



Standard Practice for Identifying Tire Tread Surface Irregular Wear Patterns Resulting from Tire Use¹

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INTRODUCTION

One of the main performance characteristics of tires is the treadlife, defined as the number of kilometres or miles to wear-out, or where the condition of the tread pattern requires the removal of the tire. Before reaching the condition called “wear-out,” intermediate conditions of treadwear are frequently encountered, both in tire testing and in normal tire use, that are characterized by complex topological tread pattern features usually called “irregular wear.” When irregular wear is present, certain other tire performance features, such as noise and handling, may fall below acceptable norms. Therefore, it is important in tire development testing and the assessment of tire use performance to be able to describe accurately the condition of the worn surface of tires.

Over the years, different descriptive names have been given to these worn tread pattern features. A standardized nomenclature system is needed to be able to identify the features that are present and describe the intensity or magnitude of these features. This practice is intended to give sufficient instructions to permit an evaluation of irregular wear. To describe adequately the features of these tread patterns, it is necessary to develop a special logical progressive sequence of definitions or descriptions.

1. Scope

1.1 This practice provides the instructions and nomenclature to evaluate the wear features of the tread pattern on a tire for some intermediate state short of total wear out.

1.2 A tire may be characterized by certain worn tread pattern conditions that are collectively referred to as “irregular wear” features. Definitions for these features are given in a special logical and conceptual sequence. First, basic tread pattern definitions are given. Then, additional tread pattern definitions directly related to the basic tread pattern definitions are given. Understanding these secondary definitions requires the knowledge of the basic definitions.

1.3 Based on the terms of this developed system of tread pattern definitions or descriptions, a set of treadwear descriptions is presented that encompasses both regular wear and irregular wear features.

1.4 This hierarchical arrangement produces the accurate and concise definitions needed to evaluate the complex irregular wear conditions of tires.

1.5 See Fig. 1 for tread pattern features or characteristics. See Fig. 2 and Fig. 3 for typical illustrations of regular or uniform and irregular treadwear features.

2. Significance and Use

2.1 This practice fulfills the need for a standardized system for identifying and describing the tread pattern features of tires that are characteristic of intermediate states of treadwear short of total wear out. This descriptive capability is especially important in testing programs devoted to the development of improved performance tires. It is also important in assessing and evaluating tires after periods of typical tire usage.

3. Elementary Features of Tire Tread Patterns

3.1 All tires contain an annular volume of rubber, the outside surface of which comes into contact with the pavement as a loaded tire rotates in vehicle use. This is defined below as a tread band. If surface voids are introduced into this tread band, the usual configuration of these voids produces a geometric pattern of remaining surface projections or elements, that is, regions of the tread band that contact the pavement, collectively called a tread pattern.

4. Tire Inspection

4.1 The tread pattern of tires for inspection and evaluation should be clean and free of debris. Tires may be inspected

¹ This practice is under the jurisdiction of ASTM Committee F09 on Tires and is the direct responsibility of Subcommittee F09.94 on Terminology.

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