

## Carbon Dioxide (CO<sub>2</sub>) (Colorimetric PEPC)

REF: 228 001      50 Test  
REF: 228 002      100 Test

### Intended Use

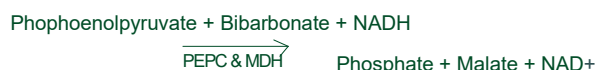
Spectrum diagnostics carbon dioxide reagent is intended for the in-vitro quantitative diagnostic determination of carbon dioxide in human serum or plasma on both automated and manual systems

### Background

Approximately 90% of total carbon dioxide present in serum is in the form of bicarbonate. Measurement of bicarbonate together with glucose, Na<sup>+</sup>, K<sup>+</sup> 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 (CO<sub>2</sub>) in serum and plasma :



### Reagents

**CO<sub>2</sub> Calibrator C**      As stated on the vial label

### 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%

For further information, refer to the Carbon dioxide reagent material safety data sheet.

### Precautions and Warnings

Do not ingest or inhale. In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries; seek medical advice immediately.

### Reagent Preparation, Storage and Stability

The reagents are supplied ready to use. Carbon dioxide reagent is stable up to the expiry date stated on the vial label when stored at 2-8 °C. Once opened , the reagent is stable for 1 months at the specified temperature if contamination is avoided.

**Don't freeze reagents**

### Deterioration

Failure to recover control values within the assigned range may be an indication of reagent deterioration.

### SYMBOLS IN PRODUCT LABELLING

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

### Specimen collection and preparation

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.H2O

### Procedure

	Blank	Calibrator	Sample
<b>Reagent</b>	1.0 ml	1.0 ml	1.0 ml
<b>Calibrator</b>	.....	10 µl	.....
<b>Sample</b>	.....	.....	10 µl

Mix well and incubate for 2 minutes. Then, read the absorbance of A1 and exactly after 1 min read A2, Determine ΔA=A1-A2 .

### Calculation

$$\text{CO}_2 \text{ conc. (mmol/L)} = \frac{(A_{\text{sample}}) - (A_{\text{Blank}})}{(A_{\text{Calibrator}}) - (A_{\text{Blank}})} \times \text{conc. of calibrator}$$

### Quality Control

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

### Performance Characteristics

#### Precision

Within run (Repeatability)

	Level 1	Level 2
<b>n</b>	20	20
<b>Mean (mmol/L)</b>	15	18
<b>SD</b>	0.2	0.16
<b>CV%</b>	1.33	0.89

#### Run to run (Reproducibility)

	Level 1	Level 2
n	20	20
Mean (mmol/L)	17	21
SD	0.32	0.22
CV%	1.88	1.05

#### Methods Comparison

A comparison between Spectrum Diagnostics Carbon dioxide reagent and a commercial reagent of the same methodology was performed on 20 human sera. A correlation of 0.977 was obtained.

#### Sensitivity

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

#### Linearity

The reaction is linear up to a Carbon dioxide concentration of 50 mmol/L; specimens showing higher concentration should be diluted 1+1 using physiological saline and repeat the assay (result × 2).

#### Interfering Substances

Triglycerides (1000 mg/dL) does not affect the results.  
Hemoglobin (>500 mg/dL) does not affect the results.  
Bilirubin (>40 mg/dL) does not affect the results.  
Other drugs and substances may interfere.

#### Expected Values

22 – 29 mmol/L

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

***Spectrum Diagnostics does not interpret the results of a clinical laboratory procedure; interpretation of the results is considered the responsibility of qualified medical personnel. All indications of clinical significance are supported by literature references.***

#### Analytical Range

1 - 50 mmol/L

#### Waste Disposal

This product is made to be used in professional laboratories. Please consult local regulations for a correct waste disposal.

**S56:** dispose of this material and its container at hazardous or special waste collection point.

**S57:** use appropriate container to avoid environmental contamination.

**S61:** avoid release in environment. refer to special instructions/safety data sheets.

#### 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



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