

BioSystems

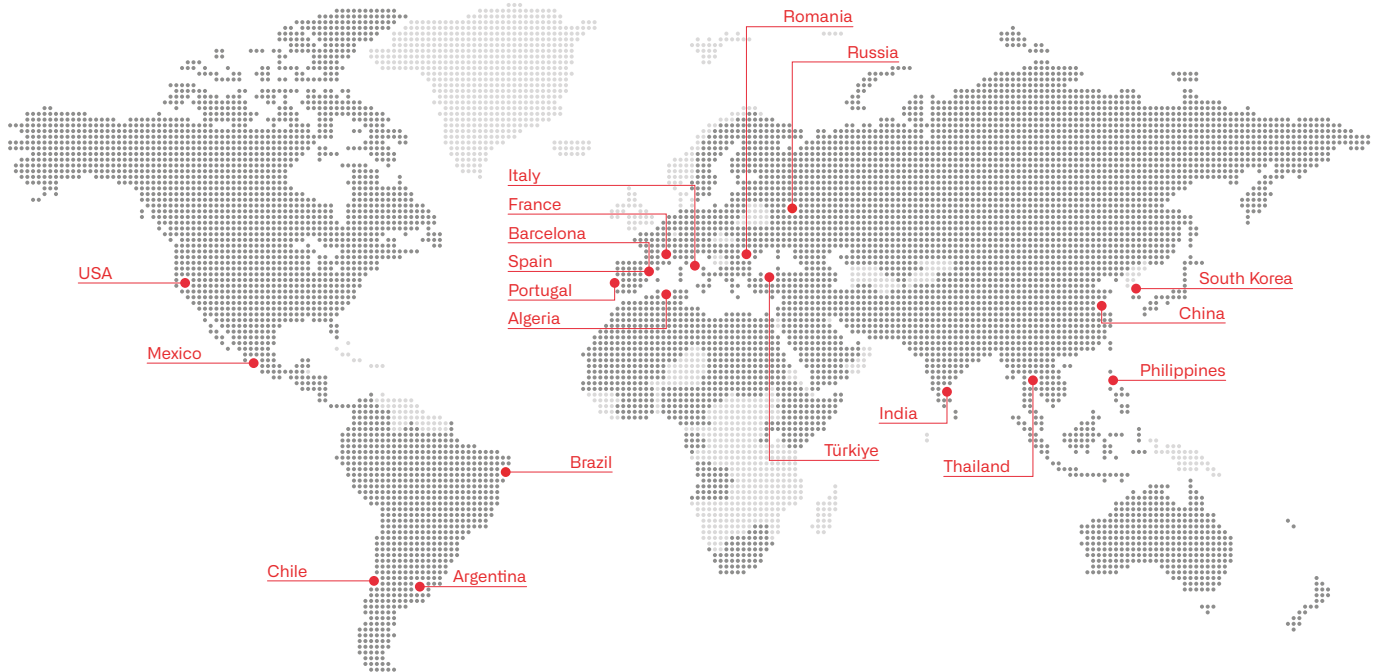
# Bioprocess monitoring analytical system



BioSystems

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

# +40 years offering quality products



Argentina  
Brazil  
Chile  
China  
France  
India  
Italy  
Korea  
Mexico  
Philippines  
Portugal  
Romania  
Russia  
Spain  
Thailand  
Türkiye  
USA

**+100** Markets with distributor partners

**25K** Users served

**+780** People in 17 countries

**02** Manufacturing sites

**45K** Analysers over 40 years



# Summary

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# Bioprocesses analysis



# BioSystems Y15 – analytical system

BioSystems presents an automated and multiparameter system to quantify key analytes in bioprocess monitoring, like sugars, organic acids or nitrogenous substances.

BioSystems Y15 allows to monitor different bioprocesses in an efficient, reliable, cost-effective and user-friendly way:

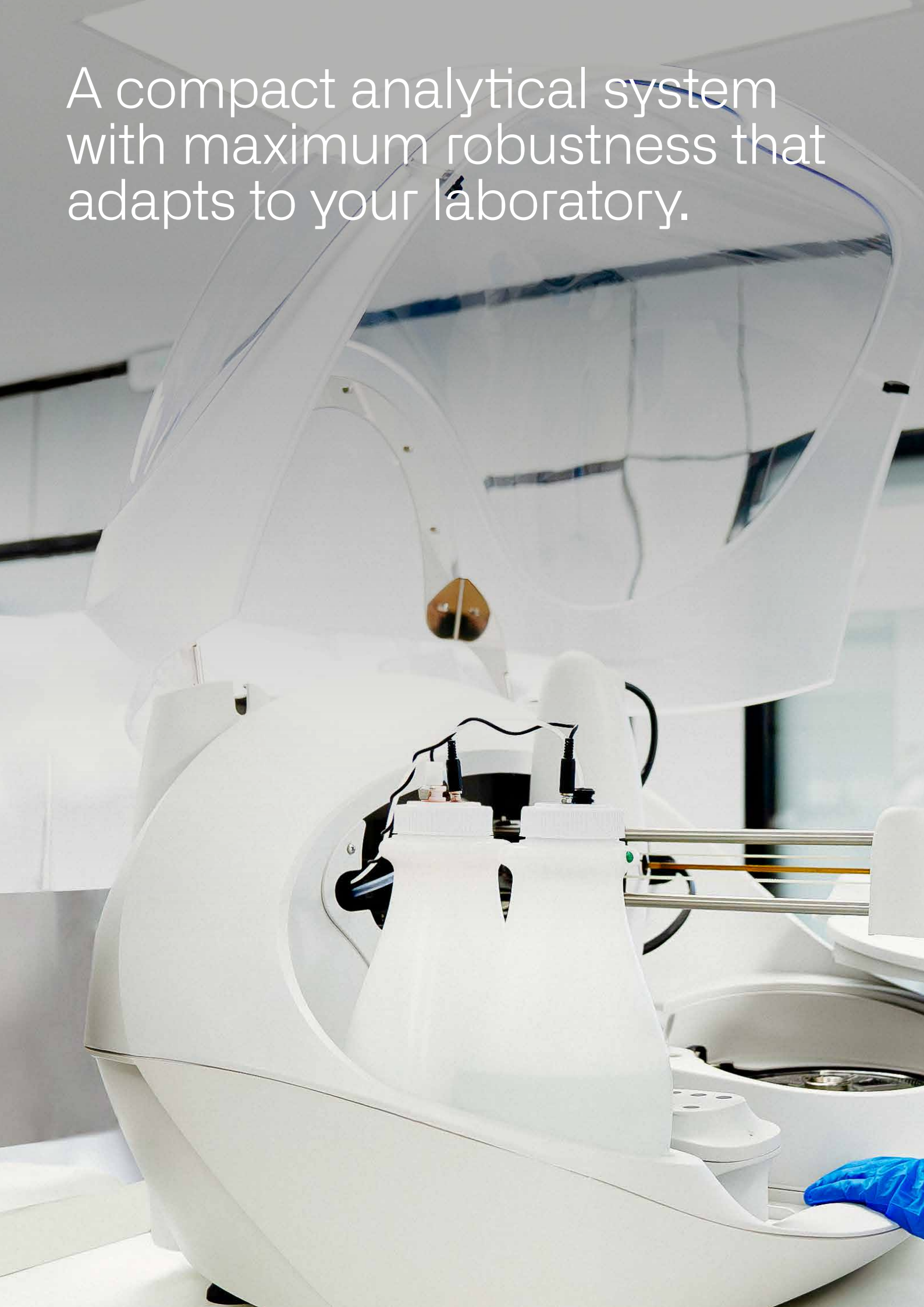
- Bacterial
- Yeast & Fungi
- Mammalian & Vegetable cell cultures

All the applications can be tailored according to the user needs and results are comparable in front of other methods like HPLC or immobilized enzyme membranes (biosensor devices).

Using the wide experience  
in biochemical analysis for  
clinical diagnostics.



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







**BioSystems Y15**  
analytical system  
to monitor your  
bioprocess.

# Technological innovation



## Efficiency in lab automation

BioSystems Y15 is an **open analyser** that easily adapts to any need, and thanks to its **multiple configuration options**, it is possible to monitor different bioprocesses.

## Reliable and validated analysis system

BioSystems Y15, in conjunction with the BioSystems line of reagents, is a **fully developed system**. It provides rapid and accurate analytical results and facilitates the users to optimise and control their processes.

## Minimum handling

Reagents adapted and dedicated to the analyser, avoiding the manual liquid handling.



#### **Continuous loading**

Samples continuous loading to streamline laboratory tasks.

#### **Stable onboard temperature**

**BioSystems Y15c** is the version equipped with a cooling system, which increases the *onboard* stability of reagents and ensures a constant temperature during work lists.

#### **Simple and intuitive interface**

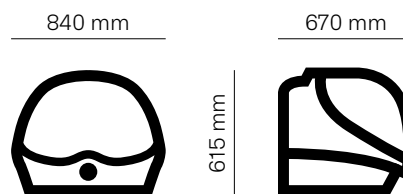
A user-friendly software, designed specifically for these analysis types. The flexible and simple interface make the Y15 a versatile analyser that can adapt to any need.



# Y15 / Y15c

## Automatic Random Access Analyser

### Dimensions



### Highlights

- BioSystems Y15 allows to measure metabolites directly from the clarified broth.
- Direct measurement in the rotor with a biochemical reaction that ensures high precision, repeatability, and reproducibility.
- No need of trained personnel, results directly in concentration.
- Multiparameter, different analytes in the same sample at the same time.
- Dedicated reagents co-designed together with Y15, optimizing yield and offering a unique system.
- No need of replacing electrodes or membranes.
- Liquid reagent and calibrators included.
- Long stability of the working reagent.

### Item

### Quantity

### Code

Y15 analyser	-	83106
Y15C analyser, with cooling system for 20 refrigerated reagents	-	83106C
Concentrated system liquid	1000 mL	12889
Concentrated washing solution	100 mL	BO13416
Reaction rotor	10 units	AC11485
Sample wells (pediatric cups)	1000 units	AC10770
Reagent bottles 50 mL + caps	10 units	BO11493
Reagent bottles 20 mL + caps	10 units	BO11494
Amber reagent bottles 50 mL + caps	10 units	BO13442
Halogen lamp Y15 6V/10W	5 units	LA10429U

**Intended use:** automated analyser for the measurement of different kind of analytes in bioprocesses.



## THROUGHPUTS

Speed	150 cycles/hour
Mean throughput	75 results/hour

## SAMPLE HANDLING

Positions for racks (reagents or samples)	4 or 2 in Y15c
Rack samples capacity	24 samples position/rack
Max. capacity of samples	72 or 48 in Y15c
Barcode reader	External
Size of primary tubes	Ø 13 mm or 15 mm (max. height 100 mm)
Sample well diameter	13 mm
Sample types	Up to 5 sample types to customise different ranges for the same analyte
Dispensing pump	Ceramic pump of high durability
Dispensing tip	Stainless steel 110 mm
Level detection	Capacitive
Sample pipetting volume	From 2 µL to 80 µL
Pipetting resolution	0.1 µL
Predilution ratio	From 1:2 to 1:100
Tip wash	Inside and outside

## REAGENTS HANDLING

Volume of reagent bottles	20 mL, 50 mL
Reagents rack capacity	10 bottles of 20 or 50 mL
Cooled reagent	Yes, in Y15c. 20 reagents max.
Temperature range of cooler	10 °C below room temperature (at 25 °C)
Reagent volume	R1 volume, 10 µL to 600 µL R2 volume, 10 µL to 200 µL
Dispensing mode	Ceramic pump without maintenance
Pipetting resolution	1 µL
Tip wash	Inside and outside

## REACTION ROTOR

Reaction volume range	From 180 µL to 800 µL
Number of wells	120
Well material	UV methacrylate
Type of incubation	Dry without maintenance
Temperature	37.0 °C
Temperature accuracy	±0.2 °C

## OPTICAL SYSTEM

Light Source	Halogen lamp (6V, 10W)
Lightpath	6 mm
Wavelengths	340 - 405 - 420 - 520 - 560 - 600 - 620 - 635 - 670 nm (1 additional filter can be added by user)
Wavelength accuracy	±2 nm
Spectral range	340 - 900 nm
Photometric range	-0.05 to 3.6 A
Photometric detection system	Silicon photodiode
Internal resolution	<0.0001 A
Baseline stability	0.004 A max., 30 minutes at 505 nm

## SIZE AND WEIGHT

Size (w., d., h.)	840 x 670 x 615 mm
Weight	45 Kg

## ELECTRICAL AND ENVIRONMENTAL REQUIREMENTS

Mains voltage	115 to 230 V
Mains frequency	50 or 60 Hz
Electric power	500 VA
Ambient temperature	From 10 to 35 °C
Relative humidity	<75%
Altitude	<2500 m

## FLUID REQUIREMENTS

System liquid solution bottle	3 L
Washing solution bottle	3 L
Waste solution bottle	3 L

## MINIMUM COMPUTER REQUIREMENTS

Operative system	Windows® 10 or Windows® 11 64 bit (x64)
CPU	Equivalent to Intel Core i3 (8th generation) @3.10 GHz or over
RAM	8 GB
Hard Disk	40 GB or over
Monitor minimum resolution	1280 x 800
Connector of serial channel	USB

## LABORATORY INFORM ON SYSTEMS (LIS)

Connectivity to LIS	Yes
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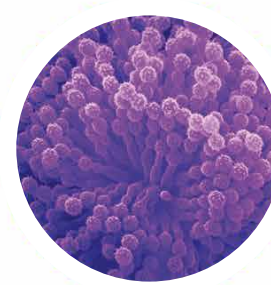
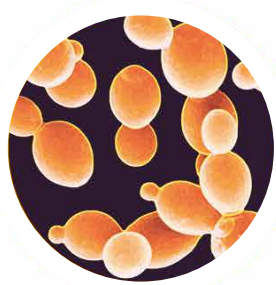
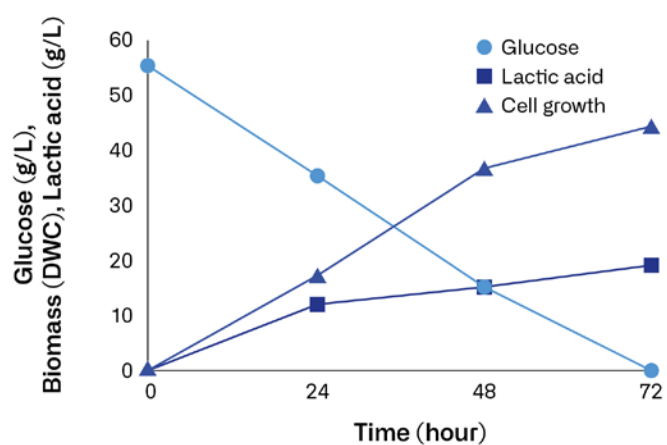




# Reagents



BioSystems enzymatic and chemical reagents work in a very sensitive and reliable way with no interference from other metabolites present in the culture broth. The system can detect small amounts of the analytes with great accuracy and predilute automatically. It allows to characterize the key biochemical parameters of the culture and understand the bioprocess\*.



\* All results obtained from BioSystems Y15 are meant to be validated according to the internal needs or regulations in each sector/industry.

# Enzymatic & chemical

Sugars & carbohydrates	Code	Presentation
<b>D-GLUCOSE/D-FRUCTOSE</b> <i>Hexokinase / Phosphoglucose isomerase</i>		
Y15 automated system	12800	120 mL
<b>LACTOSE/D-GALACTOSE</b> <i><math>\beta</math>-Galactosidase / <math>\beta</math>-Galactose dehydrogenase / Mutarotase</i>		
Y15 automated system	12882	120 mL
<b>MALTOSE/SUCROSE/D-GLUCOSE/D-FRUCTOSE</b> <i><math>\alpha</math>-Glucosidase / <math>\beta</math>-Fructosidase / Hexokinase / Phosphoglucose isomerase</i>		
Y15 automated system	12893	120 mL
<b>SUCROSE</b> <i><math>\beta</math>-Fructosidase / Hexokinase</i>		
Y15 automated system	12894	60 mL
<b>SUCROSE/D-GLUCOSE/D-FRUCTOSE</b> <i><math>\beta</math>-Fructosidase / Hexokinase / Phosphoglucose isomerase</i>		
Y15 automated system	12819	60 mL
<b>TOTAL STARCH</b> <i><math>\alpha</math>-Amylase / Amyloglucosidase / Hexokinase</i>		
Y15 automated system	12848	60 mL
Organic acids	Code	Presentation
<b>ACETIC ACID (LIQUID)</b> <i>Acetyl-CoA synthetase / Citrate synthase / L-Malate dehydrogenase</i>		
Y15 automated system	12930	100 mL
<b>ASCORBIC ACID</b> <i>MTT / PMS / Ascorbate oxidase</i>		
Y15 automated system	12828	90 mL
<b>CITRIC ACID</b> <i>Citrate lyase / L-Malate dehydrogenase</i>		
Y15 automated system	12825	50 mL
<b>D-LACTIC ACID</b> <i>D-Lactate dehydrogenase</i>		
Y15 automated system	12801	100 mL
<b>GLUCONIC ACID</b> <i>Gluconate kinase / 6-Phosphogluconate dehydrogenase</i>		
Y15 automated system	12811	100 mL
<b>L-GLUTAMIC ACID</b> <i>Glutamate dehydrogenase / diaphorase</i>		
Y15 automated system	12830	100 mL
<b>L-LACTIC ACID</b> <i>L-Lactate dehydrogenase</i>		
Y15 automated system	12802	100 mL
<b>L-MALIC ACID</b> <i>L-Malate dehydrogenase</i>		
Y15 automated system	12803	100 mL

## PYRUVIC ACID

### *D-Lactate dehydrogenase*

Y15 automated system	12826	50 mL
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## TARTARIC ACID

### *Vanadium salt*

Y15 automated system	12808	100 mL
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## Alcohols

Code

Presentation

## ETHANOL

### *Alcohol dehydrogenase*

Y15 automated system	12847	120 mL
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## GLYCEROL

### *Glycerol phosphate oxidase / Peroxidase*

Y15 automated system	12812	120 mL
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## Ions

Code

Presentation

## CALCIUM

### *Arsenazo III*

Y15 automated system	12824	80 mL
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## COPPER

### *PAESA*

Y15 automated system	12814	100 mL
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## IRON

### *Ferrozine*

Y15 automated system	12817	100 mL
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## PHOSPHATE

### *Phosphomolybdate / UV*

Y15 automated system	12877	80 mL
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## POTASSIUM

### *Pyruvate kinase K<sup>+</sup> -Dependant*

Y15 automated system	12823	80 mL
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## Nitrogenated substances

Código

Presentation

## AMMONIUM

### *Glutamate dehydrogenase*

Y15 automated system	12809	100 mL
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## NITRITE

### *Sulfanilamide / naphthylethylenediamine*

Y15 automated system	12842	50 mL
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## PRIMARY AMINO NITROGEN (PAN)

### *O-Phthaldialdehyde (OPA)*

Y15 automated system	12807	100 mL
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## PROTEIN (TOTAL)

### *Biuret*

Y15 automated system	12500	100 mL
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## UREA

### *Glutamate dehydrogenase / Urease*

Y15 automated system	12879	200 mL
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Other parameters	Code	Presentation
<b>ACETALDEHYDE</b>		
<i>Aldehyde dehydrogenase</i>		
Y15 automated system	12820	50 mL
<b>HISTAMINE</b>		
<i>Histamine dehydrogenase</i>		
Y15 automated system	12829	100 mL
<b>LACTATE DEHYDROGENASE</b>		
<i>Pyruvate</i>		
Y15 automated system	12580	5 x 40 mL + 5 x 10 mL
<b>POLYPHENOLS</b>		
<i>Folin-Ciocalteu</i>		
Y15 automated system	12815	80 mL



# Controls & calibrators

Test & code	Presentation	Included analytes
MULTICAL 12818	5 x 10 mL	Acetic Acid, Ammonia, Citric Acid, D-Gluconic Acid, D-Glucose, D-Glucose/D-Fructose, Glycerol, D-Lactic Acid, L-Lactic Acid, L-Malic Acid, PAN and Sucrose/D-Glucose/D-Fructose.
MULTICAL IONS 12841	5 x 10 mL	Calcium, Copper, Iron and Potassium.
MULTIREFERENCE 12933	2 x 10 mL	Acetic Acid, Ammonia, Citric Acid, D-Gluconic Acid, D-Glucose, D-Glucose/D-Fructose, Glycerol, D-Lactic Acid, L-Lactic Acid, L-Malic Acid, PAN and Sucrose/D-Glucose/D-Fructose.



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