



Designation: F2493 – 08

# Standard Specification for P225/60R16 97S Radial Standard Reference Test Tire<sup>1</sup>

This standard is issued under the fixed designation F2493; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

## 1. Scope

1.1 This specification covers the general requirements for the P225/60R16 97S radial standard reference test tire. The tire covered by this specification is primarily for use as a reference tire for braking traction, snow traction, and wear performance evaluations, but may also be used for other evaluations, such as pavement roughness, noise, or other tests that require a reference tire.

1.1.1 A P195/75R14 (Specification [E1136](#)) tire is another standard reference test tire that is also used for these purposes. This standard was originally published in 1986 and continues to be used.

1.2 This specification provides a 16-in. standard tire design and construction, standard dimensions, and specifies the conditions of storage.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *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:<sup>2</sup>

[D412](#) Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

[D2240](#) Test Method for Rubber Property—Durometer Hardness

[D3182](#) Practice for Rubber—Materials, Equipment, and Procedures for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee [F09](#) on Tires and is the direct responsibility of Subcommittee [F09.20](#) on Vehicular Testing.

Current edition approved May 1, 2008. Published May 2008. Originally approved in 2006. Last previous edition approved in 2006 as F2493 – 06. DOI: 10.1520/F2493-08.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[E867](#) Terminology Relating to Vehicle-Pavement Systems  
[E1136](#) Specification for P195/75R14 Radial Standard Reference Test Tire  
[F538](#) Terminology Relating to the Characteristics and Performance of Tires

## 3. Terminology

### 3.1 Definitions:

3.1.1 For definitions of terms used in this specification, refer to Terminology [F538](#).

3.1.2 *all-season tread, n*—tread design providing dry, wet, and snow traction performance for an optimized balance for year-round performance and which may meet the Rubber Manufacturers Association (RMA) definition for an M&S, M+S, M/S, MS, etc. marked tire (see RMA “Snow Tire Definitions for Passenger and Light Truck (LT) Tires”).<sup>3</sup>

3.1.3 *pavement characteristic, n*—physical feature or property of a pavement surface such as type, roughness, texture, and skid resistance. **E867**

3.1.4 *pitch, n*—unit of tread pattern elements used in various combinations to obtain optimum noise levels.

3.1.5 *standard reference test tire, SRTT, n*—tire that is used as a control tire or surface-monitoring tire (for example, Specification [E1136](#) and F2493 tires).

## 4. Design and Construction

4.1 The P225/60R16 standard reference test tire shall feature the steel-belted radial technology, and an all-season silica content tread design, see [Figs. 1 and 2](#), with technology as described in Section 3 and Sections 5-7.

4.2 The tire shall be designed to conform with the Tire and Rim Association, Inc. (TRA) standard nominal dimensions and tolerances for cross section and overall diameter found in the current TRA Yearbook.<sup>4</sup>

<sup>3</sup> Available from the Rubber Manufacturers Association, 1400 K Street, N.W. Washington, D.C. 20005.

<sup>4</sup> Available from the Tire and Rim Association, Inc., 175 Montrose West Ave., Suite 150, Copley, OH 44321.



FIG. 1 Front View of the P225/60R16 97S Radial Standard Reference Test Tire



FIG. 2 Side View of the P225/60R16 97S Radial Standard Reference Test Tire

4.3 The tire used for this specification is produced by BFGoodrich Tire Manufacturing.<sup>5</sup> The tire is stamped on the sidewall with the words: “Standard Reference Test Tire.”

**5. Materials and Manufacture**

5.1 The individual standard reference test tires shall conform to the manufacturer’s design standards.

5.2 Tread compound, fabric processing, and all the steps in tire manufacturing shall be controlled to ensure minimum variability between tires.

5.3 The standard reference test tire shall be as originally molded without any tread grinding or repairs.

5.4 Since the formulation for tread compounds are proprietary, they shall be controlled by means of their physical properties given in Table 1.

<sup>5</sup> The sole source of supply of the standard reference tire known to the committee at this time is BFGoodrich Tire Manufacturing, Opelika Plant, P.O. Box 30, Opelika, AL 36801 (attn: Development Qualification Center SRTT Manager—specify P225/60R16 97S SRTT Uniroyal Tiger Paw AWP). If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,<sup>1</sup> which you may attend.

**TABLE 1 Physical Properties of Tread Compound**

Tensile sheet cure, min at 320°F (160°C)	15.0 min
Stress at 300 % elongation, psi (MPa)	705 ± 64 psi (4.9 ± 0.4 MPa)
Tensile strength, min psi (MPa)	2250 psi (15.5 MPa)
Elongation, min %	650 % min
Durometer hardness <sup>A</sup>	64 ± 2 Type A

<sup>A</sup> Measured on tire tread.

5.5 Dimensions, weights, and permissible variations are given in Section 7.

5.6 The tire shall be of the following construction:

5.6.1 One-ply sidewall construction (polyester).

5.6.2 A three-ply tread construction (one-ply polyester and two steel belts).

5.6.3 Black sidewall.

5.6.4 Ventless tread molding.

**6. Physical Properties**

6.1 The physical properties of the tread compound are listed in Table 1.

**7. Dimensions, Weights, and Permissible Variations**

7.1 Details of dimensions are listed as follows and are shown in Fig. 3. When tolerances are not specified, tire dimensions are subject to manufacturer’s normal tolerances.

7.2 *Inflated Dimensions and Cured Cord Angles:*

7.2.1 The tread width shall be 7.22 in. (183.4 mm), and the cross-sectional tread radius shall be 24.2 ± 2.0 in. (614.7 ± 50.8 mm).

7.2.2 The tread radius is measured using the three-point drop method (see Fig. 4 for an example of how the measurement is taken).

7.2.3 The tire shall have a nominal cross-section width of 9.09 in. (231.0 mm), and a nominal outside diameter of 26.76 in. (679.0 mm) when mounted on a TRA measuring rim width (16 × 6.5 J).

7.2.4 The cured cord angles shall be 90 ± 2° for the carcass and 21.0 ± 2° for the belts.

7.3 *Ribs*—The tire shall have five ribs.

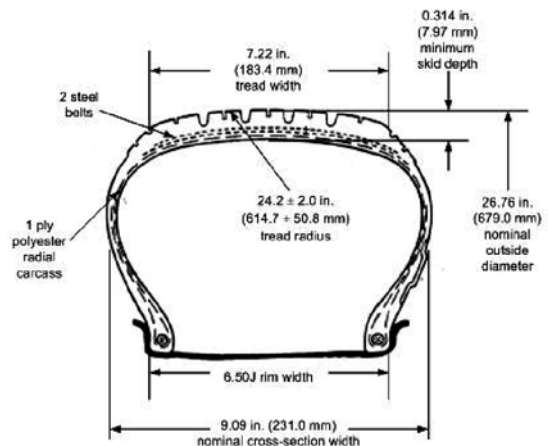


FIG. 3 Tire Cross Section