

GLUCOSE/FRUCTOSE (GLUC/FRU)

UV METHOD
RX MONACO

INTENDED USE

For the quantitative determination of Glucose/Fructose in wine. This product is suitable for use on the RX **monaco** analyser.

FOR THE ANALYSIS OF FOOD AND WINE. Not for use in diagnostic procedures.

Cat. No.

GF 8363	R1. Buffer	5 x 20 ml
	R2. Enzyme Reagent	1 x 1.1 ml
	R3. PGI	1 x 0.6 ml
	CAL Glucose Standard	1 x 5.5 ml

UV METHOD⁽¹⁻⁴⁾

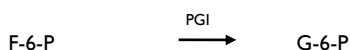
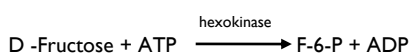
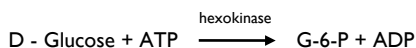
Glucose is measured enzymatically utilising both hexokinase and glucose-6-phosphate dehydrogenase.

The total sugar content (glucose + fructose) is determined by converting the fructose-6-phosphate (F-6-P) to glucose-6-phosphate (G-6-P) by phosphoglucose isomerase (PGI). The G-6-P is then converted to gluconate-6-phosphate and the NADH formed is stoichiometric with the amount of total sugars.

CALCULATION

Fructose content = Total sugar - glucose content.

REACTION PRINCIPLE



SAMPLE⁽⁵⁾

Use clear liquid samples for the assay. Turbid samples should be filtered prior to assay.

Glucose/Fructose can be determined in red, white and rose wine without decolourising and sample dilution is only required when Glucose/Fructose concentration is > 7g/l.

SAFETY PRECAUTIONS AND WARNINGS

For the analysis of food and wine. Not for use in diagnostic procedures. Do not pipette by mouth. Exercise the normal precautions required for handling laboratory reagents.

Solution R1 contains Sodium Azide. Avoid ingestion or contact with skin or mucous membranes. In case of skin contact, flush affected area with copious amounts of water. In case of contact with eyes or if ingested, seek immediate medical attention.

Sodium Azide reacts with lead and copper plumbing, to form potentially explosive azides. When disposing of such reagents flush with large volumes of water to prevent azide build up. Exposed metal surfaces should be cleaned with 10% sodium hydroxide.

Health and Safety data sheets are available on request.

Please dispose of all biological and chemical materials according to local guidelines.

The reagents must be used only for the purpose intended by suitably qualified laboratory personnel, under appropriate laboratory conditions.

STABILITY AND PREPARATION OF REAGENTS

Contents stable to expiry date as supplied when stored at +2 to +8°C.

R1. Glucose Reagent

Add **100 µl** of enzyme reagent R2 to one bottle of R1 buffer. The working reagent is stable for 3 months at +2 to +8°C or 2 weeks at +15 to +25°C protected from light.

R1. Total sugars Reagent

Add **100 µl** of enzyme reagent R2 and **110 µl** of enzyme reagent R3 to one bottle R1 buffer. Stable for 3 months at +2 to +8°C.

CAL. Glucose Standard

Contents ready for use. Stable up to expiry when stored at +2 to +8°C.

MATERIALS PROVIDED

Buffer
Enzyme Reagent
PGI
Glucose Standard

MATERIALS REQUIRED BUT NOT PROVIDED

Double deionised water

PROCEDURE NOTES

The Chemistry Parameters for Randox Dedicated RX series Assays are predefined on the hard drive of the analyser PC. The required programs should be downloaded to the analyser software. Please note that the predefined chemistry parameters use SI units. If alternative units are required these can be edited by the user. In this case the technical range should be edited in accordance with the users selected units. For wine testing, units and technical range parameters should be entered exactly as they appear on this insert. All necessary instructions are encoded on the reagent barcode. If the barcode cannot be read by the analyser, enter manually the series of numbers given beneath the barcode. If problems continue, contact Randox Laboratories Customer Technical Services, Northern Ireland +44 (0) 28 9445 1070.

CALIBRATION

Deionised water as zero calibrator (S1) and the standard (S2) provided with the kit are recommended for calibration. A 2 point linear calibration is recommended every day, with change of reagent lot/bottle, or as indicated by quality control procedures.

This assay uses a “2 point linearity” calculation.

SPECIFIC PERFORMANCE CHARACTERISTICS

The following performance characteristics were obtained using a RX **monaco** analyser.

LINEARITY

The glucose assay and total sugars assay is linear to 7 g/l. In the event of a re-run dilution should be selected and linearity is extended to 70 g/l.

SENSITIVITY

The minimum detectable concentration of glucose and total sugars with an acceptable level of precision was determined as 0.09 g/l.

GLUCOSE PRECISION

Intra assay precision

	Level 1	Level 2	Level 3
Mean (g/l)	1.31	4.82	6.21
SD	0.016	0.080	0.068
CV (%)	1.24	1.65	1.10
n	20	20	20

Inter-Assay

	Level 1	Level 2	Level 3
Mean (g/l)	1.30	4.81	6.27
SD	0.039	0.187	0.207
CV (%)	3.03	3.88	3.30
n	20	20	20

CORRELATION

The Randox glucose method (Y) was compared to another commercially available method (X). Linear regression analysis of the data resulted in the following equation:

$$Y = 0.9767 X + 0.004$$

and a correlation coefficient $r = 0.9972$

50 unknown samples were analysed spanning a glucose concentration range of 0.18 to 41.52 g/l.

TOTAL SUGARS PRECISION

Intra assay precision

	Level 1	Level 2	Level 3
Mean (g/l)	2.56	9.54	26.08
SD	0.024	0.127	0.451
CV (%)	0.94	1.33	1.73
n	20	20	20

Inter-assay precision

	Level 1	Level 2	Level 3
Mean (g/l)	2.57	9.75	26.20
SD	0.045	0.213	1.033
CV (%)	1.73	2.19	3.94
n	20	20	20

CORRELATION

The Randox total sugar method (Y) was compared to another commercially available method (X). Linear regression analysis of the data resulted in the following equation:

$$Y = 0.9944 X - 0.2794$$

and a correlation coefficient $r = 0.9985$

50 unknown samples were analysed spanning a total sugars concentration range of 0.28 to 80.55 g/l.

REFERENCES

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- Kunst, A., Draeger, B. & Ziegenhorn, J. (1984) in Methods of Enzymatic Analysis (Bergmeyer, H.U., ed.) 3rd ed., vol vi, pp. 163-172, Verlag Chemie, Weinheim, Deerfield Beech/Florida, Basel.

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