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SINGAPORE STANDARD

Specification for playground equipment for public use

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This Singapore Standard was approved by the Quality and Safety Standards Committee on behalf of the Singapore Standards Council on 30 November 2017.

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First revision, 2007
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The Quality and Safety Standards Committee, appointed by the Standards Council, consists of the following members:

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The Technical Committee on Personal Safety and Health, appointed by the Quality and Safety Standards Committee and responsible for the preparation of this standard, consists of representatives from the following organisations:

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		Mr Winston Yew	*Individual Capacity*
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		Mr Edwin Yap	*Human Factors and Ergonomics Society of Singapore*
		Mr Yusoof Aynuddin	*SETSCO Services Pte Ltd*

The Working Group on SS 457, appointed by the Technical Committee to assist in the preparation of this standard, comprises the following experts who contribute in their *individual capacity*:

		Name
Convenor	:	Mr Wong Wei Jue
Members	:	Mr Kenneth S Kutska
		Mr Jimmy Lee Shen Sun
		Mr Derek Loei
		Ms Berni Ong
		Mr Jason Sim
		Mr Soo Kwok Meng
		Dr Sun Qiqing
		Ms Alisa Wee Huili
		Ms Yoon Hui Lian
Resource Members	:	Ms Lauw Sok Chin
		Ms Nur Khairiana

The organisations in which the experts of the Working Group are involved are:

EM Services Pte Ltd
Health Promotion Board
Housing & Development Board
International Playground Safety Institute
National Parks Board
Playpoint (Singapore) Pte Ltd
Singapore Laboratory Services Pte Ltd
TÜV SÜD PSB Pte Ltd

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National Foreword

This Singapore Standard was prepared by the Working Group on Playground Equipment for Public Use, appointed by the Technical Committee on Personal Safety and Health under the direction of the Quality and Safety Standards Committee.

This standard is a revision of SS 457 : 2007, "Specification for playground equipment for public use". It is based on ASTM F1487-17, Standard Consumer Safety Performance Specification for Playground Equipment for Public Use, Copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428, USA. Reprinted by permission of ASTM International.

The modifications (national deviations) to suit local requirements and the needs of the industry are given in Annex ZA. The changes in the main text are indicated with lines along the margins.

The summary of changes from the 2007 edition is as follows:

(a) Revision to the scope and definitions;

(b) Revision to the performance requirements, requirements for access and egress, playground layout, maintenance and installation;

(c) Inclusion of embankment slides, vertical rotating equipment and horizontal rotating equipment;

(d) Additional figures.

The revision brings the standard up-to-date and makes it more comprehensive by incorporating recommendations made in the latest ASTM F 1487.

In preparing this standard, reference was made to the Code on accessibility in the built environment, Building and Construction Authority.

Acknowledgement is made for the use of information from the above publications.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions.*

2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR.*

3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

Specification for playground equipment for public use[1]

0 Introduction

0.1 This consumer safety performance specification establishes nationally recognized safety standards for public playground equipment to address injuries identified by the U.S. Consumer Product Safety Commission (CPSC).

0.2 During 1999 the CPSC estimated that about 156 000 victims were treated in U.S. hospital emergency rooms for injuries associated with public playground equipment. About three fourths of these injuries resulted from falls, primarily to the surface on which the equipment was located. Other hazard patterns involved impact by swings and other moving equipment and contact with protrusions, crush or shear points, and sharp edges. Fatalities reported to the CPSC resulted from falls; entanglement of clothing or similar items on equipment; entanglement in ropes tied to or caught on equipment; head entrapment; impact by equipment that tipped over or otherwise failed; and impact by moving swings. This consumer safety performance specification does not eliminate the need for supervision of children on public playground equipment. It is intended to minimize the likelihood of life-threatening or debilitating injuries, such as those identified by the CPSC.

0.3 There has been significant harmonization of this performance specification and CAN/CSA-Z614.

1 Scope

1.1 This consumer safety performance specification provides safety and performance standards for various types of public playground equipment. Its purpose is to reduce life-threatening and debilitating injuries.

1.2 The range of users encompassed by this consumer safety performance specification is the 5th percentile 2-year-old through the 95th percentile 12-year-old.

1.3 Home playground equipment, toys, amusement rides, sports equipment, fitness equipment intended for users over the age of 12, public use play equipment for children 6 to 24 months, and soft contained play equipment are not included in this specification.

1.4 Products or materials (site furnishings) that are installed outside the equipment use zone, such as benches, tables, independent shade structures, and borders used to contain protective surfacing, are not considered playground equipment and are not included in this specification.

1.5 This specification does not address accessibility, except as it pertains to safety issues not covered in the DOJ 2010 Standard for accessible design.

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[1] This consumer safety performance specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.29 on Playground Equipment for Public Use.

Current edition approved Feb. 15, 2017. Published April 2017. Originally approved in 1993. Last previous edition approved in 2011 as F1487 – 11. DOI: 10.1520/F1487-17.

1.6 This consumer safety performance specification includes the following sections:

Title	Section number
Scope	1
Referenced documents	2
Terminology	3
Materials and manufacture	4
General requirements	5
Performance requirements	6
Requirements for access/egress	7
Equipment	8
Playground layout	9
Accessibility	10
Installation	11
Structural integrity	12
Maintenance	13
Signs or labels, or both	14
Manufacturer identification	15
Keywords	16
Figures	Annex A1

1.6.1 The requirements in this specification are designed to mitigate the hazards typically presented by various types of equipment. New equipment may not specifically fit into the designated types listed in the specification; however, the designer or manufacturer, or both, shall use professional judgment to perform and document a hazard analysis and follow appropriate requirements to mitigate the hazards.

1.7 General measures, tolerances, and conversions:

1.7.1 The general tolerances for this specification (unless otherwise specified) are as follows:

Dimension	Tolerance
X in.	±0.5 in.
X.X in.	±0.05 in.
X.XX in.	±0.005 in.

These tolerances still apply to a dimension even when terms like greater than, less than, minimum, or maximum are used.

1.7.2 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.

1.7.3 The conversion factor from inch-pound to metric units is 1 in. = 25.4 mm, and 1 lb = 0.45359 kg.

1.7.4 See Annex A1 for figures referenced throughout this specification.

1.7.5 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.

1.8 This international standard was developed in accordance with internationally recognized principles on standardization established in the decision on principles for the development of international standards, guides and recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2 Referenced documents

2.1 ASTM standards[2]

D2240	Standard test method for rubber property – Durometer hardness
F698	Standard specification for physical information to be provided for amusement rides and devices
F846	Standard guide for testing performance of amusement rides and devices
F853	Standard practice for maintenance procedures for amusement rides and devices
F893	Standard guide for inspection of amusement rides and devices
F963	Standard consumer safety specification for toy safety
F1004	Standard consumer safety specification for expansion gates and expandable enclosures
F1148	Standard consumer safety performance specification for home playground equipment
F1159	Standard practice for design of amusement rides and devices that are outside the purview of other F24 design standards
F1292	Standard specification for impact attenuation of surfacing materials within the use zone of playground equipment
F1918	Standard safety performance specification for soft contained play equipment
F1951	Standard specification for determination of accessibility of surface systems under and around playground equipment
F2373	Standard consumer safety performance specification for public use play equipment for children 6 months through 23 months

2.2 ANSI standards[3]

ANSI Z535.1	Safety color code
ANSI Z535.2	Environmental and facility safety signs
ANSI Z535.4	Products safety—Signs and labels

[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.

[3] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

2.3 Federal standards[4]

16 CFR Part 1303	Ban of lead-containing paint and certain consumer products bearing lead-containing paint
16 CFR 1500	Hazardous Substances Act Regulations, including sections:
	1500.48 Technical requirements for determining a sharp point in toys and other articles intended for use by children under 8 years of age
	1500.49 Technical requirements for determining a sharp metal or glass edge in toys and other articles intended for use by children under 8 years of age
16 CFR Section 1501	Method for identifying toys and other articles intended for use by children under 3 years of age which present choking, aspiration or ingestion hazards because of small parts
DOJ 2010	Standard for accessible design United States Department of Justice (DOJ) 2010 Standard for accessible design: Title II (28 CFR 35) and Title III (28 CFR 36)[5]

2.4 UL standard[6]

UL 969	Standard for safety: marking and labeling systems

2.5 CSA standard[7]

CAN/CSA-Z614	Children's playspaces and equipment

[4] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

[5] Available free at: http://www.ada.gov/regs2010/ADAregs2010.htm.

[6] Available from Underwriters Laboratories (UL), Corporate Progress, 333 Pfingsten Rd., Northbrook, IL 60062.

[7] Available from Canadian Standards Association (CSA), 178 Rexdale Blvd., Toronto, ON M9W1R3, Canada.