

## Are there any other fissile materials than uranium used as nuclear fuel?

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Currently, some countries are developing production technology aimed at the use of "mixed" or MOX fuel (from MOX - Mixed-Oxide Fuel), including plutonium ("civil grade", obtained in the course of recycling spent nuclear fuel (SNF), or "weapons grade", considered to exceed the needs of national defence) mixed with uranium.

Also we should emphasize the possibility of fuel base expansion through the wider usage of thorium. The difficulty is that, unlike uranium that has natural isotopes (U-235), emitting low-energy neutrons and therefore directly suitable as nuclear fuel, thorium in its natural state lacks such isotopes. It consists entirely of a single non-fissile isotope – thorium-232, which, similar to

uranium-238, cannot sustain a nuclear chain reaction. However, just as uranium-238 produces a new fissile material – plutonium-239 - in the reactor, thorium-232 gives rise to uranium-233.

As a nuclear fuel it is not inferior to uranium-235, and in some respects is even superior. However, its use requires significant modifications to the existing nuclear fuel cycle - including designing a fundamentally new NFC.