



DETERMINATION OF MERCURY IN SOIL, BOTTOM SEDIMENTS, AND GEOLOGICAL MATERIALS

INTRODUCTION

Analysis of soils and bottom sediments for mercury content is one of the most common analyses in the monitoring of environmental pollution. Background mercury concentrations in these objects are 10–100 µg/kg and in the polluted areas they exceed 10,000 µg/kg.

MEASUREMENT METHOD

This method is based on the atomization of mercury contained in a sample in a **PYRO-915+ attachment** and subsequent mercury determination by atomic absorption spectrometry employed in a **mercury analyzer RA-915M**. The mercury AAS analyzer RA-915M with the Zeeman background correction equipped with a PYRO-915+ thermal decomposition attachment provides determination of mercury in soil and other similar samples without sample preparation and mercury accumulation on a sorbent.

Mercury content in the sample is determined from the integrated analytical signal with due account of the preset calibration coefficient (from any reference mercury sample).

The mercury content is measured by an RA-915M mercury analyzer within 2 minutes.

MEASUREMENT RANGE

Detection limit: **0.5–1 µg/kg**

Upper limit of the measurement range: **250,000 µg/kg**

Sample weight: up to 500 mg

It is possible to analyze samples with concentration up to up to 1g/kg using using a special step by step heating Mode for PYRO-915+ attachment.

ANALYSIS FEATURES

- No sample preparation is necessary.
- Direct mercury determination without its preliminary accumulation on gold sorbent.
- Wide dynamic measurement range: more than 5 orders of magnitude.
- Possible use of a special analytical cell for analysis of heavily polluted samples (up to 1 g/kg).
- No "memory" effect.
- No cylinders with compressed oxygen or other gas are necessary.
- Visualization of mercury release from the sample via a user-friendly computer interface.
- The calibration coefficient is preset from a reference mercury sample of any composition.
- Low running cost.

EQUIPMENT AND REAGENTS

The following equipment and materials are used for analysis:

- Mercury analyzer RA-915M with PYRO-915+ attachment;
- PC with Windows® XP/Vista/7/8 and RAPID software;
- SRM of mercury.

EXAMPLES OF ANALYSIS

The validity of the method is proved by agreement between the measured and certified mercury concentrations in various reference samples.

Reference sample code	Sample weight, mg	C, µg	C _{CO} , µg	Δ, %
Soil	240	40.0	41±7	-2.5
Bottom sediments IAEA 405	271	803	810±40	-1
Sewage sediments CRM 143R	53	1,050	1,100± 70	-5

The information in this leaflet is supplemental. To get more specific information on this method, please contact the developer of this method LUMEX INSTRUMENTS Group.

NORTH AMERICA

Lumex Instruments Canada 0890278
B.C. Ltd.
E-mail: info@lumexinstruments.com
www.lumexinstruments.com

EUROPE

Lumex Analytics GmbH
E-mail: info@lumexanalytics.de
www.lumexanalytics.de

RUSSIA

Lumex-Marketing LLC
E-mail: sales@lumex.ru
www.lumexinstruments.com

CHINA

Beijing Lumex Analytical
Equipment Co. Ltd.
E-mail: lumex@lumex.com.cn
www.lumexcn.com