Australian Standard®

SYNTHETIC SPORTING SURFACES

Part 1—GENERAL PRINCIPLES

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The following interests are represented on Committee PL/15:

Australian Athletic Union
Australian Particleboard Manufacturers' Association
Confederation of Australian Industry
Confederation of Australian Sport
Department of Leisure, Sport and Tourism, N.S.W.
Department of Public Works, N.S.W.
Department of Youth, Sport and Recreation, Vic.
Department of Youth, Sport and Recreation, W.A.
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Sporting surface consultants
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PREFACE

This Standard was prepared by the Association's Subcommittee PL/15/1 Sporting Surfaces, acting under the authority of the Plastics Standards Board.

In preparation of this Standard the committee took cognizance of overseas experience including *Specification for artificial sports surfaces*, Part 1—*General principles and classification*, (The Sports Council 1978); DIN 18032, Part 1: *Halls for gymnastics and games—Rules for planning and construction*; DIN 18032, Part 2: *Sports halls: Halls for gymnastics and games—Testing for force reduction on floors* and DIN 18032, Part 6: *Sports grounds: Synthetic surfacing—Requirements, rest, maintenance.* Acknowledgment is made of the assistance from these sources.

This Standard provides information on the different types of synthetic sporting surfaces and base layers available as well as methods of test to determine the suitability of surfaces for particular sports or activities. The Standard also discusses various play and durability characteristics and the effect these have on a surface.

It is intended that subsequent parts of the Standard will cover individual sports or activities and recommend limits for the relevant characteristics under considera[illegible]. Appropriate methods of test are available in AS 2983, *Test methods for synthetic sporting surfaces.*

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FOREWORD

Most traditional sports were developed for outdoor participation on natural surfaces, usually turf. Although this trend continues today, there has been a marked increase in the development and usage of synthetic sporting surfaces. This has provided numerous sports with outdoor facilities which are not adversely affected by climatic conditions. It has also provided opportunities for many traditional sports to be played indoors where the total environment can be controlled to the benefit of players, spectators, and administrators.

Utilization of synthetic sporting surfaces has promoted development of surfaces which enhance player performance, confidence and safety while preserving the playing characteristics of each sport.

Although an extensive range of synthetic sporting surfaces is available there exists a paucity of information pertaining to the suitability of these surfaces for individual sporting activities. The development of Standards detailing such information will enhance the process of selecting a synthetic surface most suited to the requirements of specific sports.

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
SYNTHETIC SPORTING SURFACES

PART 1: GENERAL PRINCIPLES

1 SCOPE. This Standard provides information on the different types of synthetic sporting surfaces and base layers for both indoor and outdoor applications. Synthetic surfaces are defined and the parameters which should be measured along with the basic safety requirements are outlined.

2 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS
1262 Code of practice for installation of wood mosaic parquet-flooring

1289 Methods of testing soils for engineering purposes

1492 Flooring milled from radiata pine

1530 Methods for fire tests on building materials, components and structures
Part 3: Test for early fire hazard properties of materials (AS 1530.3)

1745 Code of practice for outdoor weathering of plastics
Part 2: Guide for design purposes (AS 1745.2)

1782 Flooring milled from Australian-grown conifers (softwoods, excluding radiata pine and cypress pine)

1810 Flooring milled from cypress pine

1860 Code of practice for installation of particleboard flooring

1884 Floor coverings—Resilient sheet and tiles—Laying and maintenance practices

2111 Methods of test for textile floor coverings
Part 18: Method for the determination of fire propagation properties—Fire propagation of the use-surface using a small ignition source

2270 Plywood and blockboard for interior use

2271 Plywood and blockboard for exterior use

2433 Plastics—Method for exposure to ultraviolet lamps

2796 Timber—Seasoned hardwood—Milled products

2988 Methods of test for synthetic sporting surfaces

CK24 Code of practice for outdoor weathering of plastics in the Australian environment
Part 1: Commercial products (AS CK24.1)

3 DEFINITIONS. For the purpose of this Standard the definitions below apply:

3.1 Area elastic floor—'Sprung floor'—a floor which is designed to incorporate area elastic attributes. It has a stiff surface, usually constructed of timber, and may be supported by springs or timber joists, with or without resilient pads acting like springs. Such a floor is used for activities like dancing, gymnastics, and aerobics.

3.2 Area elastic surface—a surface is shown to be area elastic if, as a result of a point loaded weight falling on the surface, a deformation basin appears which is wider and much larger than the circumference of the surface which is directly under the weight.

3.3 Base layer—the layer or layers of material below the top playing surface, which is an essential component of the surface and may affect its performance considerably.

3.4 Characteristics.

3.4.1 *Durability characteristics*—those properties of the surface which determine the lasting qualities of the sporting surface both in terms of maintaining the quality of play with time and in resisting damage during use.

3.4.2 *Play characteristics*—the properties of the surface which determine the quality of activity it can support, i.e. consistently enabling the required standard of play to be maintained and providing comfort, confidence and safety to players.

3.5 Friction.

3.5.1 *Dynamic friction*—force to be overcome to maintain a constant velocity.

3.5.2 *Static friction*—force to be overcome to initiate motion.

3.6 Point elastic surface—a surface is shown to be point elastic if as a result of a point loaded weight falling on the surface the resultant deformation basin is less than 5 cm wide from the circumference of the surface directly under the weight.

3.7 Resilience—ratio of energy returned after impact to the energy expended on impact.

3.8 Rebound resilience—measure of the rebound of a ball dropped from a specific height above a surface. Rebound resilience is not constant and varies with construction, size and energy of the ball.

3.9 Resistance.

3.9.1 *Rolling resistance*—measure of the magnitude of resistance to rolling of balls or wheels on sporting surfaces.

3.9.2 *Slip resistance*—characteristic of a surface influencing player's traction.

3.10 Screed topping—a bed of concrete with a small maximum sized aggregate or other suitable material applied to a subfloor and brought to a defined level (see Figure 1).

3.11 Sporting surface.

3.11.1 *Natural sporting surface*—a surface such as natural turf used for sport. This shall be taken to