



Standard Specification for Wrought Carbon Steel Wheels¹

This standard is issued under the fixed designation A504/A504M; 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 one-wear, two-wear, and multiple-wear wrought carbon steel wheels for locomotives and cars, designated Classes L, A, B, and C, heat-treated, wheels.

1.2 The service for which the various classes are intended is as follows:

1.2.1 Class B or C wheels shall be used for freight cars in interchange service.

1.2.2 Class B or C wheels are recommended for use on locomotives.

1.2.3 For passenger car service, the various classes are intended generally as follows:

1.2.3.1 *Class L*—High speed with more severe braking conditions than other classes and light wheel loads.

1.2.3.2 *Class A*—High speed with more severe braking conditions, but moderate wheel loads.

1.2.3.3 *Class B*—High speed service with severe braking conditions and heavier wheel loads.

1.2.3.4 *Class C*—(1) Service with light braking conditions and heavier wheel loads.

1.2.3.5 *Class C*—(2) Service with heavier braking conditions where off-tread brakes are employed.

1.3 Supplemental requirements are provided for use where additional testing or additional restrictions are required by the purchaser. Supplementary requirements included in Specification A788/A788M may also be specified by the purchaser for forgings ordered to this specification. Any supplemental requirements apply only when specified in the purchase order.

1.4 The values stated in either SI units or inch-pound 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 may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.

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

1.6 *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 appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

A275/A275M Practice for Magnetic Particle Examination of Steel Forgings

A388/A388M Practice for Ultrasonic Examination of Steel Forgings

E399 Test Method for Linear-Elastic Plane-Strain Fracture Toughness K_{Ic} of Metallic Materials

A788/A788M Specification for Steel Forgings, General Requirements

2.2 SAE Documents:³

SAE J 442 Test Strip, Holder and Gage for Shot Peening
SAE J 443 Recommended Practice for Procedures for Using Standard Shot Peening Test Strip

SAE J 827 Recommended Practice for Cast Steel Shot

SAE J 2277 Shot Peening Coverage Determination

AMS-2430 Shot Peening of Metal Parts

2.3 AAR Standard:⁴

AAR M-107/M-208 Wheels, Carbon Steel

3. Terminology

3.1 *Definitions:* (The following terminology is unique to the Rail Road industry).

3.1.1 *multi-wear wheel, n*—wheel that has sufficient metal in the rim for more than two turnings before it must be replaced.

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.

³ Available from SAE International (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001, <http://www.sae.org>.

⁴ Available from Association of American Railroads (AAR), 425 Third Street, SW, Washington, DC 20024, <http://www.aar.org>.

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