



Designation: A579/A579M – 17

Standard Specification for Superstrength Alloy Steel Forgings¹

This standard is issued under the fixed designation A579/A579M; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope*

1.1 This specification covers requirements for forged steel shapes for highly stressed structural members requiring yield strengths in excess of 140 ksi [965 MPa].

1.2 This specification is not intended for applications limited by creep deformation.

1.3 Twenty-eight grades are covered by this specification. Selection will depend upon design, service conditions, and mechanical properties required.

1.4 Supplementary requirements are provided for use when additional testing or inspection is desired. These shall apply only when specified individually by the purchaser in the order.

1.5 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.6 Unless the order specifies the applicable “M” specification designation, the material shall be furnished to the inch-pound units.

2. Referenced Documents

2.1 ASTM Standards:²

A255 Test Methods for Determining Hardenability of Steel
A275/A275M Practice for Magnetic Particle Examination of Steel Forgings

A370 Test Methods and Definitions for Mechanical Testing of Steel Products

A388/A388M Practice for Ultrasonic Examination of Steel Forgings

A788/A788M Specification for Steel Forgings, General Requirements

E3 Guide for Preparation of Metallographic Specimens

E21 Test Methods for Elevated Temperature Tension Tests of Metallic Materials

E45 Test Methods for Determining the Inclusion Content of Steel

E112 Test Methods for Determining Average Grain Size

E165/E165M Practice for Liquid Penetrant Examination for General Industry

3. Ordering Information and General Requirements

3.1 In addition to the ordering information required by Specification A788/A788M, the purchaser shall include with the inquiry and order a detailed drawing, sketch, or written description of the forging.

3.2 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, marking, certification, product analysis variations, and additional supplementary requirements.

3.3 If the requirements of this specification are in conflict with the requirements of Specification A788/A788M, the requirements of this specification shall prevail.

4. Materials and Manufacture

4.1 The steel shall be made in accordance with the Melting Process Section of Specification A788/A788M. A sufficient discard shall be made to secure freedom from injurious pipe and undue segregation.

4.2 The material shall be forged as close as practical to the specified shape and size.

4.3 The finished product shall be a hot-worked forging as defined by Specification A788/A788M.

4.4 Heat Treatment Performed by Forging Supplier—Forgings may be furnished in one of the following conditions as specified in the inquiry and purchase order (some conditions are not applicable to all grades):

4.4.1 Stress relieved,

4.4.2 Annealed,

4.4.3 Solution treated,

4.4.4 Solution treated and aged,

4.4.5 Normalized,

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 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.

*A Summary of Changes section appears at the end of this standard