



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

This standard is issued under the fixed designation A521/A521M; 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 **A788/A788M**.

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 Unless the order specifies the applicable “M” specification designation, the forgings shall be furnished with the inch-pound units.

1.4 The values stated in either inch-pound units or SI (metric) units are to be regarded separately as standard. Within the text and tables, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

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.

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2. Referenced Documents

2.1 ASTM Standards:²

A29/A29M Specification for General Requirements for Steel Bars, Carbon and Alloy, Hot-Wrought

A275/A275M Practice for Magnetic Particle Examination of Steel Forgings

A322 Specification for Steel Bars, Alloy, Standard Grades
A370 Test Methods and Definitions for Mechanical Testing of Steel Products

A388/A388M Practice for Ultrasonic Examination of Steel Forgings

A576 Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality

A788/A788M Specification for Steel Forgings, General Requirements

A921/A921M Specification for Steel Bars, Microalloy, Hot-Wrought, Special Quality, for Subsequent Hot Forging

E3 Guide for Preparation of Metallographic Specimens

E45 Test Methods for Determining the Inclusion Content of Steel

E94 Guide for Radiographic Examination

E112 Test Methods for Determining Average Grain Size

E340 Practice for Macroetching Metals and Alloys

E381 Method of Macroetch Testing Steel Bars, Billets, Blooms, and Forgings

E407 Practice for Microetching Metals and Alloys

3. Ordering Information and General Requirements

3.1 Material supplied to this specification shall conform to the requirements of Specification **A788/A788M**, 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 **A788/A788M** constitutes nonconformance with this specification.

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.