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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 20130-2025

Replacing GB/T 20130-2006

Self-shielding electron beam facility for radiation processing

自屏蔽电子束辐射加工装置

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document replaces GB/T 20130-2006 "Self-shielded electron beam disinfection and sterilization device". Compared with GB/T 20130-2006, In addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope of application of the standard has been changed (see Chapter 1, Chapter 1 of the 2006 edition);
- b) Added the terms and definitions of "radiation processing" and "electron beam radiation processing device" (see 3.2 and 3.3);
- c) Changed the terms and definitions of "reference plane", "beam intensity", "beam power", "beam scanning non-uniformity" and "beam scanning width" (See 3.4, 3.6, 3.7, 3.8, 3.9, 3.2, 3.4, 3.5, 3.8, 3.7 of the 2006 edition);

- d) The term and definition of "energy instability" have been deleted (see 3.6 of the 2006 edition);
- e) Changed "beam device", "monitoring and control system" and "shielding system" (see 4.1.1, 4.1 of the 2006 edition);
- f) Deleted "Device model name" (see 4.2 of the 2006 edition);
- g) "Environmental conditions" has been changed (see 4.2.1, 4.3.1 of the 2006 edition);
- h) "Power supply conditions" have been changed (see 4.2.2, 4.3.2 of the 2006 edition);
- i) "Working methods" has been deleted (see 4.4 of the 2006 edition);
- j) "Appearance" has been changed (see 5.1, 5.1 of the 2006 edition);
- k) "Control system" has been changed (see 5.2, 5.2 of the 2006 edition);
- l) "Performance indicators" have been changed (see 5.3, 5.3 of the 2006 edition);
- m) "beam energy" has been changed (see 5.3.1, 5.3.1 of the 2006 edition);
- n) "Beam intensity" has been changed (see 5.3.2, 5.3.3 of the 2006 edition);
- o) "Beam intensity instability" has been changed (see 5.3.3, 5.3.2 of the 2006 edition);
- p) "Beam power" has been changed (see 5.3.4, 5.3.4 of the 2006 edition);
- q) "Scan width" was deleted (see 5.3.5 of the 2006 edition);
- r) "Beam scanning non-uniformity" has been changed (see 5.3.5, 5.3.6 of the 2006 edition);
- s) "Electrical safety" has been changed (see 5.4, 5.4 of the 2006 edition);
- t) "Radiation safety" was changed (see 5.5, 5.5 of the 2006 edition);
- u) Deleted the requirement of "ozone dilution emission" (see 5.6 of the 2006 edition)
- v) Changed "Operation requirements", "Start-up", "Resume startup" and "Stable operation" (see 5.6, 5.7 of the 2006 edition);
- w) Changed "Complete machine performance test" (see 6.4, 6.4 of the 2006 edition);
- x) "Beam energy" has been changed (see 6.4.1, 6.4.1 of the 2006 edition);
- y) "Beam intensity" was changed (see 6.4.2, 6.4.3 of the 2006 edition);
- z) "Beam intensity instability" was changed (see 6.4.3, 6.4.2 of the 2006 edition);
- aa) "Beam power" has been changed (see 6.4.4, 6.4.4 of the 2006 edition);
- bb) "Beam scanning non-uniformity and scanning width" was changed (see 6.4.5, 6.4.5 and 6.4.6 of the 2006 edition);
- cc) "Inspection classification" has been changed (see 7.1, 7.1 of the 2006 edition);

dd) The "Judgment Rules" were modified (see 7.3, 7.3 of the 2006 edition);

ee) The content of the product certificate has been changed (see 8.4.2, 8.4.2 of the 2006 edition).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was proposed and coordinated by the National Nuclear Instrumentation Standardization Committee (SAC/TC30).

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This document was first published in 2006 and this is the first revision.

1 Scope

This document specifies the composition, working conditions, technical requirements, inspection rules, and marking, packaging and The contents of the test include transportation, accompanying documents, storage, etc., and the corresponding test methods are described.

This document is applicable to self-shielded electron beam radiation processing equipment with electron beam energy of 0.5MeV~5MeV (hereinafter referred to as "equipment" ("Set")).

2 Normative references

GB/T 191

GB/T 9969

GB/T 16841

GB 18871

GB 19517

GB/T 25306

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Self-shielding

The shielding body of the device can reduce the leakage dose of X-rays generated by the electron beam hitting the irradiated object or absorber without additional The dose can be reduced to below the prescribed limit under shielding conditions.

3.2 Radiation processing

A process in which ionizing radiation acts on matter to make its quality or performance meet the expected requirements.

3.3

A device that generates, accelerates, and extracts electron beams for radiation processing.

3.4 Reference plan

In the rectangular coordinate system, the plane composed of the X and Y axes is shown in Figure 1.

Note. In this document, the distance between the reference surface and the electron beam output window is specified as 1 cm to 15 cm.