



Standard Practice for Accelerated Polishing of Aggregates or Pavement Surfaces Using a Small-Wheel, Circular Track Polishing Machine¹

This standard is issued under the fixed designation E660; 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.

INTRODUCTION

The Small-Wheel Circular Track Wear and Polishing Machine² is a device developed to rate aggregates and paving mixtures on their skid resistance after exposure to wearing and polishing. It is a small-diameter, circular track machine capable of accelerated wearing and polishing of pavement specimens. Correlation and comparison can be accomplished through the use of control specimens that are tested simultaneously with regular test specimens. Track capacity is twelve individual specimens per test run.

The actual wearing and polishing for bituminous pavement specimens and exposed aggregate specimens are provided by the action of four smooth pneumatic tires to eliminate, as much as possible, the variables associated with tire tread pattern effects. The wheels are adjusted for camber and for toe-out to provide scrubbing action for polishing without the aid of water or grinding compounds.

To provide accelerated wear sufficient to remove the top textured layer from portland-cement-concrete pavement specimens and to expose the coarse aggregate, as often encountered on worn pavements, that have been in use for substantial periods of time, the wear and polish procedure can be modified by use of steel wheels having studs mounted in the periphery. The procedure for concrete specimens consists of a period of operation with four smooth pneumatic tires to polish the as-built surface, followed by a period of accelerated wear using the steel wheels to expose the coarse aggregate, followed by a final polishing cycle using the four rubber tires again to polish the exposed aggregate.

1. Scope

1.1 This practice describes a laboratory procedure for estimating the extent to which aggregates or pavement surfaces are likely to polish when subjected to traffic. Specimens to be evaluated for polishing resistance are placed in a circular track and subjected to the wearing action of four small-diameter, pneumatic tires without use of abrasive or water. Terminal polish is achieved after approximately 8 h of exposure.

¹ This practice is under the jurisdiction of ASTM Committee E17 on Vehicle - Pavement Systems and is the direct responsibility of Subcommittee E17.23 on Surface Characteristics Related to Tire Pavement Slip Resistance.

Current edition approved Sept. 1, 2015. Published December 2015. Originally approved in 1978. Last previous edition approved in 2011 as E660 – 90 (2011). DOI: 10.1520/E0660-90R15.

² Mullen, W. G., Whitfield, J. K., Gibson, D., and Matlock, T. L., "Implementation for Use of Variable Speed Friction Tester and Small Wheel Circular Track Wear and Polishing Machine," Highway Research Program Project ERSD 110-76-2, Final Report; Available from National Technical Information Service, Springfield, VA 22161.

2. Referenced Documents

2.1 *ASTM Standards*:³

- C192/C192M Practice for Making and Curing Concrete Test Specimens in the Laboratory
- D2240 Test Method for Rubber Property—Durometer Hardness
- E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods
- E274 Test Method for Skid Resistance of Paved Surfaces Using a Full-Scale Tire
- E303 Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester
- E707 Test Method for Skid Resistance Measurements Using

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.