

Carbon Dioxide (CO₂) (Colorimetric PEPC)

REF: 228 001 50 Tests
REF: 228 002 100 Tests

Intended Use

Spectrum diagnostics carbon dioxide reagent is intended for the in-vitro quantitative diagnostic determination of carbon dioxide in human serum or plasma on both automated and manual systems.

Background

Approximately 90% of total carbon dioxide present in serum is in the form of bicarbonate.

Measurement of bicarbonate together with glucose, Na⁺, K⁺ and chloride is useful in assessment of disturbances of acid base balance resulting from metabolic or respiratory causes.

Assay Principle

Colorimetric test for the quantitative determination of Carbon Dioxide (CO₂) in serum and plasma :

Phosphoenolpyruvate + Bicarbonate + NADH

PEPC & MDH → Phosphate + Malate + NAD⁺

Reagents

CO₂ Calibrator C 31.5 mmol/L

Reagent R

Components (concentrations in the test)
TRIS-Buffer (pH 7.5)
PEP; PEPC; NADH (as reduced cofactor)
MDH Activators, stabilizers, detergents
Sodium Azide 0.095%

Storage and stability

At 2-8°C unopened reagents are stable until the expiration date printed on the labels. After opening of bottles the stability is until the printed expiration date, if there is no contamination during the handling.

Don't freeze reagents

Preparation of Reagents

Reagent is supplied ready to use

Precautions and Warning

Reagent contains Sodium azide as preservative. Don't swallow!
Don't touch skin and/or mucous membrane

Waste

Handle according to the local legal regulation

SYMBOLS IN PRODUCT LABELLING

	Authorised Representative		Temperature Limitation
	For in-vitro diagnostic use		Use by/Expiration Date
	Batch Code/Lot number		CAUTION. Consult instructions for use
	Catalogue Number		Manufactured by
	Consult instructions for use		

Specimen Collection and Preservation

Serum, heparin plasma

Don't use citrate or oxalate plasma

Samples should be used immediately and can be stored at 2-8°C for 1 hour tightly closed .

Discard contaminated samples.

System Parameters

Wavelength:	405 nm or 415 nm
Optical path:	1 cm
Assay type:	Fixed rate
Direction:	Decrease
First read time:	120 seconds
Delay time:	60 seconds
Last read time:	180 seconds
Temperature:	37 °C
Zero adjustment:	Dist.H ₂ O
Sensitivity:	1 mmol/L
Linearity:	50 mmol/L

Procedure

	Blank	Sample or calibrator
Sample/calibrator	----	10 µl
Reagent	1 ml	1 ml

Mix and incubate for 2min, read absorbance A1, and exactly after 1 min read A2, determine ΔA = A1-A2 (For R.blank,calibrator and sample)

Calculation

$$\text{CO}_2 \text{ (mmol/L)} = \frac{\Delta A \text{ sample} - \Delta A \text{ Blank}}{\Delta A \text{ Calibrator} - \Delta A \text{ Blank}} \times \text{Conc. Of Calibrator}$$

Quality Control

Normal & abnormal commercial control serum of known concentrations should be analyzed with each run.

Sensitivity

When run as recommended, the minimum detection limit of this assay is 1 mmol/L.

Linearity

The reaction is linear up to the concentration of 50 mmol/L; at higher concentrations dilute the samples 1+1 with NaCl solution 0.9%.
Multiply result by 2.

Expected values

22 – 29 mmol/L

Note: it is recommended that each laboratory should establish its own reference range.

Analytical Range

1 - 50 mmol/L.

References

1. Van Slyke D.D. and W.C. Stadie, *J. Biol. Chem.* 49:1 1 (1921)
2. Sterling, R., and O. Flores, *Clin. Chem.* 18:544(1972)

ORDERING INFORMATION	
CATALOG NO	QUANTITY
228 001	2 x 25 ml
228 002	4 x 25 ml