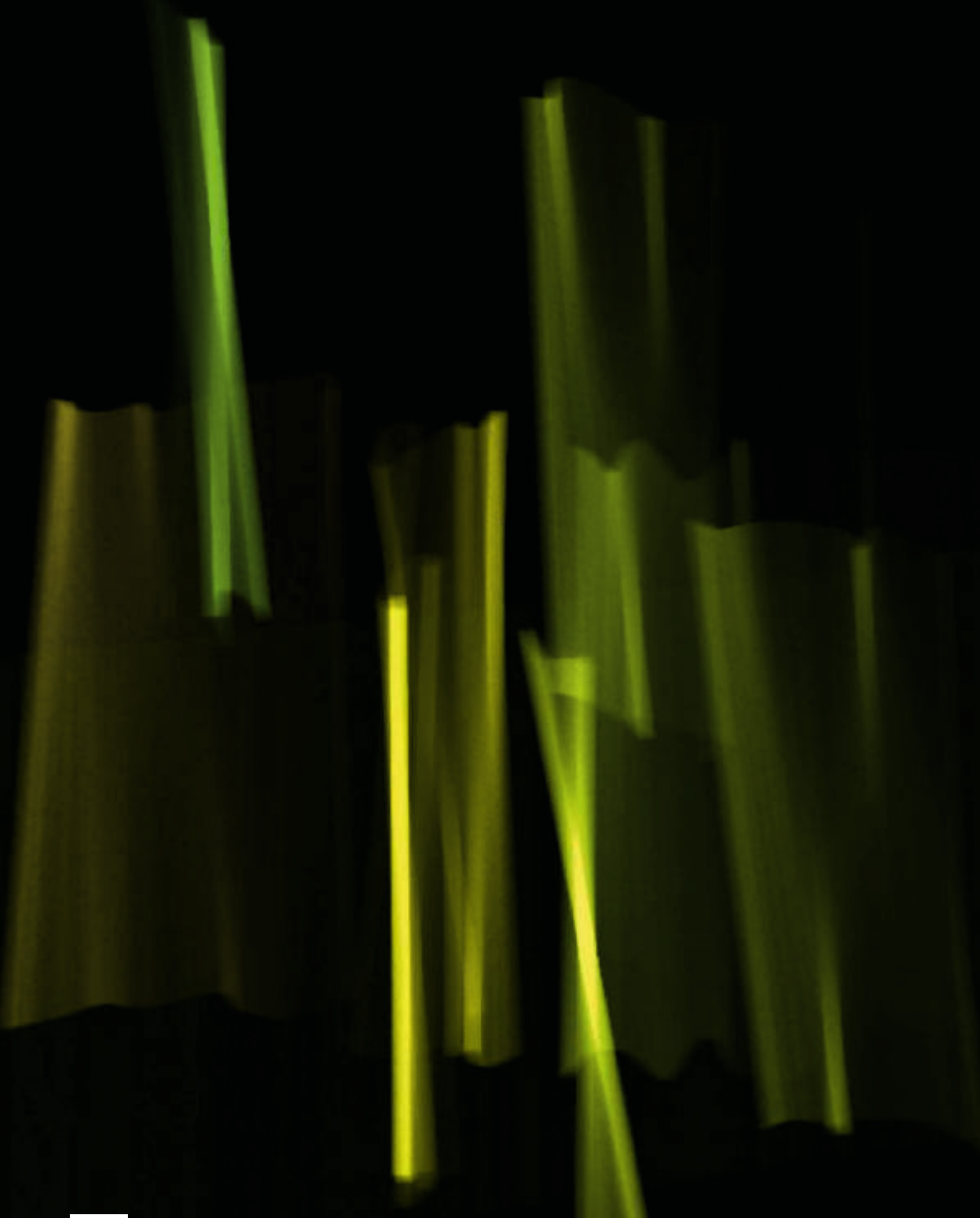
*Direct absorbance reading (no reagent required).

Immunoassays

Test	Code	Presentation
CASEIN		
ELISA	14113	96 tests
GLUTEN		
ELISA	14119	96 tests
HISTAMINE		
ELISA	FCE3100	96 tests
LYSOZIME		
ELISA	14122	96 tests
OCHRATOXIN A		
ELISA	14108	96 tests
Rapid test	14203	10 tests
OVALBUMIN		
ELISA	14125	96 tests

Controls and calibrators

Test	Code	Presentation
CASEIN SPIKE SOLUTION	14151	1 x 3 mL
HIGH GLUCOSE CONTROL	18069	1 x 10 mL
SULFITES CONTROL	12827	2 x 10 mL
WHITE WINE CONTROL	12821	10 x 5 mL
CONTROL RED WINE	12822	10 x 5 mL
GLUTEN SPIKE SOLUTION	14152	1 x 3 mL
MULTICAL IONS	12841	5 x 10 mL
LISOZIMA SPIKE SOLUTION	14155	1 x 3 mL
MULTICAL	12818	5 x 10 mL
OVALBUMIN SPIKE SOLUTION	14154	1 x 3 mL



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