



Standard Test Method for Permeability of Synthetic Turf Sports Field Base Stone and Surface System by Non-confined Area Flood Test Method¹

This standard is issued under the fixed designation F2898; 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.

1. Scope

1.1 This test method may be used to determine the permeability rate of synthetic turf playing field systems, playing field systems with pad or premolded drainage boards, or both, playing field systems with premolded panel base systems, porous and non porous pavement systems, or base stone systems in the field, or a combination thereof, by non-confined area flood test method. This system is suitable for use on the finish synthetic turf playing surface and on the stone base system below the playing system.

1.2 This test method is applicable for synthetic turf playing field systems and stone bases where system is designed for permeability through the synthetic turf surface and or through a base stone surface. It is also suitable for synthetic turf playing systems that are directly underlaid with resilient and nonresilient pre-molded drainage boards systems and porous pavement base systems. The method tests a larger surface area than confined ring test methods and decreases the effect lateral flow within the surface and or stone base system due to the large increase in the ratio of test surface area to the synthetic turf playing system and stone base system thickness. The method is intended to more accurately mimic natural storm flow conditions by eliminating the effect of head pressure created by the water column height which creates a pressure flow condition at the surface of the test area that does not exist naturally.

1.3 This test method is intended for finish-graded and compacted stone or finished surfaces that are installed with cross-slope gradients of less than 2.0 % or under conditions where the effect of cross-slope is mitigated by high system permeability. High sloping systems tend to have high sloping base systems which may impact results due to increases in the lateral flow within the section caused increased hydraulic energy caused by larger slopes.

1.4 This test method is not applicable for conditions or locations in-which surface flow, due to high surface cross-slope

or proximity, carries water flow from the test site to surface and subsurface drainage trenches or structures.

1.5 Further, this test method may be impacted if preformed directly after a significant rainfall event in cases where the downstream capacity of the receiving drainage system is taxed to the extent that water backs up in the downstream system.

1.6 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.

1.7 *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.*

2. Referenced Documents

2.1 ASTM Standards:²

F1551 [Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials](#)

3. Terminology

3.1 Definitions:

3.1.1 *area of test site, n*—the area of test site is the surface area in square feet of the test site area.

3.1.1.1 *Discussion*—This surface area represents an approximated and simplified shape of equal area such as a rectangle that includes the full wetted area. Small fingers of non-wetted surface within the wetted area shall be ignored in the surface approximation. It is assumed that these small fingers of non-wetted area are wetted below the surface within the test site.

3.1.2 *dry surface, n*—a dry surface after testing or saturation is defined as follows:

3.1.2.1 *dry stone base surface, n*—a surface where water is no longer visible as ponded water on or above the surface of the stone.

¹ This test method is under the jurisdiction of ASTM Committee F08 on Sports Equipment, Playing Surfaces, and Facilities and is the direct responsibility of Subcommittee F08.65 on Artificial Turf Surfaces and Systems.

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² 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.