

# Enzymatic testing in food analysis

## A broad test portfolio for various demands

- Roche “Yellow line” as reference methods
- Enzytec™ *Liquid* with ready-to-use reagents
- RIDA®CUBE SCAN for single tests
- Automation with full-service package



## Introduction

Enzymatic test kits are widely used for the analysis of food products such as fruit juices, wine, beer, dairy products, egg, meat and many others. They cover the determination of sugars (e.g. Glucose), organic acids (e.g. Malic acid), alcohols and other food components (e.g. Sulfite). These photometric methods are based on the specificity of each enzyme for one analyte, and the absorption of the coenzyme at 340 nm. Results are measured with a photometer, and automation is possible.

## “Yellow Line” Roche Diagnostics

The reference methods!

The “Yellow line” kits are produced by Roche Diagnostics, previously Boehringer Mannheim, with more than 40 years experience in the production of the enzymes, which are the key element of each test. The Roche test kits have been used and validated worldwide for several decades, with many corresponding publications. They have been selected as reference methods by many international organizations (e.g. AOAC, IFU, IDF, ISO and OIV) and they are still the gold standard today.

### Test procedure

1. Reconstitute the lyophilized reagents with water
2. Pipette the reagent solutions and the sample into the cuvette, then mix
3. Measure the photometric absorbance A1
4. Pipette the enzyme reagent into the cuvette, then mix
5. After 10 - 20 min incubation, read the absorbance A2 and calculate the results with the Lambert-Beer law



### Features & benefits

- Reference quality for more than 40 years
- Approved by national and international organizations
- 31 tests for all requirements in the food industry

## Enzytec™ Liquid and Color

Stable until the last droplet!

These reagents are all liquid and ready-to-use, which brings a huge improvement in the lab organization:

- In small laboratories, it is possible to test a few samples and store the reagents for further usage, since the original shelf-life remains valid.
- In large laboratories with automation, the reagents can be placed directly on any biochemistry analyzer, and stay refrigerated on board for true random-access.

### Features & benefits

- Reagents are liquid and ready-to-use (no reconstitution)
- Easy handling with same pipeting scheme for all tests
- Reagents are stable up to the expiry date, even after opening
- Easy and safe use on biochemistry analyzers



## Automation

Cost reduction!

Automation is now largely used in enzymatic testing, thanks to numerous biochemistry analyzers coming from the clinical diagnostics. Automation allows reducing handling time and handling errors. But for enzymatic testing it also reduces reagent costs, because the test volume is reduced to 300  $\mu$ l instead of 3 ml for the manual procedure. All enzymatic kits, including the Roche line, can be adapted to any instrument with applications available on request. R-Biopharm promotes two liquid-handling robots, BOLT™ and ThunderBolt®, with full-service package including instrument, maintenance, reagents and applications.

### Features & benefits

- Walk-away and multi-batch testing for large sample series
- Reagents always on-board for random access
- Automatic sample pre-dilution
- No handling errors and better reproducibility
- Cost reduction (handling time and reagent consumption)



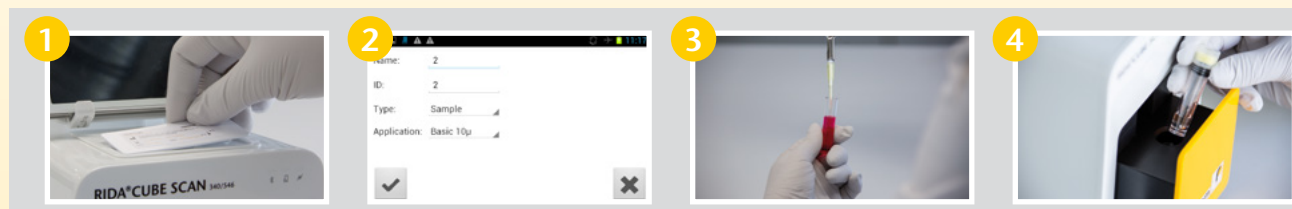
## RIDA®CUBE SCAN

Single-testing anytime, everywhere!

The RIDA®CUBE SCAN is a small walk-away instrument that allows single-testing in production facilities or in small laboratories. The instrument is controlled from a tablet with a simple app. Each test-kit contains 32 single-test cartridges and one RFID card with all test specific data, so there is no need to enter any settings. Pipette the sample into the tube and place it into the instrument, the entire test will be performed automatically. Results are displayed on the tablet, they can also be exported to a computer.

### Procedure

1. Place the RFID card on the instrument.
2. Enter sample identification into the tablet app
3. Pipette the sample into the tube
4. Close the tube with the cap and insert it into the instrument



### Features & benefits

- Small and portable device (16 x 13 x 14.5 cm)
- Ready-to-use reagent cartridges for single-testing
- RFID card including all test settings
- Only one pipeting step, result after a few minutes
- Maintenance free (no pipeting device inside the instrument)

## Enzymatic analysis – R-Biopharm test kit portfolio

	“Yellow Line” Roche Diagnostics The reference method	Enzytec™ Liquid, ready to use and stable reagents	RIDA®CUBE SCAN Single-test cartridges
<b>Acids</b>			
Acetic acid (340 nm)	10148261035	E5226	RCS4226
L-Ascorbic acid (578 nm)	10409677035		
Citric acid (340 nm)	10139076035		
Formic acid (340 nm)	10979732035		
Gluconic acid (340 nm)	10428191035		
Glutamic acid (492 nm)	10139092035		
D-3-Hydroxybutyric acid (492 nm)	10907979035		
D-Isocitric acid (340 nm)	10414433035		
D/L-Lactic acid (340 nm)	11112821035	E8240	RCS4240
L-Lactic acid (340 nm)	10139084035	E8260	RCS4260
D-Malic acid (340 nm)	11215558035		
L-Malic acid (340 nm)	10139068035	E8280	RCS4280
Oxalic acid (580 nm)		E2100	
Succinic acid (340 nm)	10176281035		
Tartaric acid (520/546 nm)		E3100	
<b>Sugars</b>			
β-Glucan (546 nm)		E3500/E3550	
D-Glucose (340 nm)	10716251035	E8140	RCS4140
D-Glucose/D-Fructose (340 nm)	10139106035	E8160	RCS4160
Lactose/D-Galactose (340 nm)	10176303035	E8110/E8120	
Lactose/D-Glucose (340 nm)	10986119035	E8130	
Maltose/Sucrose/D-Glucose (340 nm)	1113950035		
Raffinose (340 nm)	10428167035		
Starch (340 nm)	10207748035		
Sucrose/D-Glucose (340 nm)	10139041035	E8180	RCS4180
Sucrose/D-Glucose/D-Fructose (340 nm)	10716260035	E8190	RCS4190
<b>Others</b>			
Acetaldehyde (340 nm)	10668613035		
Ammonia (340 nm)	1112732035	E5390	
Urea/Ammonia (340 nm)	10542946035		
Cholesterol (405 nm)	10139050035		
Copper (580 nm)		E2400	
Ethanol (340 nm)	10176290035	E8340	RCS4340
Glycerol (340 nm)	10148270035	E5360	
Iron (580 nm)		E2300	
Nitrate (340 nm)	10905658035		
D-Sorbitol/Xylitol (492 nm)	10670057035		
Free Sulfite (340 nm)		E8610	RCS4610
Total Sulfite (340 nm)	10725854035	E8600	RCS4600
<b>Standards</b>			
Alcohol standard		E5420	
Multi-acid standards (low and high)		E1240/E1241	
Multi-sugar standards (low and high)		E5440/E5450	