



Designation: E 693 – 9401

Standard Practice for Characterizing Neutron Exposures in Iron and Low Alloy Steels in Terms of Displacements Per Atom (DPA), E 706(ID)¹

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1. Scope

1.1 This practice describes a standard procedure for characterizing neutron irradiations of iron (and low alloy steels) in terms of the exposure index displacements per atom (dpa) for iron.

1.2 Although the general procedures of this practice apply to any material for which a displacement cross section $\sigma_d(E)$ is known (see Practice E 521), this practice is written specifically for iron.

1.3 It is assumed that the displacement cross section for iron is an adequate approximation for calculating displacements in steels that are mostly iron (95 to 100 %) in radiation fields for which secondary damage processes are not important.

1.4 Procedures analogous to this one can be formulated for calculating dpa in charged particle irradiations. (See Practice E 521.)

1.5 The application of this practice requires knowledge of the total neutron fluence and ~~the neutron flux~~ flux spectrum. Refer to Practice E 521 for determining these quantities.

1.6 The correlation of radiation effects data is beyond the scope of this practice.

1.7 *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 practice is under the jurisdiction of ASTM Committee E10 on Nuclear Technology and Applications and is the direct responsibility of Subcommittee E10.05 on Nuclear Radiation Metrology.

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