

# MAGNESIUM

## Colorimetric – Xylidyl Blue Method

**PRODUCT CODE**  
CE002

**INTENDED USE**  
For the quantitative determination of Magnesium in serum or plasma.

**CLINICAL SIGNIFICANCE**  
Magnesium is the second most abundant intracellular cation of the human body after potassium, being essential in a great number of enzymatic and metabolic processes. It is a co-factor of all the enzymatic reactions that involve ATP and found in the membranes that maintain the electrical excitability of muscular and nervous cells. A low magnesium level is found in malabsorption syndrome, diuretics aminogluco-side therapy, and hyperparathyroidism or diabetic acidosis. Elevated concentration of magnesium is found in uremia, chronic renal failure, glomerulo nephritis, Addison's disease or intensive anti acid therapy.

**PRINCIPLE**  
Magnesium ions form a colored complex with Xylidyl blue in the presence of Alkali. The increase in absorbance is proportional to the magnesium concentration in the sample.

### REAGENT COMPOSITION

<b>Magnesium Reagent</b>	
Tris buffer (pH11.0)	0.2 mol/l
Potassium Carbonate	70 mmol/l
GETDA	40 mmol/l
Xylidyl Blue	0.1 mmol/l
Sodium Azide	0.1%

<b>Magnesium Standard</b>	
Magnesium standard concentration	2.5mg/dL or 1.03mmol/L

**REAGENT PREPARATION**  
The reagent and standard are ready to use.

**STORAGE AND STABILITY**  
The reagents and standard are stable up to the stated expiry date when stored at 15-25° C.

**SPECIMEN**  
Serum, plasma and urine, do not use EDTA. Magnesium is stable for 7 days at 15 - 25° C.  
Acidify urine of pH 3-4 by adding concentrated HCl. Dilute further 1+4 with distilled water and multiply by the result by 5.

**PRECAUTION**  
To avoid contamination, use clean laboratory wares. It is recommended to use disposable tubes. Use clean, dry disposable pipette tips for dispensing. Close reagent and standard bottles immediately after Use. Avoid direct exposure of reagent to light.

<b>ASSAY</b>	
Wavelength	546 nm
Cuvette	1 cm light path
Temperature	20-25°C
Measurement	Against reagent blank

**PROCEDURE**

Pipette in to cuvettes	Blank	Standard	Sample
Magnesium reagent	1000 µL	1000 µL	1000 µL
Standard	--	10 µL	--
Sample	--	--	10 µL

Mix and incubate for 10 minutes at 20-25°C and measure the absorbance of the sample (As) and the standard (Astd) against the reagent blank within 60 minutes.

**CALCULATION**

$$\text{Serum Magnesium (mg/dL)} = \frac{\Delta A \text{ sample}}{\Delta A \text{ standard}} \times 2.5 (\text{Std.conc.})$$

To convert serum Magnesium concentration from mg/dL to mmol/L multiply the result by 1.03 instead of 2.5

**LINEARITY**  
The test is linear up to a magnesium concentration of 5mg/dl or 2.05 mmol/L. Dilute sample with a higher concentration 1+1 with distilled water and multiply the result by 2.















**NORMAL RANGE**

Sample	Normal Range
Serum, plasma	1.9-2.5 mg/dL or 0.8-1.0 mmol/L
Urine	1-10 mg/dL or 0.4-4.1 mmol/L
24-hour urine	50-150 mg/dL 24 hr or 2.0-6.2 mmol/L 24 hr

**QUALITY CONTROL**  
All control sera with Magnesium values determined by this method can be used.

- NOTES**
- Do not use haemolytic sera due to the higher magnesium concentration in erythrocytes.
  - The test is not influenced by lipaemic sera or bilirubin concentration up to 20 mg/dl.
  - Contaminated glassware is the greatest source of error. Disposable plasticware is recommended for the test.
  - The reagents contain sodium azide (0.1%) as preservative. Do not swallow. Avoid contact with skin and mucous membrane.

### SYMBOL ON LABELS

Symbols	Signify	Symbols	Signify
	Catalogue Number		Pack Size
	Expiry Date		Volume
	Storage Condition		Lot Number
	Instruction for Use		In Vitro Diagnostics
	Manufacturing Date		Manufacturer
	Number of Tests		For Single Use Only
	EC Representative		European conformity

**BIBLIOGRAPHY**

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