

American Nuclear Society

REAFFIRMED

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**nuclear criticality control and safety of
plutonium-uranium fuel mixtures outside reactors**

an American National Standard

REAFFIRMED

**August 16, 2021
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**American National Standard
for Nuclear Criticality Control and Safety of
Plutonium-Uranium Fuel Mixtures Outside Reactors**

Secretariat
American Nuclear Society

Prepared by the
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Working Group ANS-8.12

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Foreword

(This Foreword is not a part of American National Standard for Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors, ANSI/ANS-8.12-1987.)

This standard provides guidance for the prevention of criticality accidents in the handling, storing, processing, and transporting of plutonium-uranium fuel mixtures outside reactors and is applicable to all operations involving mixtures of plutonium and natural uranium. It constitutes an extension of the American National Standard for Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors, ANSI/ANS-8.1-1983.

Under the prescribed five year review of ANSI/ANS-8.12-1978, the standard has been revised to include subcritical limits for heterogeneous lattices of mixed oxide fuel pins in water. The basis for the limits for both homogeneous mixtures and for lattices are calculations done by several members of the work group, which have been published in the open literature. These calculations were done by methods that have been validated by correlations with available experimental data, and an adequate margin of subcriticality was allowed. The revised standard was prepared by Work Group ANS-8.12.1 of Subcommittee 8 of the Standards Committee of the American Nuclear Society. This work group was composed of:

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