

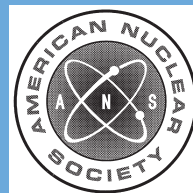
American Nuclear Society

WITHDRAWN

**use of borosilicate-glass Raschig
rings as a neutron absorber in
solutions of fissile material**

an American National Standard

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American National Standard
Use of Borosilicate-Glass Raschig Rings as a
Neutron Absorber in Solutions of Fissile Material

Sponsor

American Nuclear Society

Approved October 20, 1971

American National Standards Institute

American National Standard

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Foreword

(This Foreword is not a part of American National Standard Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material, N16.4-1971.)

This Standard provides guidance for the use of borosilicate-glass raschig rings as a neutron absorber for criticality control in plants processing fissile materials. It recommends concentrations of homogeneous solutions of uranium and plutonium in vessels of unlimited size when packed with rings. Although the general use of neutron absorbers, including raschig rings, for this purpose dates back to 1958, some applications were recorded as early as the mid-1940's.

The concentration of these solutions is expressed in terms of the mass of uranium or plutonium per unit volume. The concentrations specified for uranium enriched in the ^{235}U isotope shall be applied regardless of the ^{235}U enrichment but with a limitation on the ^{233}U content. Specifications for solutions of uranium which are primarily of the ^{233}U isotope are designated as "Solutions containing more than 1 wt % ^{233}U ." Limitations on the relative abundance of the various isotopes of plutonium are imposed on the specifications applicable to plutonium solutions. Although this categorization of solutions, in which, for example, all ^{235}U -enriched uranium is considered as though it were 100% ^{235}U , unnecessarily imposes restrictions, insufficient information at this time precludes doing otherwise.

The experimental data forming the bases for the specifications of this Standard are summarized in "Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material," Y-CDC-8, published by the Criticality Data Center, Oak Ridge Y-12 Plant, Oak Ridge, Tennessee, together with a review of the practical experience gained in the use of raschig rings for the purposes detailed in the Standard.

The American National Standards Committee, N16, Nuclear Criticality Safety, which reviewed and approved this Standard in 1970, had the following membership:

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The Standard was drafted by a Work Group of the Subcommittee comprised of C. L. Schuske, Chairman, W. Bradley Lewis, D. W. Magnuson, W. G. Morrison, J. P. Nichols, and M. E. Weech.

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