

Comparison of different fuel materials

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1 Quiz

1.1 Questions

1. Name the common fuel materials used in nuclear reactors?
2. Which one of the following is not a desirable property of a nuclear fuel?
(a) low density (b) low creep (c) high melting point
(d) high thermal conductivity
3. Which one of the following is a desirable property of a nuclear fuel?
(a) low fission cross section (b) high neutron yield per fission
(c) low neutron yield per fission (d) high chemical reactivity with coolant
4. Your friend says that a fuel with high melting point, high thermal conductivity and high creep is suitable for use in nuclear reactors. Do you agree with him?
5. Which one of the following is a limitation of oxide fuels?
(a) low creep (b) chemical inertness (d) low density (d) low availability
6. If the coefficient of thermal expansion of cladding is greater than that of the fuel, then the fuel-clad gap
(a) increases (b) decreases (c) does not change
7. For a fuel with high thermal conductivity, the difference in temperature at the center of the fuel rod and that at the surface is
(a) high (b) low (c) zero
8. What are the advantages of carbide and nitrides over oxides as fuel?
9. What are limitations of carbide and nitride over oxides as fuel?

1.2 Answers

1. Uranium and Plutonium compounds
2. (a) low density
3. (b) high neutron yield per fission

4. No. High creep is not a desirable property for fuel.

5. (d) low density

6. (a) increases

7. (b) low

8. High thermal conductivity and high density

9. Low compatibility with cladding, swelling under irradiation, poor retention of fission gas