

# Uranium-plutonium mixed fuel for the Central African solar power station

What is materials science & fuel technologies of uranium & plutonium mixed oxide?

Materials Science and Fuel Technologies of Uranium and Plutonium Mixed Oxide offers a deep understanding of MOX properties for nuclear fuel that will be useful for performance evaluation. It also reviews fuel property simulation technology and an irradiation behavior model required for performance evaluation.

Can plutonium be used in BN-1200 reactor MOX fuel?

For this purpose, a precision model of the BN-1200 reactor has been developed using the Serpent Monte Carlo code. The model has been verified against the reference values of the nuclear fuel burnup and breeding ratios. The study has shown that such plutonium can be used in the BN-1200 reactor MOX fuel.

How is nitride uranium-plutonium fuel produced?

Since 2010, all stages from laboratory studies to industrial implementation have been completed, including the development of equipment prototypes. The unique automated experimental complexes allowing to produce nitride uranium-plutonium fuel in the conditions of completely drained nitrogen inner-box atmosphere are created.

Can a VVER-1000 thermal neutron reactor operate on mixed uranium-plutonium fuel?

The VVER-1000 thermal neutron reactor can operate on mixed uranium-plutonium fuel with a content of reactor-grade plutonium up to 5% with a 100% loaded core. In this case, plutonium burns up to 56% of odd isotopes. The energy potential of such plutonium is very low, and its further use in thermal reactors is impractical.

The production of  $^{14}\text{C}$  and tritium can be greatly diminished by substituting in mixed uranium-plutonium nitride fuel highly concentrated  $^{15}\text{N}$  for naturally occurring nitrogen with the ...

MOX is a mixture of uranium and plutonium oxides used in some overseas nuclear power stations. British Nuclear Fuels plc (BNFL) produced MOX for export on a small scale at Sellafield. A ...

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In this work, an annular uranium-plutonium mixed oxide (MOX) fuel operating in a liquid lead/lead-bismuth cooled fast reactor is modeled and simulated to predict its behavior under ...

The present article summarizes and analyzes the currently obtained data on the swelling and its rate for mixed uranium-plutonium nitride fuel in fuel rods with a gas sublayer.

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The use of mixed uranium-plutonium nitride fuel in fast reactors allows for a breeding ratio (BR)  $\approx 1.06$  with a rejection of the uranium blanket as well as the possibility of operating in an ...

Mixed oxides of uranium and plutonium (MOX) are currently considered as a reference fuel for the new generation of fast breeder reactors such as ASTRID. The key factor determining the ...

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