TARTARIC ACID

Colorimetric – Method
RX ALTONA
MANUAL
FOOD AND WINE

INTENDED USE

For the quantitative determination of Tartaric Acid in food and wine. This product is suitable for manual use and on the Rx **altona** analyser. **Applications for a variety of additional analysers are available from www.randoxfooddiagnostics.com.**

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

Cat. No.			
TK4060	R1.	Buffer	1 x 60 ml
	R2.	Chromogen	1 x 15 ml
	CAL	Standard	1 x 5 ml
		Decolourant	1 x 5 ml

SIGNIFICANCE

Tartaric Acid occurs naturally in grapes and is one of the most prevalent organic acids, along with L-Malic acid, present in wine. Its concentration is decisive in the definition of the acidity of wines and therefore affecting wine characteristics such as odour, colour and flavor. The determination of tartaric acid is also of interest in stability studies, since it forms complexes with potassium and calcium and the resulting precipitate causes undesirable deposits in the bottle.

PRINCIPLE

This end-point colorimetric test is based on the principle that at acidic pH, tartaric acid (tartrate) reacts with vanadate to produce a coloured complex (metapervanadyl tartrate) which is measured spectrophotometrically at 480- 520 nm.

SAMPLE

Wine. Turbid samples should be filtered prior to assay. Decolourant supplied should be added to all coloured samples as outlined in procedure section. Sparkling wine samples should be degassed before analysis.

SAFETY PRECAUTIONS AND WARNINGS

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

Solutions R2 and CAL contain 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

R1. Buffer
Contents ready for use. Stable up to the expiry date specified when stored at +2 to +8°C.

R2. Chromogen
Contents ready for use. Stable up to the expiry date specified when stored at +2 to +8°C.

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

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

MATERIALS PROVIDED

Buffer
Chromogen
CAL
Decolourant

RX ALTONA PROCEDURE

Select Tartaric Acid in the Test Screen. Then select Run Calibration or Run Sample and carry out a water blank as instructed.

Calibration and White Wine Samples

Pipette into cuvette:

	S0	S1	White Wine Sample
Sample	---	---	40 µl
CAL dil 1 + 4 (S0)	40 µl	---	---
CAL (S1)	---	40 µl	---
Buffer (R1)	600 µl	600 µl	600 µl

Mix, and incubate for 3 minutes at +25°C. Insert the cuvette into the RX **altona** flowcell holder when prompted for Sample Blank and press Read. Then add

Chromogen (R2)	150 µl	150 µl	150 µl

Mix, and incubate for 5 minutes at +25°C. Insert the cuvette into the RX **altona** flowcell holder when prompted for Sample and press Read.

Coloured Samples

Pipette into cuvette:

	Red Wine Sample
Sample	40 µl
Decolourant	50 µl

Mix, and incubate for 1 minute at +25°C. Then add

Buffer (R1)	550 µl

Mix, and incubate for 3 minutes at +25°C. Insert the cuvette into the RX **altona** flowcell holder when prompted for Sample Blank and press Read. Then add

Chromogen (R2)	150 µl

Mix, and incubate for 5 minutes at +25°C. Insert the cuvette into the RX **altona** flowcell holder when prompted for Sample and press Read.

NOTE: Bubbles may form in cuvette when completing the coloured samples procedure. User should flick the side of cuvette a few times to disperse these before reading in the analyser.

CALIBRATION FOR RX ALTONA

The use of CAL used neat (as S1) and diluted 1+ 4 (as S0) with double distilled water is recommended for calibration. A 2 point linear calibration is recommended with change in reagent lot or as indicated by quality control procedures.

FOR MANUAL USE
PROCEDURE SEMI MICRO

Wavelength:	520 nm (480-520 nm)
Cuvette:	1 cm path length
Temperature:	+20 to +25°C

Calibration and White Wine Samples

Pipette into 1 ml cuvette

	S0	S1	White Wine Sample
Sample	---	---	80 µl
CAL dil 1 + 4 (S0)	80 µl	---	---
CAL (S1)	---	80 µl	---
Buffer (R1)	1200 µl	1200 µl	1200 µl

Mix, and read absorbance A1 after 3 minutes at +25°C. Then add

Chromogen (R2)	300 µl	300 µl	300 µl

Mix, and read absorbance A2 after 5 minutes at +25°C.

Coloured Samples

Pipette into 1 ml cuvette

	Red Wine Sample
Sample	80 µl
Decolourant	100 µl

Mix, and incubate for 1 minute at +25°C. Then add

Buffer (R1)	1100 µl

Mix, and read absorbance A1 after 3 minutes at +25°C. Then add

Chromogen (R2)	300 µl

Mix, and read absorbance A2 after 5 minutes at +25°C

MANUAL CALCULATION

Calculate A2 – A1 for all standards/samples (ΔA).
Plot a linear calibration graph using ΔA standards (x axis) versus Standard Concs. g/L (y axis).
Use the linear regression equation achieved ($y = mx + c$) to calculate the tartaric acid concentration for samples, where y = concentration (g/L) and x = ΔA sample.

SPECIFIC PERFORMANCE CHARACTERISTICS

The following performance characteristics were obtained using a RX **altona** analyser in cuvette mode at +25°C.

LINEARITY

The tartaric acid assay is linear to 10 g/l.

SENSITIVITY

The minimal detectable concentration of tartaric acid with an acceptable level of precision was determined as 0.51 g/l.

PRECISION

Intra assay precision

	Level 1	Level 2	Level 3
Mean (g/l)	2.82	4.68	8.24
S.D	0.045	0.044	0.151
C.V(%)	1.59	0.94	1.83
n	20	20	20

Inter assay precision

	Level 1	Level 2	Level 3
Mean (g/l)	2.83	4.73	8.27
S.D	0.084	0.071	0.264
C.V(%)	2.96	1.50	3.20
n	20	20	20

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