



Standard Specification for Steel, Closed-Impression Die Forgings for General Industrial Use¹

This standard is issued under the fixed designation A 521; 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.

1. Scope*

1.1 This specification covers untreated and heat-treated steel, closed-impression die forgings (Note 1) for general industrial use.

NOTE 1—For the definition of a forging, refer General Requirements Specification A 788.

1.2 The Grades of forgings are as follows, the choice depending on design and stress or service to be imposed:

1.2.1 *Grade CA*—Untreated, carbon steel forgings,

1.2.2 *Grades CC, CC1, and CE*—Annealed, normalized and tempered, carbon steel forgings,

1.2.3 *Grade CF*—Normalized and tempered carbon steel forgings,

1.2.4 *Grade CF1*—Double normalized and tempered carbon steel forgings,

1.2.5 *Grade CG*—Quenched and tempered, or normalized, quenched and tempered carbon steel forgings,

1.2.6 *Grade AA*—Annealed, normalized, or normalized and tempered alloy steel forgings,

1.2.7 *Grades AB and AC*—Normalized and tempered alloy steel forgings, and

1.2.8 *Grades AD, AE, AF, AG, and AH*—Normalized, quenched, and tempered alloy steel forgings.

1.3 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 *ASTM Standards*:²

A 29/A 29M Specification for Steel Bars, Carbon and Alloy, Hot-Wrought and Cold-Finished, General Requirements for

A 275/A 275M Test Method for Magnetic Particle Examination of Steel Forgings

A 322 Specification for Steel Bars, Alloy, Standard Grades
A 388/A 388M Practice for Ultrasonic Examination of Heavy Steel Forgings

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products

A 576 Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality

A 711 Specification for Steel Forging Stock

A 788 Specification for Steel Forgings General Requirements

A 921/A 921M Steel Bars, Microalloy, Hot-Wrought, Special Quality for Subsequent Hot Forging

E 3 Guide for Preparation of Metallographic Specimens

E 45 Practice for Determining the Inclusion Content of Steel

E 94 Guide for Radiographic Examination

E 112 Test Methods for Determining the Average Grain Size

E 340 Macro Etching Metals and Alloys

E 381 Method of Macroetch Testing, Inspection and Rating Steel Products, Comprising Bars, Billets, Blooms, and Forgings

E 407 Practice for Microetching of Metals and Alloys

3. Ordering Information and General Requirements

3.1 Material supplied to this specification shall conform to the requirements of Specification A 788, which outlines additional ordering information, manufacturing requirements, testing and retesting methods and procedures, product analysis variations, marking, certification and additional supplementary requirements. Failure to comply with the requirements of Specification A 788 constitutes non-conformance with this specification

3.2 In addition to the ordering information required by Specification A 788, the purchaser may require that the tolerances stated in the appendices to this specification shall apply.

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.06 on Steel Forgings and Billets.

Current edition approved Sept. 10, 2003. Published December 2003. Originally approved in 1964. Last previous edition approved in 2001 as A 521–96 (2001).

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.