



Designation: E 496 – 9602

Standard Test Method for Measuring Neutron Fluence and Average Energy from $^3\text{H}(d,n)^4\text{He}$ Neutron Generators by Radioactivation Techniques¹

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1. Scope

1.1 This test method covers a general procedure for the measurement of the fast-neutron fluence rate produced by neutron generators utilizing the $^3\text{H}(d,n)^4\text{He}$ reaction. Neutrons so produced are usually referred to as 14-MeV neutrons, but range in energy depending on a number of factors. This test method does not adequately cover fusion sources where the velocity of the plasma may be an important consideration.

1.2 This test method uses threshold activation reactions to determine the average energy of the neutrons and the neutron fluence at that energy. At least three activities, chosen from an appropriate set of dosimetry reactions, are required to characterize the average energy and fluence. The required activities are typically measured by gamma ray spectroscopy.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

¹ This test method is under the jurisdiction of ASTM Committee E10 on Nuclear Technology and Applications and is the direct responsibility of Subcommittee E10.07 on Radiation Dosimetry for Radiation Effects on Materials and Devices.

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