

SMP SPECIFIERS GUIDE TO EN 1176 PARTS 1 TO 7 PLAYGROUND EQUIPMENT

INTRODUCTION:

For the last 36 years SMP have been at the forefront of Playground Equipment Safety, having played an active role in supporting the preparation of previous national standards as well as the recent European Standard EN 1176.

With this in mind, and by popular request SMP has produced this wall chart which highlights a few of the more relevant every-day aspects of the European Standard.

It is not intended as an alternative or even a substitute for EN 1176, but an easy reference, and light-hearted look at a serious subject.



PART I: GENERAL I

General safety requirements and test methods.

SCOPE:

Deals with general safety requirements for playground equipment, with additional specific safety requirements for specific pieces of equipment being additionally addressed in subsequent parts.

The standard was drafted with full recognition of the need for supervision of children of 0 to 3 years of age. For playground equipment accessible to this age group additional safety requirements are specified.

STRUCTURAL INTEGRITY:

When assessed by calculation or physical test all structural parts shall resist the worst case loading whether they be permanent or variable loads acting on the equipment.

HANDRAILS, GUARDRAILS AND BARRIERS:

Handrails:

Shall be at a height not less than 600mm and not more than 850mm above the standing surface.

Guardrails:

Only permitted for equipment 'not easily accessible' by younger children (less than 36 months) for standing surfaces of less than 2m above the playing surface. They shall be between 650mm and 850mm in height above the standing surface.

Barriers:

For equipment easily accessible to all ages (including those less than 36 months) barriers shall be provided when the standing surface is more than 600mm above the playing surface.

For equipment not easily accessible by younger children barriers shall be provided for standing surfaces greater than 2m above the playing surface.

Barriers shall be at least 700mm in height.

They shall have no intermediate horizontal or

near horizontal rails or bars that can be used as steps by children attempting to climb.



PART I: GENERAL 2

GRIP AND GRASP:

The cross section of any support designed to be gripped (holding of the hand round the entire circumference of the support) shall have a dimension between 16mm and 45mm.

The cross section of any support designed to be grasped (holding of the hand round part of the circumference of the support) shall have a width not exceeding 60mm.

For climbing ropes (fixed at both ends) the diameter shall be between 18mm and 45mm.

For swinging ropes (fixed at one end) the diameter shall be between 25mm and 45mm.



PROTECTION AGAINST ENTRAPMENT:

All test probes shall be made to the dimensions stated in Part I Annex D.

Head and Neck:



All accessible completely bound openings, with a lower edge more than 600mm above the ground or standing surface, which allow the passage of the small probe(s), shall also allow the passage of the large probe.

As a rule of thumb this will fail gaps between 89mm and 230mm for equipment accessible to children of all ages (including those less than 36 months). For equipment not easily accessible to younger children it will be gaps between 110mm (feet first) or 120mm (head first) and 230mm.

Bound openings should have no parts that converge in a downward direction at an angle of less than 60 degrees.

All partially bound and V shaped openings with an entrance 600mm or more above the ground shall be tested for neck entrapment using the specified template and test procedure.

Clothing: Slides, sliding poles and roofs shall be tested for toggle entrapment.

Whole Body: Tunnels shall be greater than the diameters specified, depending on their length and inclination.

Fingers: Openings within the 'Free Space' and holes which have a lower edge more than 1.2m above ground, which allow passage of the 8mm finger rod, must also allow the passage of the 25mm finger rod.

CERTIFICATION:

The manufacturer/Supplier shall provide information concerning the safety of the playground equipment on offer, which shall include certification of conformity with this European Standard.



PART I: GENERAL 3

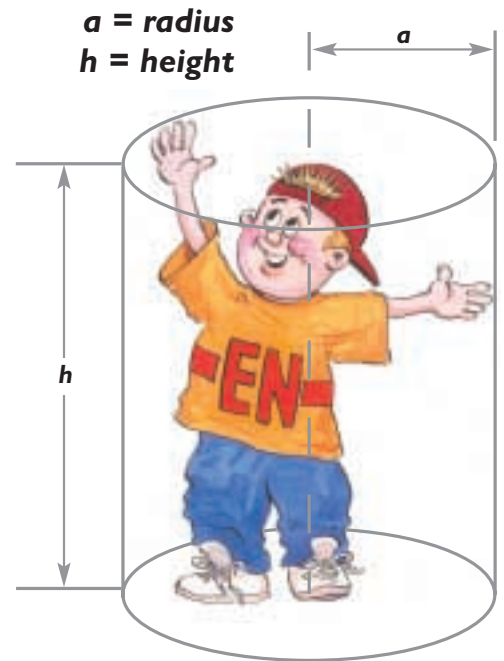
ZONES:

Minimum Space:

This is defined as the space required for the safe use of the equipment and will consist of the space occupied by the equipment, the Free Space (if any) and the Falling Space.

Free Space:

This is defined as the space in, on or around the equipment that can be occupied by a user undergoing a movement forced by the equipment (e.g. sliding, swinging, rocking). It is specified as a cylinder of diameter 1m for sitting and standing use and 500mm for hanging use. The heights of the cylinder are 1.8m for standing, 1.5m for sitting and 300mm plus the body extension below for hanging.

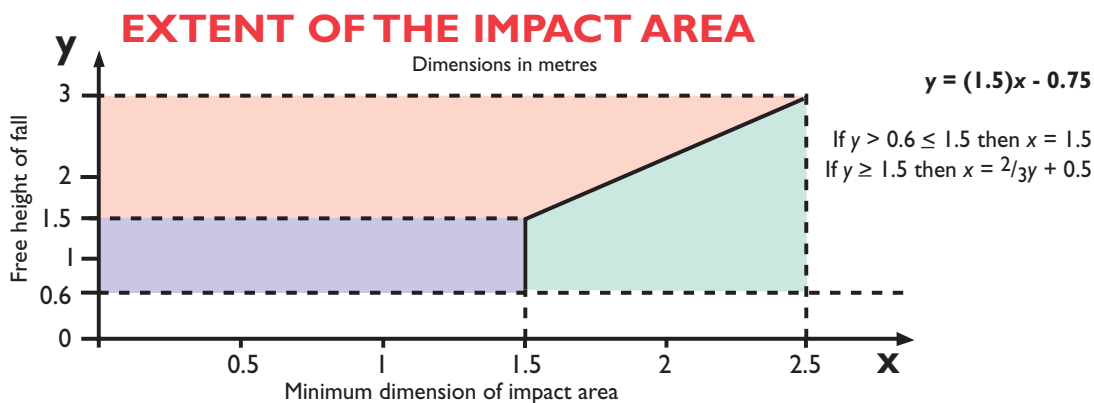


Falling Space:

This is defined as the space in, on or around the equipment that can be occupied by a user falling from an elevated part of the equipment. The extent of the Falling Space shall be 1.5m from a point directly below the elevated part of the equipment unless a greater Impact Area is required.

Impact Area:

Area required to have an Impact Absorbing Playground Surface, which has been fully tested to the requirements of EN 1177. This is required for all free heights of fall above 600mm and is generally specified by the graph below but with specific requirements for specific types of equipment.



Note: For free heights of fall less than 600mm EN 1177 recommends that the surface used should have some impact attenuating properties, but in such situations no test of its critical height is required.

Height of Fall:

The maximum Free Height of Fall permitted is 3m.

Equipment Separation:

The Falling and Free Spaces shall not contain any obstacles. In most cases there may be overlapping of Falling Spaces. There shall be no overlapping of adjacent Free Spaces or an adjacent Free Space and Falling Space.

Main travelling routes at or through the playground shall not intersect the Free Space. (e.g. a pedestrian pathway)

PART 2: SWINGS

Additional specific safety requirements and test methods for swings.

GROUND CLEARANCE:

Traditional to and fro swings with one rotational axis shall have a seat ground clearance in the rest position of 350mm unless a tyre seat is used in which case it shall be 400mm.

IMPACT TESTING OF SWING SEATS:

When seats are tested in accordance with the standard there shall be no peak values of acceleration greater than 50g and the average surface compression shall not exceed 90N/m.

MINIMUM SPACE BETWEEN THE SEATS OF SWINGS:

Shall be calculated to the standard requirements with a greater space required the higher the swing beam.

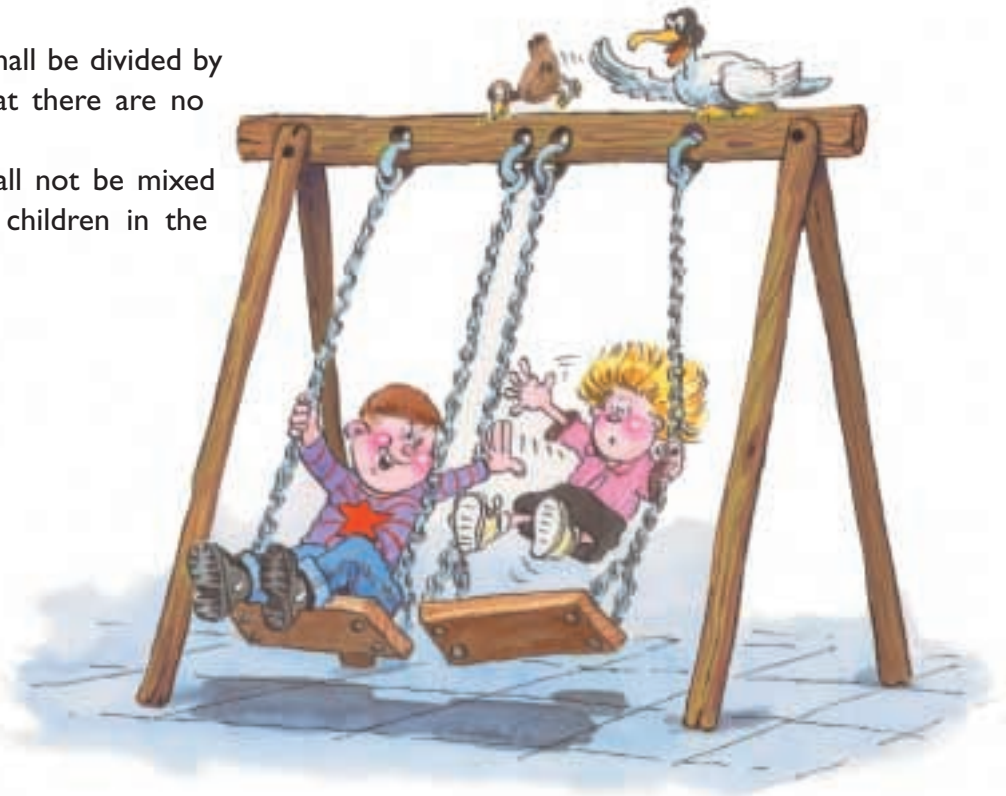
DYNAMIC LOAD TEST FOR SWINGING EQUIPMENT:

When tested in accordance with the standard the components in the suspension system shall show no cracks, permanent deformation or damage and no connection shall be loosened after 100,000 cycles of test.

FRAMEWORK:

Swings with more than two seats shall be divided by construction parts into bays so that there are no more than two seats per bay.

Cradle seats for young children shall not be mixed with flat seats designed for older children in the same swing bay.



PART 3: SLIDES

Additional specific safety requirements and test methods for slides:

STARTING SECTION:

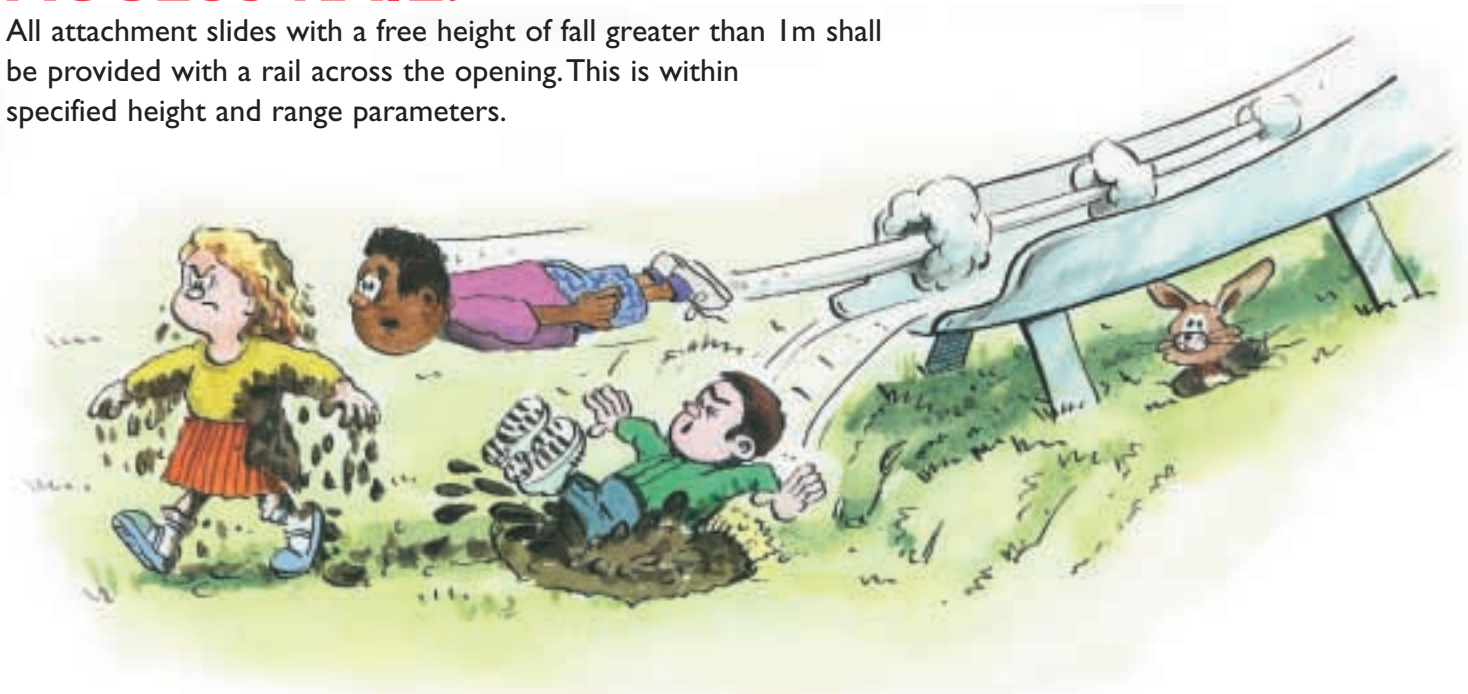
Each slide shall have a horizontal starting section of at least 350mm to allow the user to get into the sliding position. For attachment slides the platform may be used as the starting section.

SLIDE ANGLE:

The angle of inclination, to the horizontal, of the sliding section shall not exceed 60 degrees at any one point and shall not exceed an average of 40 degrees.

ACCESS RAIL:

All attachment slides with a free height of fall greater than 1m shall be provided with a rail across the opening. This is within specified height and range parameters.



RUNOUT SECTION:

Two types of runout section are permitted and both have a horizontal length, which increases with the length of the Sliding Section.

SURFACE OF THE SLIDE:

Should the slide surface be constructed from more than one piece of material it should be fabricated so as to eliminate gaps at the joints so that they inhibit the introduction of sharp objects such as razor blades and splinters. The preferred method of protecting against this problem is by manufacturing one piece slide surfaces.

PART 4: RUNWAYS

Additional specific requirements and test methods for runways:



STOPS:

When tested in accordance with the standard, the stop at the terminus of the runway shall progressively slow down the traveller until it stops, with the seat not being swung through an angle of more than 45 degrees.

SEAT IMPACT TEST:

Seats shall be tested to the same impact requirements as swing seats.

SPEED:

When tested in accordance with the standard the maximum speed of the traveller shall not exceed 7m/s.

PART 5: CAROUSELS

Additional specific requirements and test methods for carousels:

AXIS:

The axis of support of the carousel shall not be inclined at an angle of more than 5 degrees from the vertical.

SPEED OF ROTATION:

Carousels shall be designed so that the maximum speed at the periphery, under normal conditions of use, is not more than 5m/s.



GROUND CLEARANCE:

(For traditional type Carousels)

If flush with the ground there shall be no vertical gaps between the ground and the edge of the carousel greater than 6mm.

If not flush with the ground the underside of the platform shall be between 60mm and 110mm (maintained for at least 300mm towards the axis) or greater than 400mm, unless the underside is designed to specific requirements of the standard.

PART 6: ROCKING

Additional specific requirements and test methods for rocking equipment.



RESTRAINT OF MOTION:

The motion of all rocking equipment shall be progressively restrained towards the extremities of movement so that no sudden stop or sudden reversal of motion can occur. In addition to this certain types of rocking equipment (generally the higher types) also require a minimum ground clearance of 230mm.

HAND SUPPORTS:

Hand supports shall be provided for each seat/stand position that shall be firmly fixed and unable to rotate. The diameter of the supports shall be between 16mm and 45mm (for equipment accessible for use by younger children a maximum of 30mm is recommended).

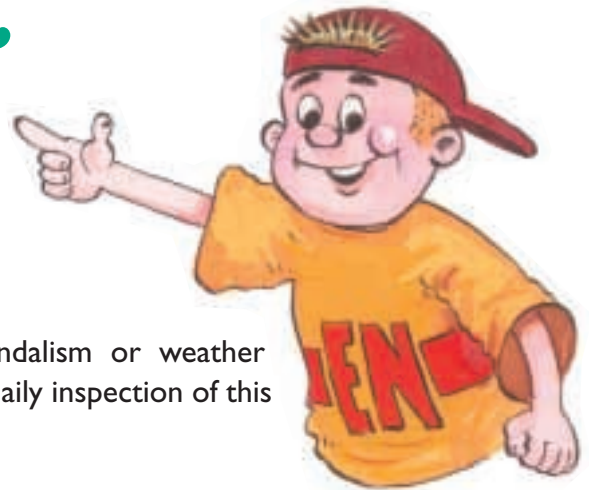
LIMITS OF MOTION:

(For traditional type seesaws)

When in motion the seat or stand position shall not exceed a free fall height of 1.5m and it shall not exceed an angle of 20 degrees. When at rest the maximum height of the seat or stand shall not exceed 1m.

PART 7: OPERATION

Guidance on installation, inspection, maintenance and operation.



INSPECTION:

Routine Visual Inspection:

This identifies obvious hazards that can result from use, vandalism or weather conditions. For playgrounds subject to heavy use or vandalism a daily inspection of this type can be necessary.

Operational inspection:

This is more detailed to check the operation and stability of the equipment, especially for any wear and should be carried out every 1 to 3 months or as indicated by the supplier of the equipment.

Annual Main Inspection:

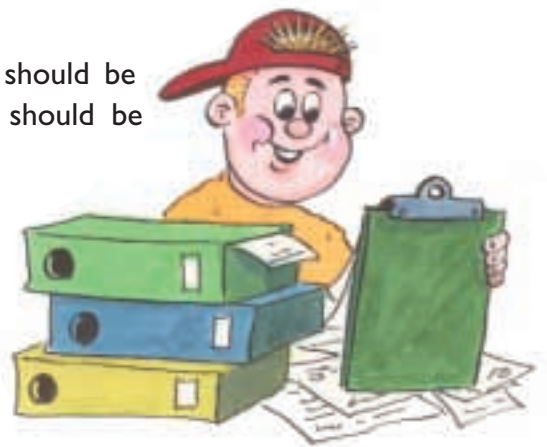
This establishes the overall level of safety of the equipment and should be carried out by a competent person at intervals not exceeding every 12 months.

MAINTENANCE:

If serious defects, which put safety at risk, are discovered they should be corrected without delay. If this is not possible, the equipment should be secured against use, e.g. immobilisation or removal.

DOCUMENTATION:

Records should be kept of all actions taken as part of the safety management of the play area which includes all the original documentation supplied with the equipment such as the **certificate of conformity to this European standard.**



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