

Xe and Kr Radionuclides Generator for Calibration and Functional Testing of Equipment

Radionuclide ^{252}Cf is disintegrated mainly by alpha decay, half-life period $T_{1/2} = 2.645$ years (97%) and also by spontaneous fission with $T_{1/2} = 86$ years (3%). Number of spontaneous fissions ~ 610 fissions $\cdot \text{sec}^{-1} \cdot \text{ng}^{-1}$. Thus, in ^{252}Cf specimen the whole spectrum of fission products (fragments) is formed, including ^{133}Xe , ^{135}Xe , etc. Xe radionuclides generator is designed as a stainless steel hermetic cylindrical ampoule 8 cm³ by volume. The generator contains about 1.5 ng of ^{252}Cf ; gamma-radiation dose rate is not more than 0.4 microSv/h at the distance of 15 cm from the protective case; neutron flux is ~ 2400 neutron/sec. • During one month are accumulated: • ^{133}Xe - 19 Bq, • ^{135}Xe - 25 Bq, • ^{133m}Xe - 0.6 Bq, • ^{131m}Xe ~ 0.1 Bq per /ng ^{252}Cf . Radionuclide ^{131}I ($T_{1/2} = 8.02$ days), which decays to ^{131m}Xe , can be added to the Xe(Cf)-generator. Then the removed xenon radionuclides gases mixture will be enriched in ^{131m}Xe .

Thus the generator may be used as the system for radionuclides monitoring stations, laboratories and on site inspection teams in field use.

The construction of Xe-Kr radionuclides generator as a sealed source provides its classification in accordance with International radiation safety regulations.

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