



Standard Reference Radiographs for Titanium Castings¹

This standard is issued under the fixed designation E 1320; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 These reference radiographs are reproductions of original radiographs and are supplied as a means for establishing some of the categories and severity levels of discontinuities in titanium castings that may be revealed by radiographic examination. The title is intended to be descriptive and not restrictive. The document may be used, where there is no other applicable document, for other energy levels, thicknesses, or both, for which agreement has been reached between purchaser and manufacturer. They should be used in accordance with contractual specifications.

NOTE 1—The original radiographs produced for Volume I were taken with x-rays in the range of 110 KV to 220 KV. The original radiographs produced for Volume II were taken with x-rays in the range of 200 K to 340 KV.

1.2 These reference radiographs consist of two volumes. Volume I, described in Table 1, is applicable to a wall thickness of up to 1 in. (0 to 25.4 mm). Volume II, described in Table 2, is applicable to a wall thickness of over 1 in. to 2 in. (25.4 mm to 50.8 mm).

1.3 The plates produced to serve for use in this standard were purposely cast to exhibit the desired discontinuity. The plates were cast using different processes as shown in Table 1 and Table 2. Hot isostatic pressing was not used on any of the plates.

1.4 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for informational purposes only.

1.5 *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 appro-*

priate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:

E 94 Guide for Radiographic Examination²

E 1316 Terminology for Nondestructive Examinations²

2.2 ASTM Adjuncts:

Reference Radiographs for the Inspection of Titanium Castings

Volume I, applicable up to 1 in. (25.4 mm)^{3,4}

Volume II, applicable over 1 in. to 2 in. (25.4 mm to 50.8 mm)^{4,5}

3. Terminology

3.1 *Definitions*—For definitions of terms used in this document, see Terminology E 1316.

4. Significance and Use

4.1 These reference radiographs are designed so that acceptance standards, which may be developed for particular requirements, can be specified in terms of these radiographs. The radiographs are of castings that were produced under conditions designed to produce the discontinuities. The reference radiographs are intended to be used for casting thickness ranges in accordance with Table 1 and Table 2.

5. Description of Discontinuities

5.1 This section is provided to aid in the identification and classification of discontinuities. It briefly describes the radiographic appearance of those discontinuities in the reference radiograph adjuncts and indicates their probable cause in

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² *Annual Book of ASTM Standards*, Vol 03.03.

³ Available from ASTM Headquarters. Order RRE132001.

⁴ Volumes I and II are available from ASTM Headquarters as a set. Order RRE1320CS.

⁵ Available from ASTM Headquarters. Order RRE132002.