



Standard Specification for Cast Steel Wheels for Railway Service¹

This standard is issued under the fixed designation A 583; 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 cast carbon steel wheels for use on locomotives and cars, designated Class U, untreated, and 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 service with 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.

1.2.4 *Class U*—Wheels may be used in service in which the wheel load and braking are low.

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

1.4 *This standard does not purport to address all of the safety problems, 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:

E 59 Practice for Sampling Steel and Iron for Determination of Chemical Composition²

E 350 Test Methods for Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron²

E 415 Test Method for Optical Emission Vacuum Spectrometric Analysis of Carbon and Low-Alloy Steel³

E 1019 Test Methods for Determination of Carbon, Sulfur, Nitrogen, and Oxygen in Steel and in Iron, Nickel, and Cobalt Alloys³

2.2 AAR Standard:

AAR Wheel and Axle Manual, Section G-M-208⁴

2.3 SAE Documents:

J442 Standard for Test Strip, Holder and Gage for Shot Peening⁵

J443 Recommended Practice for Procedures for Using Standard Shot Peening Test Strip⁵

J827 Recommended Practice for Cast Steel Shot⁵

2.4 Military Standard:

MIL-S-13165B Shot Peening of Metal Parts⁶

3. Ordering Information

3.1 The inquiry, order, or contract for material under this specification shall include:

3.1.1 Quantity (number of pieces),

3.1.2 Class (see Section 1),

3.1.3 Full identification of wheel design, including tread and flange contour, and dimensional drawing if required,

3.1.4 Rough bore size,

3.1.5 Intended service (see Section 1),

3.1.6 ASTM designation and year of issue, and

3.1.7 Supplementary requirements (if any).

4. Manufacture

4.1 *Melting Practice*— The steel shall be melted in electric furnaces.

4.2 *Temperatures*— During the processes of manufacture, necessary care in regulation of temperature gradients shall be exercised to obtain the mechanical properties to be expected from the chemical composition and to prevent the development of internal discontinuities and injurious stresses.

¹ This specification is under the jurisdiction of Committee A-1 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.18 on Castings

Current edition approved Dec. 15, 1993. Published February 1994. Originally published as A 583 – 67. Combined with A 631 in this edition. Last previous edition A 583 – 88.

² *Annual Book of ASTM Standards*, Vol 03.05.

³ *Annual Book of ASTM Standards*, Vol 03.06.

⁴ Available from the Association of American Railroads, 50 F St. N.W., Washington, DC 20001.

⁵ Available from the Society of Automotive Engineers, Inc., 400 Commonwealth Dr., Warrendale, PA 15906.

⁶ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.