POLON-IZOT

Multi-channel analyzer type PI-MAZAR 02

The PI-MAZAR 02 type spectrometer for determining contamination of natural radioactive elements is a precise laboratory meter for quantitative determination of radioactive elements - potassium, radium and thorium (and others) in tested materials. It is possible too determination of radioactive elements with radiation energies ranging from approx. 50 keV to 3.2 MeV and even in the range of others energy after prior arrangement. The measurement result is given in Bq per kilogram of test substance (Bq / kg). The lead shields used for many years to a high degree eliminate the influence of external radiation (of natural origin and the result of human activity - test nuclear and thermonuclear explosions, reactor failures, etc.) on the measurement result. The measurement system is designed to determine the concentrations of natural radioactive elements in building materials, food, soil, rocks, industrial waste, etc. These studies allow, inter alia, eliminate materials such as waste and ashes with excessive radioactivity used in the production of building materials and ready-made building materials such as bricks and cement, used in construction for people and livestock.

Functions

- Measurement of potassium, radium and thorium concentrations (in Bq / kg);
- Calculation of the index "I" of the radioactive concentration of radioactive isotopes of potassium K-40, radium Ra-226, track Th-232, in accordance with the regulation of the Council of Ministers of December 17, 2020;
- Calculating the value of the dose rate of the exposure dose 1 meter above the sample, expressed in Gy / kg of sample weight;
- Calculating the values of errors in the measurement of radionuclide concentrations and qualification coefficients.

Standard equipment

- PI-MAZAR 02 analyzer;
- Lead shield house with a scintillation probe;
- Laptop with printer;
- Calibration standards - 4 pcs;
- Source of CS 137 for spectral stabilization (unique solution) with low activity, not requiring a permit from the National Atomic Energy Agency on its use;
- Marinelli sample containers - 10 pcs;
- Documentation (manuals, user manual, warranty card, declaration of conformity).

Included in the purchase price: transport, assembly, commissioning of devices and training in operation.

View of the PI-MAZAR 02 measurement system:

1. Laptop with the program supervising the work of the controller.
2. Spectrometer.
3. Calibration standards (4 pieces).
4. Mass equivalent.
5. Marinelli type sample container.

An important element of the measuring system is the measuring chamber located in a special lead structure called a house measuring. The house consists of a series of movable, overlapping layers of lead rings. This is a unique solution ensures that the entire structure can be transported by one person. After assembly, the house is stable and weighs about 260 kg.

View of container measuring chamber with test sample, before closing.

View of an empty, open measuring chamber.

View of lead shield.

Standards

The device is manufactured in accordance with the standards:

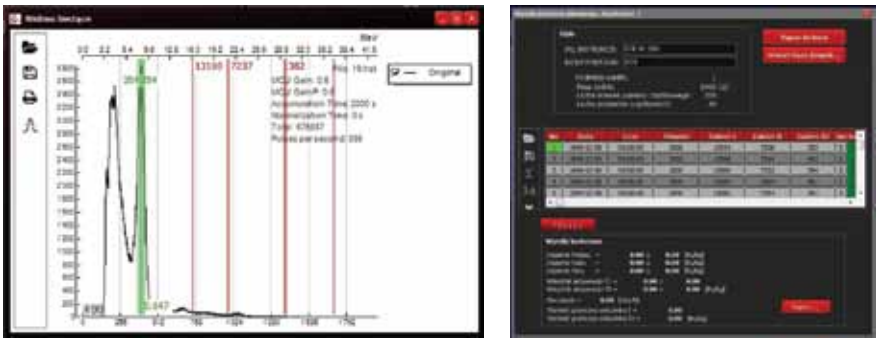
- PN EN 62598: 2014-04 Nuclear instrumentation - Constructional requirements and classification of radiometric gauges.
- PN-EN 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requir ements.
- Results form the basis for granting technical appr ovals accordance with the Council of Ministers of 17 December 2020.
- The need for testing of materials used in construction to the presence of natural radioactive elements result from the act dated. 29 November 2000. Atomic Law (Jour nal of Laws No. 3 poz.18), and specifies the detailed r equirements established by the Institute of Building Technology in Warsaw, Instruction No. 455/2010.

Software

- Windows 7 (other on request) - Polish or English language version with the function of calculating the mean value, standard deviation and RSD, as well as with the automation of measurements.
- GLP-compliant report in ISO systems, with graphical presentation of measurement results as well as statistics and test description.

Technical specification

PROBE TYPE	SCYNTYLATOR, HIGH PERFORMANCE AND HIGH RESOLUTION
MEASURED CONCENTRATION OF RADIONUCLIDES	POTASSIUM, RADIUM, THORIUM AND OTHER TO BE AGREED (BETA AND GAMMA RADIATION)
unit	Bq / kg
energy ranges	1.25 to 1.65 MeV for potassium 1.65 to 2.30 MeV for radium 2.30 to 2.85 MeV for thorium other energy ranges to be agreed
sample volume	up to 1700 cm3 (other to be agreed)
electronic block dimensions	430 x 130 x 250 mm
lead shield dimensions	diameter 400 mm x 720 mm height
weight	~260 kg
power	230 V, 50 Hz
supply voltage	200 W
digital outputs	printer, ethernet, USB
producer	Polon - Izot Sp. z o.o., Polska, UE



Window view with spectra and results

POLON - IZOT sp. z o.o. continues business activities of world-known company POLON United Nuclear Devices Works, established in 1956 which functioned as Office of Nuclear Technology Devices.
We closely co-operate with Central Radiological Safety Laboratory (Warsaw), Radiochemistry and Nuclear Technology Institute (Warsaw), Atomic Energy Institute (Świerk) and Institute of Physics at Warsaw University. Our long experience in narrow specialization allows us to reduce production costs, what gives our produts very competitive price.

The company holds Permits of the Ionization Radiation Application Supervision Department of the National Atomic Agency of Poland for the manufacture of isotopic equipment and XRF spectrometers.

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