

## DETERMINATION OF **ARSENIC** IN DRINKING WATER BY FLUORIMETRIC METHOD

### INTRODUCTION

Lumex Instruments provides sensitive and selective fluorimetric method for the measurement of mass concentration of arsenic in drinking water samples using the FLUORAT-02 analyzer.

### MEASUREMENT RANGE

Measurement range, mg/L	Directives & standards for drinking water	MAC (MPL), mg/L
0.005–2.0 mg/L (0.005–2.0 ppm) (drinking water)	WHO Guidelines for drinking water quality (2011)	0.01
	FAO CODEX STAN 108-1981 Standard for natural mineral waters	
	Drinking Water Directive 98/83/EC	
	US EPA National Secondary Drinking Water Regulations	
	GB 5749-2006 Standards for drinking water quality	
	Resolução CONAMA No 396/2008	
	Código Alimentario Argentino. Capitulo XII	

Samples with higher arsenic content should be diluted prior to analysis.

### METHOD

The fluorimetric method is based on formation of a complex compound between arsenic (V) and pyrocatechol in weak acid medium, extraction of this compound with chloroform in a form of ion associate with Acridine Yellow G dye followed by measurement of fluorescence intensity of the extract using FLUORAT-02 analyzer displayed as arsenic concentration in mg/l. The result appears on the PC-operated FLUORATE software.

Samples need to be preserved by addition of nitric acid. Carry out the analysis within 24 hours after sampling. Not preserved sample should be analysed within 4 hours after sampling.

### HIGHLIGHTS OF THE FLUORIMETRIC METHOD

In comparison with the photometric method for the determination of arsenic with silver diethyldithiocarbamate (ISO 6595:1982; SMWW 3500-As.B; GB 7485-87; TCVN 6182:1996), the fluorimetric method has the following advantages:

- A smaller sample volume is required for analysis.
- The method is more expressive and less laborious.

### EQUIPMENT AND REAGENTS

The following equipment and reagents are used for measuring:

- FLUORAT-02 analyzer with FLUORATE software
- Lumex Instruments optical filters\*
- Arsenic (III) standart solution (0,1 g/l)\*
- Acridine Yellow G (CAS No 135-49-9), ≥90%\*
- Pyrocatechol (CAS No 120-80-9), ≥99%\*
- Reagent water complying with grade 1 as defined in ISO 3696
- Chloroform, puriss.
- Nitric acid, supra pur.
- Hydrogen peroxide, supra pur.
- Acetone, ≥99,9%
- N,N,N',N'-ethylenediaminetetraacetic acid disodium salt dihydrate (CAS No 6381-92-6), p.a.

\* – included in Lumex Instruments “Arsenic in drinking water” set, order code 300002522

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