

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

Radionuclide  $^{252}\text{Cf}$  is disintegrate main 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  $\sim 610$  fissions  $\cdot \text{sec}^{-1} \cdot \text{ng}^{-1}$ . Thus, in  $^{252}\text{Cf}$  specimen the whole spectrum of fission products (fragments) is formed, including  $^{133}\text{Xe}$ ,  $^{135}\text{Xe}$ , etc. Xe radionuclides generator is designed as a stainless steel hermetic cylindrical ampoule 8 cm<sup>3</sup> by volume. The generator contains about 1.5 ng of  $^{252}\text{Cf}$ ; 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  $\sim 2400$  neutron/sec. • During one month are accumulated: •  $^{133}\text{Xe}$  - 19 Bq, •  $^{135}\text{Xe}$  - 25 Bq, •  $^{133m}\text{Xe}$  - 0.6 Bq, •  $^{131m}\text{Xe}$   $\sim 0.1$  Bq per /ng  $^{252}\text{Cf}$ . Radionuclide  $^{131}\text{I}$  ( $T_{1/2} = 8.02$  days), which decays to  $^{131m}\text{Xe}$ , can be added to the Xe(Cf)-generator. Then the removed xenon radionuclides gases mixture will be enriched in  $^{131m}\text{Xe}$ .

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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