



Standard Practice for Calculating the International Runway Friction Index¹

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1. Scope

1.1 This practice covers the calculation of the International Runway Friction Index, IRFI, from measurements obtained by local friction-measurement devices² on movement areas under winter conditions.

1.2 The IRFI is the international friction index to be used for reporting the friction characteristics of airport movement areas.

1.3 The IRFI reported by this practice is a harmonized value of the pavement friction characteristics.

1.4 The IRFI obtained by using this practice has not been extended to address the braking performance of an aircraft.

1.5 The values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information only.

1.6 *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:³

E524 Specification for Smooth Tire for Pavement Skid-Resistance Tests

E867 Terminology Relating to Vehicle-Pavement Systems

E1551 Specification for Special Purpose, Smooth-Tread Tire, Operated on Fixed Braking Slip Continuous Friction Measuring Equipment

E1844 Specification for A Size 10 × 4–5 Smooth-Tread Friction Test Tire

E1859 Test Method for Friction Coefficient Measurements

¹ This practice is under the jurisdiction of ASTM Committee E17 on Vehicle - Pavement Systems and is the direct responsibility of Subcommittee E17.21 on Field Methods for Measuring Tire Pavement Friction.

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² In Tribology, friction-measuring devices are referred to as Tribometers.

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.

Between Tire and Pavement Using a Variable Slip Technique

E1960 Practice for Calculating International Friction Index of a Pavement Surface

3. Terminology

3.1 Definitions:

3.1.1 *base surface, n*—the type of surface evaluated; there are four classes (1) bare pavement dry, (2) bare pavement wet, (3) bare compacted snow and (4) bare ice.

3.1.2 *compacted snow, n*—a compressed solid mass of snow, which is sufficiently strong to prevent a normally loaded tire operating in a rolling mode from penetrating to the pavement or breaking up the surface.

3.1.3 *device configuration, n*—a term used to designate the entire test system as used for any friction measurement; it includes type of device (force or torque measurements), tire type, size and inflation pressure, slip ratio, normal load and braking system control mode.

3.1.4 *harmonization, n*—the adjustment of the outputs of different devices used for measurement of a specific phenomenon so that all devices report the same value.

3.1.5 *ice, n*—water with or without contaminants frozen into a continuous solid body with or without cracks.

3.1.6 *IRFI reference device, n*—a particular friction measuring device selected as a benchmark or reference; it is used to calibrate any local friction device to permit master or local friction device values to be converted to IRFI values for selected base surfaces.

3.1.7 *local friction device, n*—a particular friction testing device used at a given location to measure the friction level of selected base surfaces; the friction values evaluated with this device may be harmonized to IRFI values.

3.1.8 *master friction device, n*—a particular friction measuring device selected as a secondary reference that has been calibrated with the IRFI reference device; it is used to calibrate any local friction device to permit local friction device values to be converted to IRFI values for selected base surfaces.

3.1.9 *movement area, n*—that part of the airport (aerodrome) used for take-off, landing and taxiing of aircraft, consisting of the maneuvering area and the apron(s).

3.1.10 For additional definitions, see Terminology E867.