



## Standard Specification for Steel Tires<sup>1</sup>

This standard is issued under the fixed designation A 551; 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 seven classes of carbon steel tires for railway and rapid transit use.

1.1.1 *Class A*—For untreated driving tires for locomotives in passenger service.

1.1.2 *Class AHT*—For heat-treated driving tires for locomotives in passenger service.

1.1.3 *Class B*—For untreated driving tires for freight locomotives and tires for locomotive-truck, tender-truck, trailer and car wheels, and miscellaneous service.

1.1.4 *Class BHT*—For heat-treated driving tires for freight locomotives and tires for trailer wheels.

1.1.5 *Class C*—For untreated tires for switching locomotives.

1.1.6 *Class CHT*—For heat-treated driving tires and switching locomotives and tires for locomotive-trucks, tender-trucks, trailer and car wheels, and miscellaneous service.

1.1.7 *Class DHT*—For heat-treated driving tires for locomotives with light braking conditions, heavily loaded trailer tires, and car wheels where off-tread brakes are employed.

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

### 2. Referenced Documents

#### 2.1 ASTM Standards:

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products<sup>2</sup>

E 350 Test Methods for Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron<sup>3</sup>

E 415 Method for Optical Emission Vacuum Spectrometric Analysis of Carbon and Low-Alloy Steel<sup>4</sup>

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee A-1 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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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 01.03.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 03.05.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 03.06.

NOTE 1—References to these standards are for guidance only; other methods of equivalent accuracy may be used.

### 3. Ordering Information

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

3.1.1 Quantity,

3.1.2 Class,

3.1.3 Full identification of tread and flange contour with dimensional drawings as required,

3.1.4 Inside diameter to be rough machined or finished,

3.1.5 Intended service,

3.1.6 ASTM designation and year of issue, and

3.1.7 Supplementary requirements, if any.

### 4. Manufacture

4.1 *Melting Process*—The steel shall be made by one or more of the following processes: open-hearth, basic-oxygen, or electric-furnace.

4.2 *Discard*—Sufficient discard shall be made from each ingot to assure freedom from piping and undue segregation.

4.3 *Cooling and Heating*:

4.3.1 All tires, immediately after being rolled, shall be slow cooled in a manner to accomplish proper transformation without damage.

4.3.2 Classes AHT, BHT, CHT, and DHT shall be heated to and held at the proper temperature for a sufficient time to effect the desired transformation and then shall be immersed in a suitable quenching medium.

4.3.3 Following quenching, the tires shall be charged into a furnace for tempering to meet the hardness requirements of 6.1.1, and then cooled under suitable conditions.

### 5. Chemical Requirements

5.1 *Chemical Composition*—The steel shall conform to the requirements for chemical composition specified in Table 1 or to the composition agreed upon by the manufacturer and the purchaser.

5.2 *Heat or Cast Analysis*—An analysis of each heat or cast of steel shall be made by the manufacturer to determine the percentages of the elements specified in Table 1. The analysis shall be made from a test sample taken preferably during the