



Standard Test Method for Outdoor Evaluation of Tire Sidewall Component Cracking Resistance¹

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1. Scope

1.1 This test method covers procedures for evaluating passenger car tires for sidewall component integrity and cracking resistance, using an outdoor roadwheel.

1.2 This test method evaluates the resistance of tire sidewalls to dynamic weathering, atmospheric ozone cracking, fatigue cracking, or openings of splices within, or of junctures between sidewall components and cracking at molded sidewall elements.

1.3 This test method is useful for evaluating tire black sidewalls, white sidewalls, and coverstrips.

1.4 This test method is limited to comparative performance testing between a “control” sidewall component or assembly and one or more experimental alternatives that are built onto the same tire (“multisection”) or onto tires that are identical in all respects other than the sidewall variation.

1.5 This test method is not applicable to evaluation of sidewall resistance to abrasion, as may be experienced in severe cornering or curb scuffing.

1.6 The values stated in SI units are to be regarded as the standard.

1.7 *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.* For specific precaution statements, see 5.2.

2. Referenced Documents

2.1 ASTM Standards:

- D 518 Test Method for Rubber Deterioration—Surface Cracking²
- D 1149 Test Method for Rubber Deterioration—Surface Ozone Cracking in a Chamber²
- D 1171 Test Method for Rubber Deterioration—Surface Ozone Cracking Outdoors or Chamber (Triangular Specimens)²
- D 3395 Test Methods for Rubber Deterioration—Dynamic

¹ This practice is under the jurisdiction of ASTM Committee F09 on Tires and is the direct responsibility of Subcommittee F09.30 on Laboratory (Non-Vehicular) Testing.

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² *Annual Book of ASTM Standards*, Vol 09.01.

Ozone Cracking in a Chamber²

F 538 Terminology Relating to the Characteristics and Performance of Tires³

3. Terminology

3.1 Definitions:

3.1.1 *black sidewall, n*—a sidewall on which only black compounds comprise the outer visible surface of a tire. (F 538)

3.1.2 *clinch strip, n*—high-modulus or high-hardness compound applied between the carcass and the sidewall in the bead area to reinforce the bead. (F 538)

3.1.3 *coverstrip, n*—a thin layer of black compound which covers the unexposed white sidewall portion of a finished tire. (F 538)

3.1.4 *crazing, n*—minute, closely grouped, generally superficial cracks that usually result from light activated oxidation. (F 538)

3.1.5 *flex cracking, v*—cracking primarily caused by application of mechanical stress-strain cycling. (F 538)

3.1.6 *juncture, n*—the interface between two different tire components or different compounds within the same component. (F 538)

3.1.7 *juncture cracking, n*—a crack with opening originating at a juncture between two components. (F 538)

3.1.8 *juncture opening, n*—a separation developing in a juncture. (F 538)

3.1.9 *rim strip, n*—a layer of compound, with or without fabric reinforcement, that is applied at the bead to protect the carcass plies against damage from mounting tools and from rim chafing during service. (F 538)

3.1.10 *sidewall, n*—of a tire, that portion of a tire between the tread and the bead. (F 538)

3.1.11 *sidewall component, n*—an individual part of the sidewall construction, either a separate compound or a separately assembled piece. (F 538)

3.1.12 *sidewall rubber, n*—the exterior rubber layer of a tire that extends over the sidewall part of the carcass. (F 538)

3.1.13 *splice, n*—the joint formed either by overlapping or butting the ends of a given tire component in the course of assembling the tire. (F 538)

3.1.14 *splice crack, n*—a crack originating at a splice.

³ *Annual Book of ASTM Standards*, Vol 09.02.