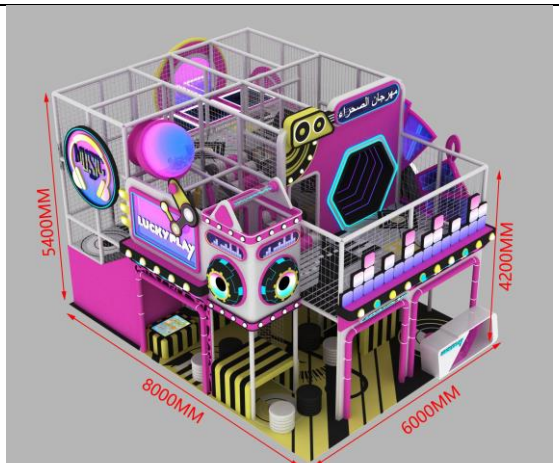
Prüfbericht-Nr.: *Test report no.*:	**CN25FPII 001**	**Auftrags-Nr.:** *Order no.*:	170411397	Seite 1 von 49 *Page 1 of 49*
Kunden-Referenz-Nr.: *Client reference no.*:	N/A	**Auftragsdatum:** *Order date:*	2015-01-14	
Auftraggeber: *Client*:	Guangzhou Leqi Amusement Equipment Co.,LTD No.33 Tai An Road, Da Long Street, Pan Yu Disct, Guangzhou City, China			
Prüfgegenstand: *Test item*:	Indoor Playground; DANCING DESERT THEME			
Bezeichnung / Typ-Nr.: *Identification / Type no.*:	DUBAI-3D			
Auftrags-Inhalt: *Order content*:	Drawing review			
Prüfgrundlage: *Test specification*:	EN 1176-1:2017+A1:2023 Playground equipment and surfacing - Part 1: General safety requirements and test methods Drawing review, based on applicable clauses in standard. Details refer to following pages.			
Wareneingangsdatum: *Date of sample receipt*:	Drawing review			
Prüfmuster-Nr.: *Test sample no:*	Drawing review			
Prüfzeitraum: *Testing period*:	2025-02-11 - 2025-03-14			
Ort der Prüfung: *Place of testing*:	Drawing review			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Guangdong) Ltd.			
Prüfergebnis*: *Test result**:	Pass			



geprüft von: tested by:	Charles Xue	**genehmigt von:** *authorized by*:	Jason Ding
Datum: *Date:* 2025-03-18		**Ausstellungsdatum:** *Issue date:* 2025-03-18	
Stellung / Position:	Sachverständige(r)/Expert	**Stellung** / Position:	Sachverständige(r)/Expert

Sonstiges / *Other*: N/A

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery*:	Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*P(ass) = passed a.m. test specification(s)*	*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Anmerkungen
Remarks

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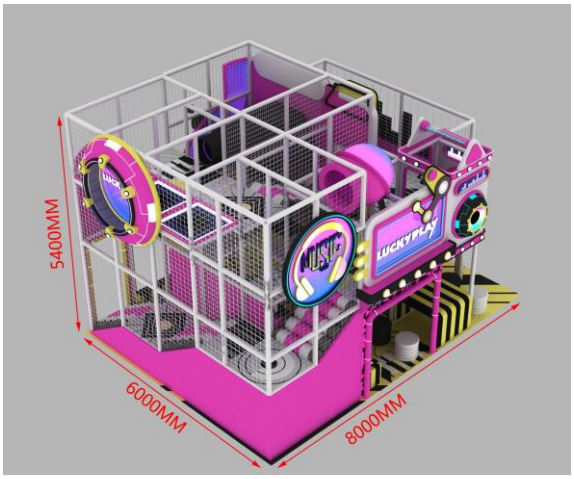
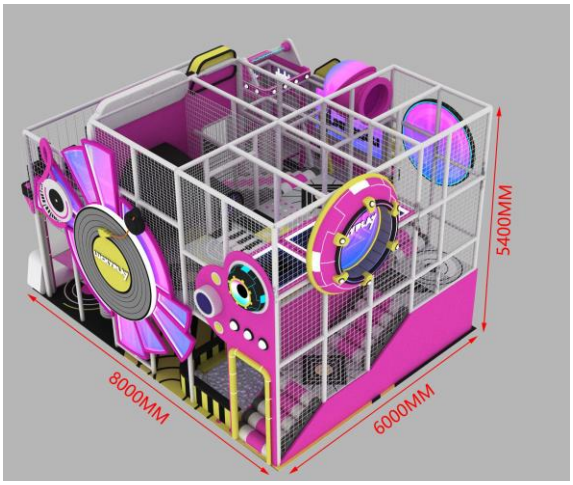
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. *The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.*

Prüfbericht-Nr.: CN25FPII 001
Test report no.:

Absatz *Clause*	Anforderungen - Prüfungen / *Requirements - Tests*	Messergebnisse – Bemerkungen/ *Measuring results - Remarks*	Ergebnis *Result*

1	**Produktdetails** *Product details*	Playground Equipment
2	**Maße / Gewicht** *Dimensions / Weight*	Refer to construction drawings
3	**Bedienelemente** *Operating elements*	N/A
4	**Ausstattung / Zubehör** *Equipment / Accessories*	N/A
5	**Verwendete Materialien** *Used materials*	Metal , Plastic.
6	**Sonstiges** *Other*	Test sample(s), as well sample information, description, product details and intended usage was provided by customer.
7	**Prüfmusterbereitstellung**: *Test sample obtaining*	☐ Sending by customer ☐ Sampling by TÜV Rheinland Group ☐ others: tested onsite





N/A

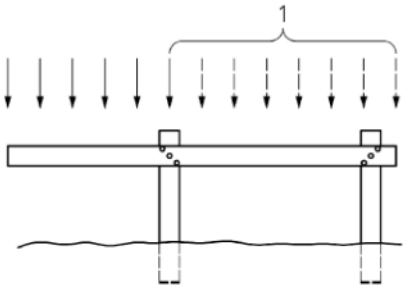
N/A

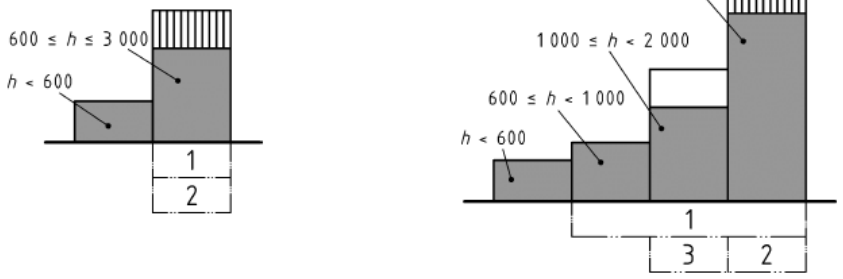
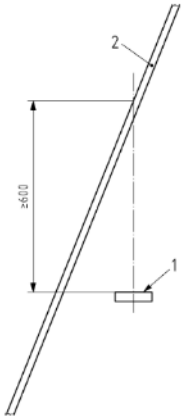
Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
EN 1176-1:2017+A1:2023 Playground equipment and surfacing - Part 1: General safety requirements and test methods			
1	**Scope**		
2	**Normative references**		
3	**Terms and definitions**		
4	**Safety requirements**		
4.1	**Materials**		
4.1.1	**General** Materials shall conform to 4.1.2 to 4.1.6. Materials shall be selected and protected such that the structural integrity of the equipment or impact attenuating surfacing manufactured from them is not affected before the next relevant inspection and maintenance. NOTE EN 1176-7 gives recommendations on inspections and maintenance. The provisions relating to certain materials in this standard do not imply that other equivalent materials are unsuitable in the manufacture of playground equipment. The selection of materials and their use should be in accordance with appropriate European Standards. Special attention should be given to surface coatings to avoid potential toxic hazards. The choice of materials should be appropriate where extreme climatic or atmospheric conditions are to be expected. Care should be taken where direct skin contact is to be expected. In the choice of a material or substance for playground equipment or impact attenuating surfacing, consideration should be given to the eventual disposal of the material or substance having regard to any possible environmental toxic hazard.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
4.1.2	**Flammability** To avoid the risk of fire and associated hazards, materials known to produce surface flash shall not be used. Particular attention should be given to newly developed products whose properties might not be fully known.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	NOTE 1 Requirements for adequate exits to ensure escape in cases of fire are given in 4.2.3. NOTE 2 Attention is drawn to national and local building regulations regarding flammability for equipment installed both indoors and outdoors.		
4.1.3	**Timber and associated products** Timber parts shall be designed in such a way that precipitation can drain off freely and water accumulation shall be avoided. In cases of ground contact, one or more of the following methods shall be used: a) use of timber species with sufficient natural resistance in accordance with classes 1 and 2 of the natural resistance classification given in EN 350:2016, 5.2; b) construction methods, e.g. post shoe; c) use of timber treated with wood preservatives in accordance with EN 351-1:2007, Figure A.1, and in accordance with EN 335, use class 4. NOTE It is advised to also consider other factors which can be unsuitable, such as splintering, poisoning etc. All components made of timber and associated products, other than those species conforming to a), that affect the stability of the structure and are in constant contact with the ground shall be treated in accordance with c). When selecting metal fastenings, consideration should be given to the species of timber and chemical treatments used as some will accelerate corrosion of metals if there is contact between them. Plywood shall be in accordance with EN 636 and shall be weatherproofed.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
4.1.4	**Metals** Metal parts should be protected against atmospheric conditions and cathodic corrosion. Metals that produce toxic oxides that scale or flake shall be protected by a non-toxic coating.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
4.1.5	**Synthetics**		P ☐ F ☐

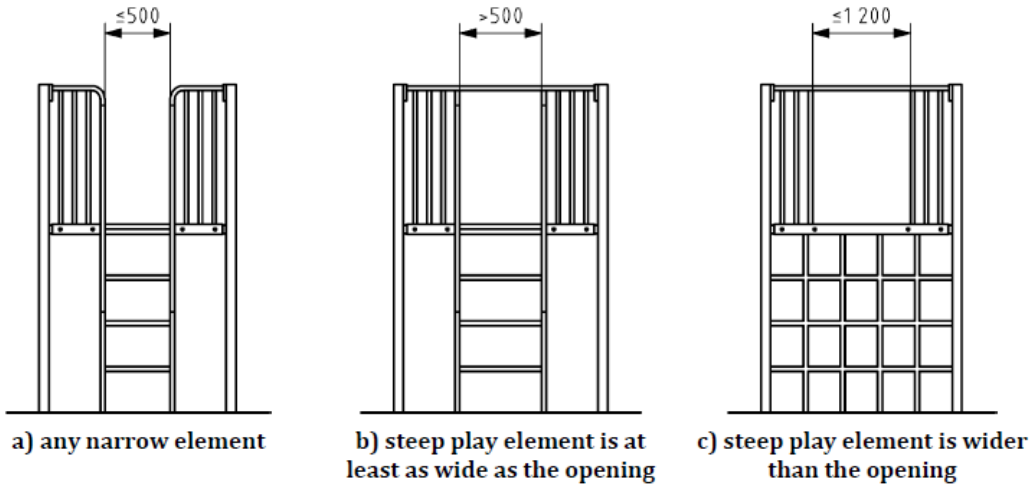
Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	If, during maintenance, it is difficult to determine at what point material becomes brittle, manufacturers shall give an indication of the time period after which the part or equipment or impact attenuating surfacing should be replaced. It should be possible for the operator of the playground to visually identify excessive wear of the gelcoat of GRP (glass-reinforced plastics) products intended for sliding before the user becomes exposed to the glass fibres. NOTE This can be achieved for example by the use of different coloured layers in the sliding surface. Consideration should also be given to degradation of structural components or impact attenuating surfacing through ultraviolet influences.		N/A ☐ N/T ☒
4.1.6	**Dangerous substances** Dangerous substances shall not be used in playground equipment or impact attenuating surfacing in such a way that they can cause adverse health effects to the user of the equipment. NOTE Attention is drawn to the provisions of the REACH Regulation (EC) 1907/2006 and its successive modifications. Restricted materials include, but are not limited to, asbestos, lead, formaldehyde, coal tar oils, carbolineums, polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAH compounds).		P ☐ F ☐ N/A ☐ N/T ☒
4.2	**Design and manufacture**		
4.2.1	**General** Equipment where the primary play function is augmented by a secondary motion, e.g. rocking and/or rotating, shall conform to the additional parts of EN 1176 relating to both play functions, as appropriate, unless the equipment is specifically covered in just one of the additional parts of EN 1176. The dimensions and degree of difficulty of the equipment should be suitable for the intended user group. The equipment should be designed so that the risk involved in play is apparent and foreseeable by the child. NOTE For additional safety of equipment that is easily accessible, specific requirements have been included for the following: — protection against falling: a) guardrails (4.2.4.3); b) barriers (4.2.4.4); — steep elements (4.2.9.4); — easily accessible playground equipment (4.2.9.5). Except when intended for water play, all parts of	The equipment suitable for the intended user group. Dimensions and degree of difficulty are suitable for user group.	P ☒ F ☐ N/A ☐ N/T ☐

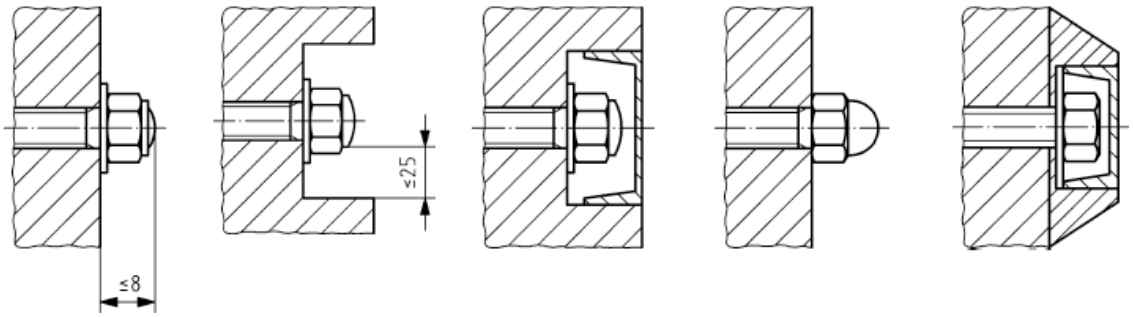
Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	playground equipment should be designed so that they do not accumulate water e.g. space beneath bouncing facility or carousel flush with the ground.	Device is not intended for water play.	
4.2.2	**Structural integrity** For playground equipment, the structural integrity for the worst case of the intended combinations shall be proved. Structural integrity, including stability of the equipment shall be assessed by one of the following: a) calculation, in accordance with Annexes A and B; b) physical testing, in accordance with Annex C; or c) a combination of a) and b) When calculations are carried out in accordance with Annex B no limit states shall be exceeded at combinations of loads as given in B.2. When tested in accordance with Annex C, the equipment shall not show any cracks, damage or excessive permanent deformation (see C.1.2). Each structure shall resist both the permanent and variable loads acting on equipment and parts of equipment as described in Annex C. When playground equipment relies on one post for its stability, the construction should be carried out in order to: — minimize rotting or corrosion in parts relevant for stability; — allow for controlling degradation and the need for decommission; — be used without collapse within the foreseen inspection period when maintained correctly. NOTE 1 No allowance for accidental loads, i.e. loads produced by fire, collision by vehicles or earthquake, need to be made for playground equipment. NOTE 2 The loads associated with fatigue are in general much smaller than the loads in combination with the appropriate load factors when calculated in accordance with B.2. Therefore, playground equipment in general need not be verified for fatigue. NOTE 3 For one post equipment at installation stage, it is advised to consider access to foundations to control rotting or degradation; the choice of impact attenuating surfacing material can have implications on inspections to foundations.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Structural parts shall resist the worst case loading condition. NOTE 4 To achieve this, it might be necessary to remove that part of the user load causing favourable effects, as shown in Figure 7.		
	 **Key** 1 remove this part of the load because of favourable effects **Figure 7 — Example of removal of that part of the user load which causes a favourable effect**		
4.2.3	**Accessibility for adults** Playground equipment shall be designed to ensure that adults are able to gain access to assist children within the equipment. Enclosed parts of the equipment such as tunnels and playhouses, with an internal distance greater than 2 000 mm from an entry point shall have at least two access openings that are independent of one another and situated on different sides of the equipment. These openings shall not be capable of being locked and shall be accessible without any additional aids (e.g. a ladder that is not an integral part of the equipment). These access openings shall have no dimension less than 500 mm. Because of the risk of fire, these two openings shall allow the user to leave the equipment by different routes.	Adults are able to gain access to the device.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.4	**Protection against falling**		
4.2.4.1	**General** Different types of protection against falling from elevated platforms are required. The type of protection required will depend on the free height of fall and on the type of equipment, whether it is easily accessible or not (see 4.2.4.3 and 4.2.4.4). See Figure 8 and Annex F. When installed on ramps or stairs, handrails, guardrails or barriers shall commence at the lowest position on the ramp or stairs.		P ☒ F ☐ N/A ☐ N/T ☐

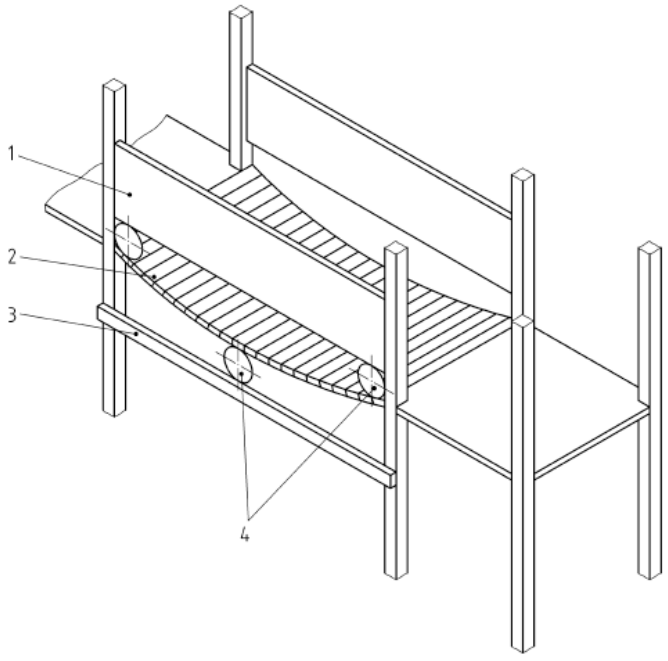
Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Dimensions in millimetres  **a) Protection against falling for easily accessible equipment** **b) Protection against falling for not easily accessible equipment** **Key** 1 impact attenuating surfacing in accordance with 4.2.8.5 2 barriers required 3 guardrail required **Figure 8 — General protection against falling where there is no forced movement**		
4.2.4.2	**Handrails** Handrails shall be not less than 600 mm and not more than 850 mm above the foot position (see Figure 9). As a minimum, handrails shall conform to the requirements for grasp (see 4.2.4.7).		P ☐ F ☐ N/A ☒ N/T ☐
	Dimensions in millimetres  **Key** 1 foot position 2 handrail **Figure 9 — Guidance on measurement of height of handrail above foot position**		
4.2.4.3	**Guardrails** For equipment other than that which is easily accessible, guardrails shall be provided when the platform is 1 000 mm to 2 000 mm above the playing surface (see Figure	No guardrail used.	P ☒ F ☐ N/A ☐ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	8b)). The height to the top of the guardrail shall be not less than 600 mm and not more than 850 mm measured from the surface of the platform, stairs or ramp. Guardrails shall completely surround the platform except for entrance and exit openings necessary for each play element. The width of entrance and exit openings in guardrails, with the exception of stairs, ramps and bridges, shall have a maximum clear opening of 500 mm, when measured horizontally at a position, with a height between 600 mm to 850 mm from the platform. For stairs, ramps and bridges the width of the exit opening in the guardrail shall be no greater than the width of these elements.		
4.2.4.4	**Barriers** Except for entrance and exit openings necessary for each play element, barriers shall completely surround the platform. The width of entrance and exit openings in barriers shall have a clear opening of 500 mm maximum, when measured horizontally at any point (see Figure 10a)), unless a guardrail is provided across the opening (see Figure 10b) and Figure 10c)). For stairs, ramps, bridges, etc. that have additional barriers as part of their structure, the width of the exit opening in the barrier shall be no greater than the width of these elements. There shall be no intermediate horizontal or near horizontal rails or bars that can be used as steps by children attempting to climb. The design of the top of the barriers should not encourage children to stand or sit on them, nor should any infilling encourage climbing. Openings between the platform surface and the lower edge of the barrier and between any infilling elements shall not allow passage of the probe C. For easily accessible equipment, barriers shall be provided when the platform is more than 600 mm above the playing surface (see Figure 8a)). For equipment other than easily accessible, barriers shall be provided when the platform is more than 2 000 mm above the playing surface (see Figure 8b)). The height to the top of the barrier shall be at least 700 mm measured from the surface of the platform, stairs or ramp. Openings in the barrier of easily accessible equipment/parts of equipment that give access to steep play elements shall conform to the requirements of	No Barriers used.	P ☐ F ☐ N/A ☒ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	4.2.9.4. For all other equipment, openings in the barrier provided with a guardrail, which give access to steep play elements, shall not be greater than 1 200 mm (see Figure 10c)).		
	Dimensions in millimetres  **Figure 10 — Entrance and exit openings in barriers for steep play elements**		
4.2.4.5	**Strength requirements** Barriers and guardrails shall conform to 4.2.2.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
4.2.4.6	**Grip requirements** The cross-section of any support designed to be gripped for support of full body weight (see 3.16 and Figure 5) shall have a dimension of not less than 16 mm or more than 45 mm in any direction, when measured across its centre.		P ☒ F ☐ N/A ☐ N/T ☐
4.2.4.7	**Grasp requirements** The cross-section of any support designed to be grasped (see 3.17 and Figure 6) shall have a width not exceeding 60 mm.	Comply.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.5	**Finish of equipment** Wooden equipment shall be made of wood with a low susceptibility to splintering. The surface finish of equipment made of other materials (e.g. glass fibre) shall be non-splintering. There shall be no protruding nails, projecting wire rope terminations or pointed or sharp-edged components.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Rough surfaces should not present any risk of injury. Protruding bolt threads within any accessible part of the equipment shall be permanently covered, e.g. dome headed nuts. Nuts and bolt heads that project less than 8 mm shall be free from burrs. NOTE 1 Figure 11 shows examples of protection for nuts and bolts. Corners, edges and projecting parts within the space occupied by the user that protrude more than 8 mm, and which are not shielded by adjacent areas that are not more than 25 mm from the end of the projecting part, shall be rounded off. The minimum radius of the curve shall be 3 mm. NOTE 2 This requirement is intended only to prevent injuries caused by unintended contact with components. Corners, edges and projections with a radius less than 3 mm may be in other accessible parts of the equipment only if they are not sharp.		
	Dimensions in millimetres  **Figure 11 — Examples of protection for nuts and bolts**		
4.2.6	**Moving parts** There shall be no crushing points or shearing points between moving and/or stationary parts of the equipment, in accordance with 4.2.7. Parts from which a high impact force can emanate should have an attenuating construction. If moving parts of the equipment can endanger the body, there shall be a ground clearance of at least 400 mm.		P ☒ F ☐ N/A ☐ N/T ☐
4.2.7	**Protection against entrapment**		
4.2.7.1	**General** When choosing materials, the manufacturer should take		P ☒ F ☐ N/A ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	into account the entrapment hazards that can occur through distortion of materials during use. NOTE 1 Test methods for entrapment are given in Annex D. NOTE 2 Possible entrapment situations are illustrated in Annex E. Openings shall have no parts that converge in the downward direction at an angle of less than 60° taking into consideration the following conditions (4.2.7.2).		N/T ☐
4.2.7.2	**Entrapment of the head and neck** Equipment shall be constructed so that any openings do not create head and neck entrapment hazards either by head first or feet first passage. Hazardous situations in which this type of entrapment can be encountered include the following: — completely bound openings through which a user can slide feet first or head first; — partially bound or V-shaped openings; — other openings (e.g. shearing or moving openings). **a) Completely bound openings:** Accessible completely bound openings with a lower edge more than 600 mm above the playing surface (see 3.5) shall be tested in accordance with D.2.1. Probes C or E shall not pass through any opening unless it also allows the passage of the large head probe D. NOTE 1 Probe C represents a 'feet first' passage to an opening and probe E represents a 'head first' passage. **b) Partially bound and V-shaped openings:** Partially bound and V-shaped openings with an entrance at 600 mm or more above the ground shall be constructed so that either: 1) opening is not accessible when tested in accordance with D.2.2; or 2) if accessible at a position of 600 mm or more above ground when tested in accordance with D.2.2, depending on the angular orientation range of the opening (see Figure D.4), shall conform to the following: — Range 1: (template centre line ± 45° from vertical);	Drawing review, dimension checked.	P ☒ F ☐ N/A ☐ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	when the template apex contacts the base of the opening, the depth of the opening shall be less than the length of the template to the underside of the shoulder section. — Range 2: (template centre line from horizontal to + 45°); when the template apex contacts the base of the opening, the depth of the opening shall be less than the 'A' portion of the template. If the depth of the opening is greater than the 'A' portion of the template all parts of the opening above the 'A' portion shall also allow insertion of the shoulder section of the template or probe D. — Range 3: No template test requirements. **c) Other openings (e.g. shearing or moving openings):** Non-rigid members (for example ropes) shall not overlap if, by doing so, they create openings that do not conform to the requirements for completely bound openings. Openings between the flexible parts of suspended bridges and any rigid side members shall be not less than 230 mm in diameter under the worst case condition of loading (see 4.2.2). Both loaded and unloaded situations shall be considered. NOTE 2 This requirement relates to the potential change in dimensions as a result of the stretching of bridge flexible supports (e.g. wire) over time. A typical suspended bridge is illustrated in Figure 12.		
			

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Key 1 rigid side members 2 suspended bridge 3 rigid side members 4 diameter 230 mm minimum **Figure 12 — Suspended bridge**		
4.2.7.3	**Entrapment of clothing/hair** Equipment should be constructed so that hazardous situations including the following, in which clothing entrapment can be encountered, are not created: a) gaps or V-shaped openings in which a part of clothing can become trapped while or immediately before the user is undergoing a forced movement; b) protrusions; and c) spindles/rotating parts. NOTE 1 The toggle test (see D.3) is restricted to the free space as practical experience has shown that natural materials and connections between different parts can vary over time. The definition of free space (see 3.5) does not include the three-dimensional area in which the falling movement takes place. Special consideration should be given when using elements of circular cross-section, e.g. round tubes or poles, to avoid clothing entanglement within the falling space. NOTE 2 This can be achieved by use of spacers or similar devices. Slides and fireman's poles shall be constructed so that openings located within the free space do not trap the toggle when tested in accordance with D.3. Roofs shall be constructed so that they do not trap the toggle when tested in accordance with D.3. Spindles and rotating parts shall be constructed so as to prevent entanglement of clothing or hair. NOTE 3 This can be achieved by use of suitable covering or shields.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
4.2.7.4	**Entrapment of the whole body** Equipment should be constructed so that the following hazardous situations, which might cause entrapment, are not created: a) tunnels into which children can crawl with their whole body; and b) suspended parts which are heavy or have rigid suspension.	Drawing review, dimension checked.	P ☒ F ☐ N/A ☐ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Tunnels shall have a maximum length of 10 000 mm and conform to the requirements given in Table 1.		

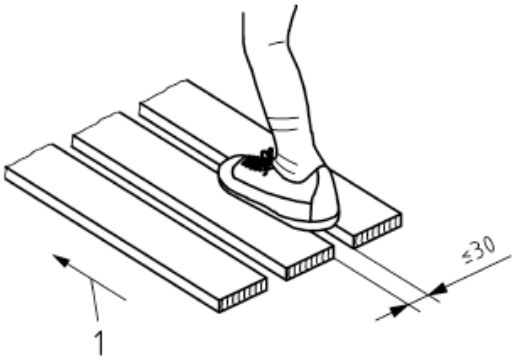
Table 1 — Requirements for tunnels

Dimensions in millimetres

Requirements	Open one end	Open both ends			
Inclination	≤ 5° and upwards only when entering	≤ 15°			> 15°
Minimum internal dimension [a]	≥ 750	≥ 400	≥ 500	≥ 750	≥ 750
Length	≤ 2 000	≤ 1 000	≤ 2 000	≤ 10 000	≤ 10 000
Other requirements	None	None	None	None	Provision for climbing e.g. steps or handles
NOTE For tunnel slides, see EN 1176–3.					
[a] Measured at the narrowest point.					

4.2.7.5	**Entrapment of the foot or leg** Equipment should be constructed so that the following hazardous situations, which might cause entrapment, are not created: a) completely bound rigid openings in surfaces on which children can run or climb; and b) footholds, handholds, etc. extending from these surfaces. NOTE In the case of b) the entrapped foot or ankle can be severely injured if the user falls.	Drawing review, dimension checked.	P ☒ F ☐ N/A ☐ N/T ☐

Dimensions in millimetres



Key
1 direction of travel

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Figure 13 — Measurement of gaps limited to 30 mm		
	Surfaces intended for running/walking shall not contain gaps likely to cause foot or leg entrapment. Gaps in the main direction of travel shall not be greater than 30 mm when measured across the direction of travel (see Figure 13). This requirement does not apply to surfaces inclined more than 38° from the horizontal.		P ☒ F ☐ N/A ☐ N/T ☐
4.2.7.6	**Entrapment of fingers** Equipment should be constructed so that the following hazardous situations, which may cause entrapment, are not created: a) gaps in which fingers can be trapped whilst the remainder of the body is moving or continues in forced movement, for example sliding, swinging; and b) variable gaps(excluding chains). Openings within the free space, where the user is subjected to forced movement, and/or holes which have a lower edge more than 1 000 mm above the potential impact area, when tested in accordance with D.4, shall conform to one of the following requirements: NOTE 1 Openings include tubes and pipes. c) the 8 mm finger rod (see Figure D.10a)) shall not pass through the minimum cross-section of the opening and the profile of the opening shall be such that the rod cannot be locked in any position when set in motion as given in D.4.2; or d) if the 8 mm finger rod passes through the opening, the 25 mm finger rod (see Figure D.10b)) shall also pass through the opening, provided that the opening does not permit access to another finger entrapment site. NOTE 2 Only to be used where there is a potential fall to an impact area below. See also adjacent platforms (4.2.8.5.4). NOTE 3 The test process D.4.2 for finger entrapment will only be conducted with the presence of free space and/or falling space. The ends of tubes and pipes shall be closed off to prevent the risk of finger entrapment. The closures shall not be removable without using tools.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Gaps whose dimensions change during use of the equipment shall have a minimum dimension in any position of 12 mm. Splits in single pieces of wood shall not be considered as finger entrapment where the gap diminishes towards the centre of the wooden part.		
4.2.8	**Protection against injuries during movement and falling**		
4.2.8.1	**Determination of free height of fall** Unless stated otherwise, determination of free height of fall shall be as given in Table 2. In determining the free height of fall, the possible movements of the equipment and of the user shall be taken into account. In general, this means that the maximum movement of the equipment shall be taken. In the case of roofs, or other features not intended for play, it is not required for them to be included in the free height of fall where access has not been encouraged. EXAMPLE Some examples of features that could encourage access are: — play feature, which can be accessed from the roof; — hand and foot holds for climbing; — arm or leg reach distance; — inclination of the roof; — roughness of the roof surface. The free height of fall (h) shall not exceed 3 000 mm (see Figure 14). For the determination of free height of fall, see Table 2.		P ☒ F ☐ N/A ☐ N/T ☐

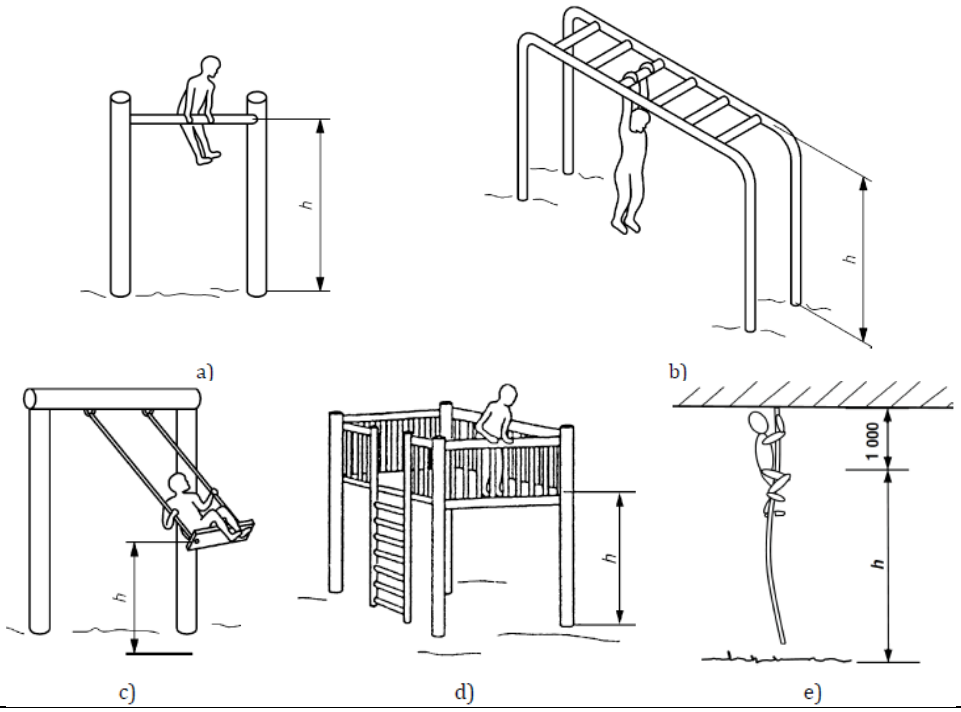
Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*

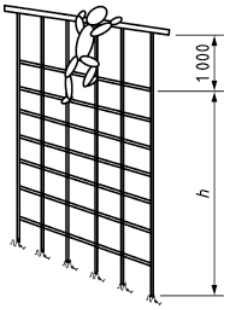
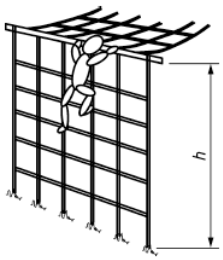
Table 2 — Free height of fall for different types of use

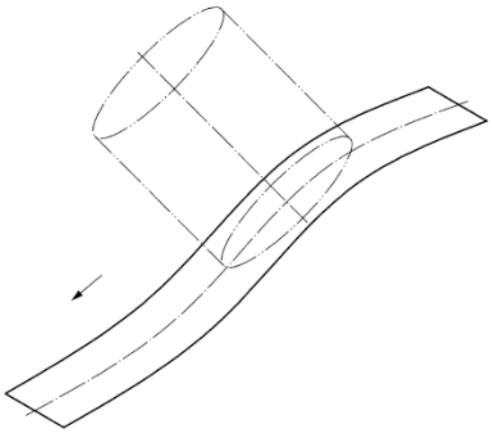
Type of use	Vertical distance
Standing	From foot support to surface below
Sitting	From seat to surface below
Hanging [a] (When full body support is provided by the hands only and the whole body can be lifted up to the hand support)	From hand support height to surface below
Climbing [a] (When body support is a combination of feet/legs and hands, e.g. climbing ropes or sliding/climbing poles)	Maximum hand support: 4 000 mm to the surface below (free height of fall measured from maximum hand support minus 1 000 mm to the surface below)
Bouncing	From suspension bed to the lowest point of falling space plus 900 mm

[a] Such equipment constructed for use as 'climbing' or 'hanging' shall not encourage access to positions for full body support with a free height of fall of more than 3 000 mm e.g. horizontal net (climbing), horizontal ladder intended for arm walking (hanging).

Dimensions in millimetres

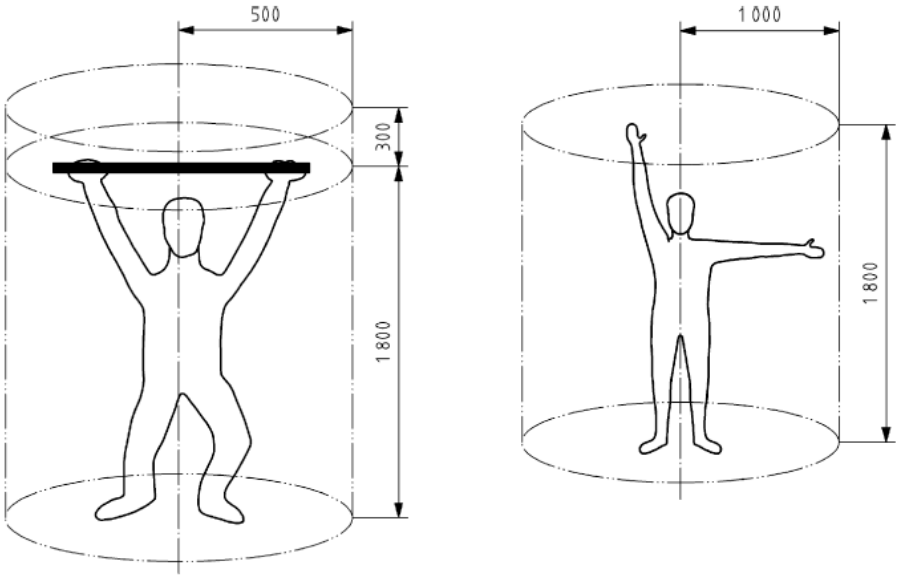


Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	 f)  g) **Key** *h* free height of fall **Figure 14 — Examples showing free height of fall**		
4.2.8.2	**Determination of spaces and areas**		
4.2.8.2.1	**General** The requirements for falling space and impact area within this standard are intended to offer some protection to users during the first impact of a potential fall. These spaces and areas will also afford some protection to other users who might be circulating around the equipment items, but these requirements should be considered in addition to this standard as they are likely to be site specific and may be subject to national control. In particular the attention of the play area designer is directed to possible hazards associated with the close proximity of play structures intended for users of greatly different age groups and those in highly populated play areas such as those found in some schools. Care should be taken with seated dynamic equipment with significant motion, e.g. swings and certain types of rocking equipment, to discourage users of the surrounding play area from unintentionally coming into contact with the equipment. This can be achieved, for example, by placing the equipment at the perimeter of the play area.	Drawing reviewed.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.8.2.2	**Minimum space** The minimum space shall consist of the following: a) space occupied by the equipment; b) free space, if any; and c) falling space.		P ☐ F ☐ N/A ☒ N/T ☐
4.2.8.2.3	**Free space**		P ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	The free space is a series of cylindrical spaces representing the user (see Figure 15), originating from and perpendicular to the body bearing surface, along the forced path of the user. The cylindrical space is shown in Figure 16 and its dimensions are given in Table 3. In determining the free space, the possible movements of the equipment and the user shall be taken into account. Fireman's poles that are accessed via a platform or other starting point shall have a clearance of at least 350 mm from the pole to the edge of the adjacent structure. NOTE 1 This is to allow safe grabbing of the pole while reducing the risk of head impact on the adjacent structure.	Drawing reviewed.	F ☐ N/A ☐ N/T ☐
	 **Figure 15 — Determination of the free space; example of a slide**		

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*

Dimensions in millimetres



a) Hanging user b) Standing user

Figure 16 — Cylindrical space

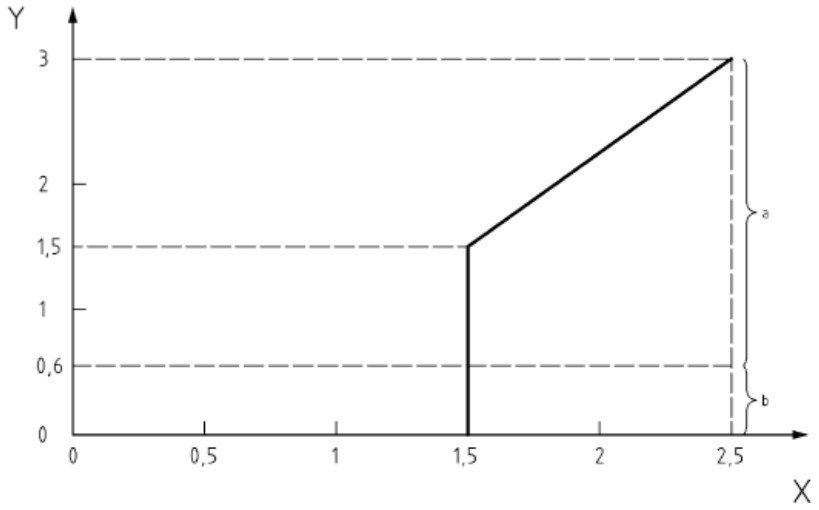
Table 3 — Dimensions of the cylinder for the determination of the free space

Dimensions in millimetres

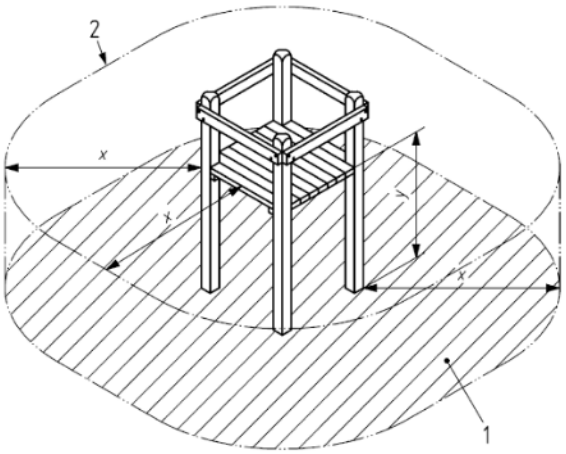
Type of use	Radius	Height
Standing	1 000	1 800
Sitting	1 000	1 500
Hanging	500	300 above and 1 800 below hanging grip position
NOTE In case of hanging, h = 300 mm because of the possibility that the users pull themselves up [see Figure 16a)].		

NOTE 2 In certain cases, the dimensions of the free space can be altered. In some cases, these will be given in the parts of this standard covering individual types of equipment.

4.2.8.2.4	**Extent of the impact area** Dimensions of the impact area are shown in Figure 17. In certain cases, such as a carousel giving the user a horizontal speed, the impact area may be extended to provide adequate protection against falling injuries. In determining the impact area, the possible movements of the equipment and the user shall be taken into account. NOTE These cases are also covered in the parts of this standard covering individual types of equipment	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒

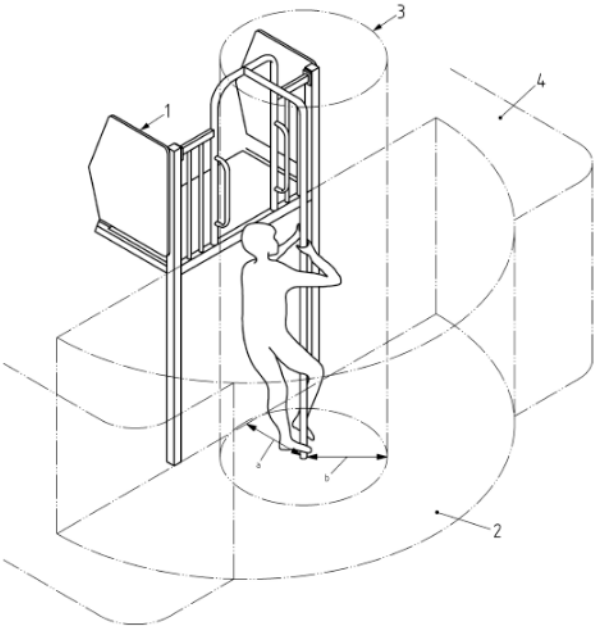
Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Dimensions in metres  **Key** Y free height of fall X minimum dimension of impact area a impact attenuating surfacing with requirements (4.2.8.5.2) b surface with no impact attenuation test requirements, unless there is forced movement(4.2.8.5.3) If 0 ≤ Y ≤ 1,5 then X = 1,5 (in metres) If Y > 1,5, then X = 2/3 Y + 0,5 **Figure 17 — Extent of the impact area**		
4.2.8.2.5	**Extent of the falling space** Unless otherwise specified, the extent of the falling space shall be at least 1 500 mm around elevated parts of the equipment, measured horizontally and extending from the vertical projection plane below the equipment. The falling space shall increase for free heights of fall above 1 500 mm together with the extent of the impact area (see 4.2.8.2.4). This requirement can be varied in certain cases, e.g. increased, in the case of forced movement or reduced, in the case of equipment installed on or against a wall or fully enclosed equipment. In most cases there may be overlapping of falling spaces including impact areas. Unless specified in other parts of this standard, overlapping of the falling space where forced movement exists should not occur. Where two items with different fall heights are sited together the larger of the two impact areas will take precedence. Examples of falling space are given in Figures 18 and 19.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*



Key
1 impact area
2 falling space
x extent of falling space
y height of falling space

Figure 18 — Example of falling space and impact area of a platform



Key
1 space occupied by the equipment
2 falling space of the fireman's pole
3 free space of the fireman's pole
4 falling space of platform
a fireman's pole minimum clearance (see 4.2.8.3)
b free space radius (see 4.2.8.2.3)

Figure 19 — Example of falling space and free space of a fireman's pole

4.2.8.3	**Protection against injuries in the free space for users undergoing a movement that is forced by the**	Free sapce was checked.	P ☒ F ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	equipment Unless stated otherwise, there shall be no overlapping of adjacent free spaces, or of free space and falling space of two different pieces of equipment. NOTE 1 This requirement does not apply to the common space between pieces of equipment in a cluster. The free space shall not contain any obstacles that interfere with the passage of a user whilst undergoing a forced movement e.g. tree branches, ropes, cross beams etc. Parts of the equipment bearing or containing the user, or helping the user to keep balance, shall be permitted within the free space, e.g. a platform with a fireman's pole (see 4.2.8.2.3). NOTE 2 Exceptions to this requirement are given in the parts of this standard covering individual types of equipment. The free space shall not be intersected by main travelling routes at, or through, the playground (e.g. pedestrian pathway).		N/A ☐ N/T ☐
4.2.8.4	**Protection against injuries in the falling space** The falling space shall not contain any obstacles onto which a user could fall and cause injuries, e.g. posts not flush with adjacent parts or exposed foundations (see 4.2.14). NOTE 1 The intention of this requirement is not to protect the user from minor knocks or bumps,that might lead to a bruise or sprain etc., as these types of injuries are possible in all situations. The following parts of play structures may be in the falling space: — adjacent parts of play structures with a difference in free height of fall of less than 600 mm; — parts of the equipment bearing or containing the user, or helping the user to keep balance; — parts of the equipment with an inclination of 60° or more from the horizontal. NOTE 2 In this case a falling user would only make a glancing contact with the equipment part.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
4.2.8.5	**Protection against injuries from the surface of the impact area**		
4.2.8.5.1	**General** The surface of the impact area shall be free from sharp	Only drawing review.	P ☐ F ☐ N/A ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	edged parts or projections and shall be installed without creating any entrapment situation (see 4.2.7). If loose particulate material is used it shall be installed to a layer thickness of 100 mm more than that determined in Table 4 or by testing to EN 1177. NOTE This is to allow for displacement of loose particulate material through use.		N/T ☒
4.2.8.5.2	**Equipment with a free height of fall greater than 600 mm or with forced movement** Beneath all playground equipment with a free height of fall of more than 600 mm and/or equipment causing a forced movement on the body of the user (e.g. swings, slides, rocking equipment, cableways, carousels, etc.), there shall be impact attenuating surfacing over the entire impact area. NOTE 1 Specific requirements for equipment causing a forced movement on the body of the user (e.g. swings, slides, rocking equipment etc.) are covered in other parts of EN 1176. The critical fall height of the surfacing shall be equal to, or greater than, the free height of fall of the equipment. Examples for commonly used impact attenuating materials are given in Table 4 with the related maximum free heights of fall, tested in accordance with EN 1177 and measured partly on site and partly in the laboratory with different test conditions. Where the installed surfacing can be verified as being in accordance with Table 4, no additional testing is required. The extent of the impact area is given in 4.2.8.2.4. NOTE 2 Turf as well as having aesthetic appeal also has some useful impact attenuating properties. Experience has shown that, if well maintained, it is normally effective for fall heights up to 1 m and can be used without the need to conduct a test. For fall heights above 1 m, the performance of turf as an impact attenuating surfacing is dependent upon local climatic conditions. Therefore, as there are significant regional variations in climate throughout Europe it is advised that guidelines are given at a national level. Turf/topsoil is not intended to be tested in accordance with EN 1177. NOTE 3 Impact attenuating materials are tested under specific conditions; therefore the performance of these materials can vary in use (e.g. materials under frozen conditions, rain or extreme heat) – see 6.2 of this standard. Impact attenuating materials should be adequately maintained. Failure to maintain such surfaces will result in the impact attenuation being significantly reduced.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
	Table 4 — Examples of commonly used impact attenuating materials, depths and corresponding		

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*

maximum free heights of fall

Material[a]	Description	Minimum depth[b]	Maximum free heights of fall
Where the installed surfacing is verified (e.g. sieve test) as being in accordance with this table or carries a test report according to EN 1177, no additional testing is required	mm	mm	mm
Turf/topsoil	—	—	≤ 1 000[d]
Bark	20 to 80 particle size	200	≤ 2 000
		300	≤ 3 000
Woodchip	5 to 30 particle size	200	≤ 2 000
		300	≤ 3 000
Sand or gravel[c]	0,25 to 8 grain size	200	≤ 2 000
		300	≤ 3 000
Other materials and other depths	As tested according to EN 1177		Critical fall height as tested

[a] For further information on specific material properly prepared for use in children's playgrounds see CEN/TR 16598 (Collection of Rationales for EN 1176–1 requirements).

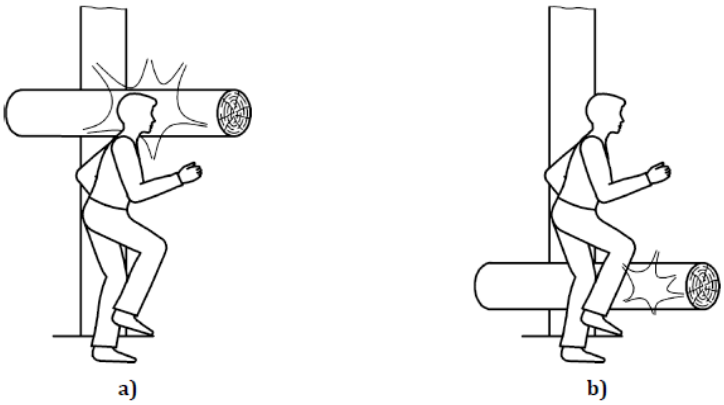
[b] For loose particulate material, add 100 mm to the minimum depth to compensate for displacement (see 4.2.8.5.1).

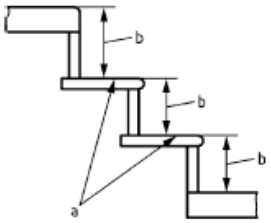
[c] Sand and gravel shall be well rounded and washed to eliminate most of the silt or clay particles. Washed sand or gravel is considered to be from alluvial (naturally eroded) deposits and free from most silt or clay particles. For gravel this may commonly be described as 'pea shingle'. Uniformity coefficient D60/D10 < 3,0. Grain size can be identified by use of a sieve test, as in EN 933–1 (see Annex G).

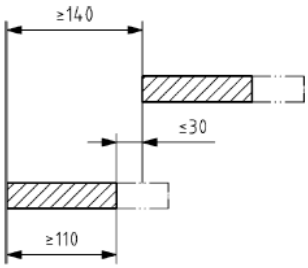
[d] See NOTE 2 in 4.2.8.5.2.

NOTE 4 Loose fill material specifications in Table 4 are examples that can be accepted without further testing in accordance with EN 1177.

4.2.8.5.3	**Equipment with a free height of fall not exceeding 600 mm and without forced movement** It is not necessary to test the critical fall height of a surface beneath playground equipment having a free fall height of less than 600 mm and which does not cause forced movement on the body of the user.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
4.2.8.5.4	**Adjacent platforms** If the free height of fall between adjacent platforms is more than 1 m, the surface of the lower platform shall present the necessary impact attenuating properties.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
4.2.8.6	**Protection against injuries due to other types of**	The space in, on or around the	P ☒

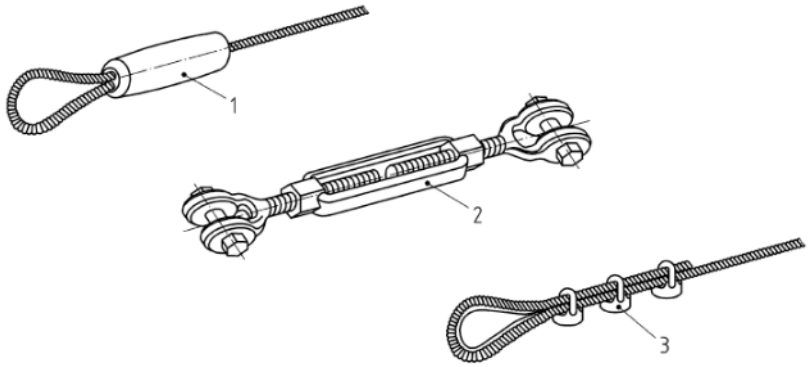
Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	movement The space in, on or around the equipment that can be occupied by the user shall not contain any obstacles that the user is not likely to expect and which could cause injuries if hit by the user. NOTE Examples of such obstacles are shown in Figure 20.	equipment was inspected.	F ☐ N/A ☐ N/T ☐
	 a) b) **Figure 20 — Unexpected obstacles**		
4.2.9	**Means of access**		
4.2.9.1	**Ladders** The spacing of the rungs or steps shall conform to the head entrapment requirements given in 4.2.7.2. Rungs and steps shall be non-rotating and equally spaced. Equal spacing is required only between the rungs. It is not required between the highest rung and the platform or the ground and the first rung. The requirement for equal spacing does not apply to rope ladders. NOTE To assist the safe transfer from the ladder to the platform or its summit, the stiles of the ladder without the rungs or steps can continue vertically from the platform to the top of the barrier. Wooden components shall have positive connections that cannot be undone or shifted. Nails or wood screws shall not be used as the only form of connection. To allow for the foot to rest correctly on the rung or step there shall be an unobstructed space at the rear of the ladder of at least 90 mm from the centre of the rung or tread measured at 90° to the ladder. Rungs and steps shall be horizontal to within ± 3°.	No ladder was used.	P ☐ F ☐ N/A ☒ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Ladders shall have rungs and/or stiles or shall have handrails that conform to the requirements for grip according to 4.2.4.6 or for grasp according to 4.2.4.7.		
4.2.9.2	**Stairs** Stairs with a free height of fall greater than 600 mm shall conform to the requirements of 4.2.4 concerning protection against falling. Guardrails and/or barriers shall be provided from the first step and shall conform to the requirements for grasp (4.2.4.7) or a handrail shall be provided. NOTE 1 This is to ensure that hand support is available for the entire run of the stair. For stairs leading to platforms up to 1 000 mm in height a guardrail may replace the barrier, providing the gap beneath the guardrail is less than 600 mm when measured from the middle of the tread. NOTE 2 For platforms above 1 000 mm, a combination of guardrails and barriers is allowed. NOTE 3 A panel type barrier with a thickness of less than 60 mm is considered in compliance with grasp requirements. The inclination of stairs shall be constant. Openings shall conform to the entrapment requirements given in 4.2.7.2. The treads shall be spaced equally, shall be of uniform construction, and shall be horizontal within ± 3°.	No stairs was provided.	P ☐ F ☐ N/A ☒ N/T ☐
	 Key a stair tread b stair riser NOTE The risers are not required to be infilled. **Figure 21 — Parts of a stair**		
	To provide adequate space for standing, the minimum projection of tread shall be 140 mm and the minimum depth of tread shall be 110 mm (see Figure 22). Where the overall height of the set of stairs is more than 2 000 mm above ground level, intermediate landings shall be provided at height intervals not exceeding 2 000 mm. Intermediate landings shall be at least as wide as the set of stairs and at least 1 000 mm long.	No stairs was provided.	P ☐ F ☐ N/A ☒ N/T ☐

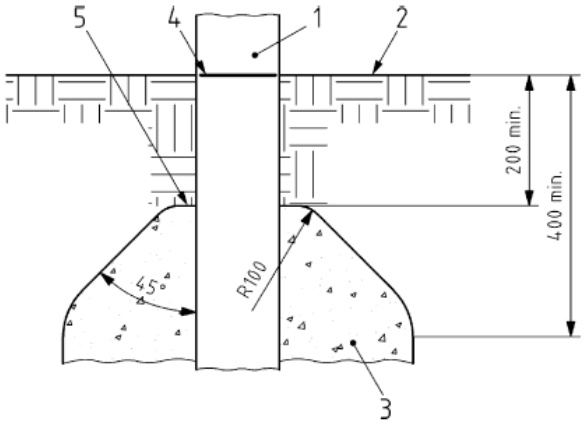
Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Dimensions in millimetres  **Figure 22 — Minimum projection and depth of tread**		
4.2.9.3	**Ramps** Ramps shall be inclined at an angle of up to 38° to the horizontal and shall be of a constant angle. NOTE 1 Surfaces with a greater inclination are not regarded as ramps but can be used as a means of access. Ramps shall conform to the requirements of 4.2.4. For ramps leading to platforms up to 1 m in height a guardrail may replace the barrier, providing the gap beneath the guardrail is less than 600 mm. If guardrails are used, they shall be provided from the beginning of the ramp. Ramps shall be level within ± 3° across their width. To reduce the risk of slipping, ramps expected to be used by all children shall include means to improve the grip of the foot. NOTE 2 This can be achieved by use of suitable foot holds.	Drawing reviewed.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.9.4	**Steep play elements** For steep play elements provided on easily accessible parts of equipment the opening in the barrier shall be 500 mm maximum and the free height of fall of the platform shall be 2 000 mm maximum. NOTE This is to help the carer reach up to the user if necessary. Openings leading from a platform with a free height of fall of > 1 000 mm to a steep play element shall have hand supports that comply with grasp requirements.	Not easily accessible steep play elements.	P ☒ F ☐ N/A ☐ N/T ☐
4.2.9.5	**Easily accessible playground equipment** Equipment designed to allow users to move quickly and freely onto it is to be considered as easily accessible.		P ☒ F ☐ N/A ☐ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	It is not the intention of this standard to give a definitive list of the types of possible access and associated requirements, but to provide guidance on the best way to tackle the issue of easy access. The following is an example of the hierarchy of three easy access possibilities: a) Ramps starting from the ground are the easiest means of access to the equipment. b) Stairs are the next easiest means of access to the equipment. c) Ladders are the least easy means of access to equipment in this example. There are many designs which can delay access to the equipment, thus giving more time for carers to intervene as appropriate. Such design features may include, but are not restricted to, movement, height or dimensional requirements e.g. reach distance or step height. NOTE 1 Carers include adults, responsible siblings and others who are looking after the user (see CEN/CLC Guide 14 for more information on carers). NOTE 2 Examples of access restriction by height or dimension might include but are not limited to ramps where the start is more than 600 mm above the ground or ladders where the lowest rung is more than 400 mm above the ground. The figure of 400 mm is a compromise between the need to limit access and the need to provide a safe means of exit by the same route.		
4.2.10	**Connections** Connections shall be secured such that they cannot come loose of their own accord unless specifically designed to do so. Connections shall be safeguarded so that they cannot be undone without tools.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
4.2.11	**Consumable components** Replaceable components should be protected against unauthorized intervention and should require little maintenance. Any lubricants leaking out should not soil the equipment or adversely affect its safe use.	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒
4.2.12	**Ropes**		
4.2.12.1	**Ropes fixed at one end**		P ☐ F ☐ N/A ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	For suspended ropes between 1 m and 2 m in length, the distance between ropes fixed at one end and fixed equipment shall be not less than 600 mm and the distance between ropes fixed at one end and swinging equipment shall be not less than 900 mm. Ropes fixed at one end shall not be combined with swings in the same bay (see EN 1176-2). For suspended ropes of between 2 m and 4 m in length, the distance between ropes fixed at one end and other parts of equipment shall be not less than 1 m. The rope diameter shall be between 25 mm and 45 mm. NOTE A stiffer rope, depending on its diameter and construction, will make it more difficult to create a loop, thus reducing the risk of strangulation. However, it will still allow good grip.	Suspended ropes fixed at both ends.	N/T ☐
4.2.12.2	**Ropes fixed at both ends (climbing ropes)** For a rope fixed at both ends, typically for climbing up and not part of a larger net structure, it shall not be possible to make a loop in the rope that is wide enough to let probe C pass through (see Figure D.1) nor probe E (see Figure D.1) pass through. NOTE 1 This requirement is intended to remove the risk of strangulation. The rope diameter shall meet the grip requirements given in 4.2.4.6. NOTE 2 Ropes with sufficient roughness allow for a good grip. This can be achieved, for example, by using outer strands with a diameter of at least 6 mm. When a rope fixed at both ends is used in conjunction with another element, care shall be taken not to create entrapment situations, see 4.2.7.2.		P ☐ F ☐ N/A ☒ N/T ☐
4.2.12.3	**Wire ropes** Wire ropes shall be unstressed and shall be made from galvanized or corrosion-resistant wire. Ferrules shall conform to EN 13411-3 and the rope end shall coincide with the edge of the grip. Wire rope grips shall be utilized in accordance with EN 13411-5. If accessible and the thread ends protrude more than 8 mm, they shall only be used outside the minimum space or shall be covered by suitable means.		P ☐ F ☐ N/A ☒ N/T ☐

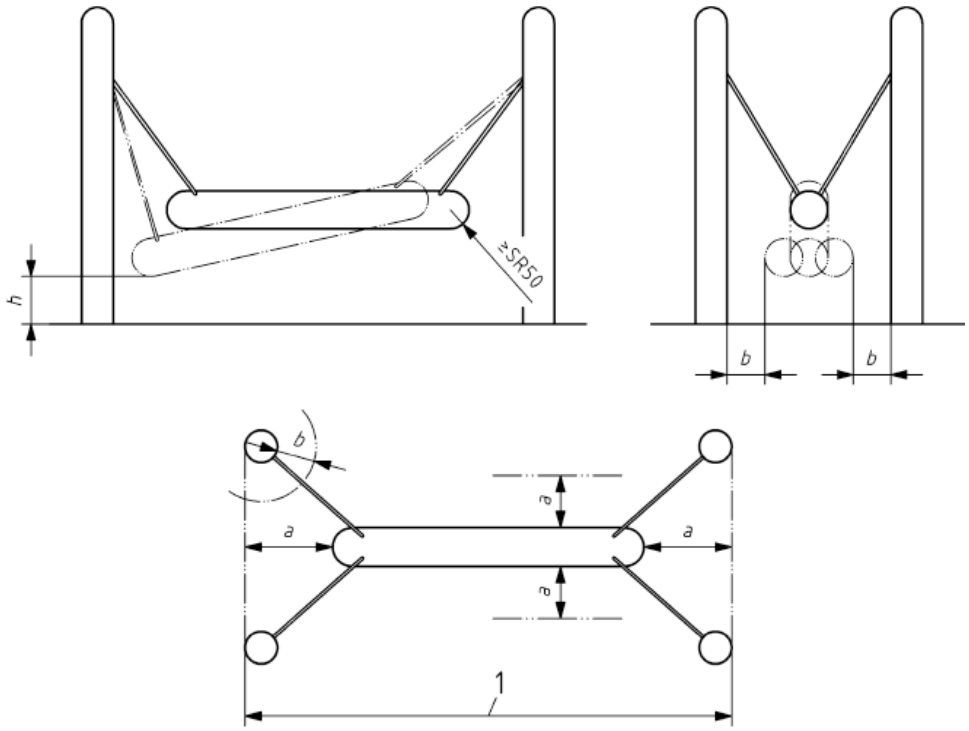
Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	The ends of the turnbuckles shall be closed (see Figure 23) and shall be made from corrosion-resistant material. It shall not be possible to undo turnbuckles without a tool.		
	 **Key** 1 ferrule 2 turnbuckle 3 wire rope grips **Figure 23 — Example of ferrules, turnbuckles and wire rope grips**		
4.2.12.4	**Sheathed wire ropes** When sheathed wire ropes are used for climbing ropes, climbing nets, hanging ropes and the like, each strand shall be sheathed with yarn made from synthetic or natural fibres. The sheath shall not contain monofilament. NOTE The wires inside the strands make it more difficult for the ropes to be intentionally damaged and thus reduce any hazards.		P ☐ F ☐ N/A ☒ N/T ☐
4.2.12.5	**Fibre ropes (textile type)** Fibre ropes shall either: a) conform to EN ISO 9554 or EN ISO 2307; or b) the manufacturer shall supply a work certificate stating the material used and the safe working load. In the case of climbing ropes, climbing nets, hanging ropes and the like, the strands shall have a soft and non-slip covering, e.g. hemp or equivalent material. Monofilament plastic ropes or ropes made from similar materials shall not be used.		P ☐ F ☐ N/A ☒ N/T ☐
4.2.13	**Chains** Chains for playground equipment shall conform to the dimensional requirements in EN 818-2:1996+A1:2008, Table 2 or EN 818-3:1999+A1:2008, Table 2 as a		P ☐ F ☐ N/A ☒ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	minimum and, when tested in accordance with D.5, shall conform to one of the following requirements: a) the 8,6 mm rod (see Figure D.13) shall not pass through the minimum cross-section of the chain opening, NOTE When "8-mm-short-link-chains" wear, the openings can increase. If the opening on a worn chain is greater than 8,6 mm, a risk assessment can be carried out to confirm whether replacement is necessary. or where a connection is made b) if the 8,6 mm finger rod passes through the opening, the 12 mm rod (see Figure D.13) shall also pass through the opening.		
4.2.14	**Foundations** The foundations shall be designed such that they do not present a hazard (tripping, impact). In loose fill surfacing (e.g. sand), foundations shall be installed or laid in accordance with one of the following: a) so that pedestals, footings and fixing elements on the equipment are at least 400 mm below the playing surface or; NOTE 1 Post shoes are not considered foundations. b) if the tops of the foundations are as shown in Figure 24 at least 200 mm below the surfacing; or c) so that they are covered by items of equipment or equipment parts (e.g. central foundation of a roundabout). Any parts that protrude from the foundations such as the ends of screws shall be at least 400 mm below the playing surface unless they are effectively covered and finished as described in 4.2.5. Additional measures should be taken for equipment in which the stability depends on only one cross-section. Foundations of one post equipment shall be accessible for periodic inspection. The choice and installation of impact attenuating surfacing should be carefully planned in order to allow for inspections and if access to the foundations is required. For example, for synthetic surfacing, this may require the surfacing to be cut-back and re-laid. NOTE 2 When components are embedded in concrete there is a risk of corrosion or rotting. The high rate of corrosion or rotting under	Only drawing review.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	dynamic loading endangers the stability of the anchorage of units in which the stability depends on only one cross-section, or in which the stability is provided by two-legged members or rows of members.		
	Dimensions in millimetres  **Key** 1 post 2 playing surface 3 foundation 4 basic level mark 5 top of foundation NOTE The basic level mark given by the manufacturer on the equipment shows the level of the playing surface. It is advised to maintain this basic level. **Figure 24 — Example of foundations**		
4.2.15	**Heavy suspended rigid beams** Rigid suspended beams are deemed heavy when they have a mass of 25 kg or more. There shall be a ground clearance of at least 400 mm underneath heavy suspended rigid beams, (see Figure 25). The ground clearance is measured as the distance between the lowest point of the lower edge of the heavy suspended rigid beam and the surface below. The heavy suspended rigid beam shall be so constructed that all changes in the profile of the beam shall have a radius of at least 50 mm. The range of movement (a in Figure 25) shall not exceed 300 mm and shall not go beyond the support posts. The distance between the support posts and the heavy suspended rigid beam (b) shall not be less than 230 mm throughout its full range of movement.	No Heavy suspended rigid beams used.	P ☐ F ☐ N/A ☒ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*

Dimensions in millimetres



Key
a range of movement
b free space towards standing construction, ≥ 230 mm
h ground clearance
l maximum deflection

Figure 25 — Example of a heavy suspended rigid beam

4.2.16 **Bouncing facilities**

4.2.16.1 **General**

A bouncing facility with a suspension bed smaller than 1,44 m^2 is considered as a small bouncing facility.

NOTE Bouncing facilities with a suspension bed ≥ 1,44 m^2 are considered as large bouncing facilities.

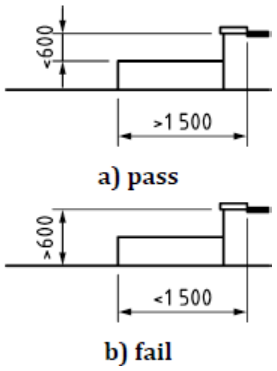
The extent of the falling space of a suspension bed of a small bouncing facility shall be 1 500 mm. The extent of the falling space of a suspension bed of a large bouncing facility shall be 2 000 mm. When a suspension bed gives a user a predetermined jumping direction to outside of the suspension bed, the extent of the impact area to that direction shall be at least 3 000 mm.

Unprotected edges within the falling space that the user can hit shall be rounded with at least 20 mm radius.

The maximum allowed height of any point of the

No bouncing facility used.

P ☐
F ☐
N/A ☒
N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	suspension bed is 600 mm measured from the surrounding ground or platform of the playground equipment 1 500 mm away from that specific point (see Figure 26).		
	Dimensions in millimetres  **Figure 26 — Acceptable and not acceptable solutions due to height of the suspension bed**		
	In case of failure of the suspension bed or its supports (spring, rubber band etc.) the user shall not fall more than 600 mm unless the impact area below has an adequate level of impact attenuation equivalent to the free height of fall of the suspension bed. There shall be no dangerous obstacles under or around the suspension bed, onto which a user could fall or otherwise be injured. For a bouncing facility the extent of the free space shall be 1 500 mm measured horizontally from any point at the perimeter and 3 500 mm above the suspension bed. During a physical weight test according to 4.2.2, the minimum ground clearance shall be ≥ 100 mm. NOTE 1 This is to prevent unintended contact with the ground while jumping. During a dynamic physical test according to D.6 the rebound effect of the bouncing facility shall not be more than 700 mm above the suspension bed. NOTE 2 This is to prevent the user bouncing too high and reaching a falling height greater than the adequate level of impact attenuation of the adjacent surface. Consideration shall be given to the design of the equipment and to the layout of the surrounding area in order to avoid jumping from surrounding installations (other than the enclosure) onto the suspension bed. Suspension beds made out of textile shall maintain 80 % of their initial tensile strength according to EN ISO 13934-1 after exposure to light and UV, according to EN	No bouncing facility used.	P ☐ F ☐ N/A ☒ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	ISO 4892-3, for a minimum period of 400 h. Large bouncing facilities shall have a sufficient ground clearance under the suspension bed. During the physical test according to 4.2.2, the clearance below the suspension bed shall remain greater than 230 mm. If this cannot be achieved, access under the suspension bed shall be prevented in a way that the test probe E cannot pass any opening leading under the suspension bed. NOTE 3 This is to protect non-users from getting squeezed between the ground and the suspension bed. Openings in the suspension bed shall not be greater than 30 mm measured in the smallest direction. Under a static weight of 69,5 kg applied to the middle of the suspension bed, any opening shall not allow passage of the test probe E. Access to the space under the suspension bed shall be provided for cleaning.		
4.2.16.2	**Enclosures of bouncing facilities** Where enclosures are provided, a risk assessment shall be made before allowing an enclosure for bouncing facilities in unsupervised settings. An enclosure, where climbing is not encouraged and with a minimum height of 1 800 mm, may be introduced to reduce the falling space or to prevent users from falling from the suspension bed. Sections of the enclosure above the height of 2 400 mm shall be unclimbable. The enclosure shall withstand a horizontal force of (800 ± 50) N applied to the centre of each enclosure section. Net yarns shall have a minimum diameter of 2 mm to reduce the risk of cutting fingers of users.	No bouncing facility used.	P ☐ F ☐ N/A ☒ N/T ☐
5	**Verification of compliance and reports**		
5.1	**General** Unless otherwise specified the requirements of Clause 4 shall be verified by measurement, visual examination or practical tests. Before testing, the equipment shall be assembled in accordance with the manufacturer's instructions into a condition similar to its position of use. Test reports shall include the following:		P ☒ F ☐ N/A ☐ N/T ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	a) number and date of this European Standard, i.e. EN 1176-1:2017; b) details of the equipment tested; c) details of the condition of the equipment including any defects observed before the test; d) details of any change in the condition of the equipment observed after the tests; e) test result.		
5.2	**Confirming the adequate level of impact attenuation after installation of impact attenuating surfacing** As there are significant regional variations in the provision and management of impact attenuating surfacing, it is recommended that requirements are given at a national level. If no requirements are given at national level, Annex H shall be used as it gives requirements to confirm the adequate level of impact attenuation after installation of the impact attenuating surfacing. NOTE This is to ensure that if Annex H is not followed, national requirements are given.	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒
6	**Information to be provided by the manufacturer/supplier**		
6.1	**Information to be provided by the manufacturer/supplier of playground equipment**		
6.1.1	**General product information** The manufacturer/supplier shall provide instructions in the appropriate language(s) of the country in which the equipment is to be installed and used. The instructions shall conform to the following: a) instructions shall be printed legibly and in a simple form; b) illustrations shall be used wherever possible; and c) instructions shall include at least the following information: 1) details of the installation, operation, inspection and maintenance of the equipment; 2) clause or note drawing the operator's attention to the need to increase inspection/ maintenance if the equipment is subject to	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	heavy use and/or the stability of the equipment relies on one post; 3) advice to take care, in relation to specific hazards to children, due to incomplete installation or dismantling, or during maintenance. The manufacturer/supplier should supply copies of test reports to purchasers upon request.		
6.1.2	**Pre-information** The manufacturer/supplier shall provide information concerning the safety of the installation prior to the acceptance of the order, e.g. a catalogue data sheet. This information shall include at least the following, where relevant: a) minimum space; b) surfacing requirements (including free height of fall and extent of surfacing); c) details of the foundations and any specific provisions for their accessibility during inspection and maintenance; d) overall dimensions of the largest part(s); e) mass of the heaviest part/section in kilograms; f) guidance regarding the target user group for the equipment; g) if the equipment is intended only for indoor use or under supervised conditions; h) availability of spare parts; and i) certification of conformity with this European Standard.	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒
6.1.3	**Installation information** The manufacturer/supplier shall supply an equipment delivery parts list with the equipment. The manufacturer/supplier shall supply installation instructions for the correct assembly, erection and placing of the equipment. This information shall include at least the following:	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	a) minimum space requirements and safety clearances; b) equipment and parts identification; c) erection sequence (assembly instruction and installation details); d) matching aids where necessary, e.g. signs on parts accompanied by appropriate instructions; e) need for any special tools, lifting devices, templates or other assembly aids to be used and any precautionary measures to be taken. Where necessary, torque values should be given; f) constructional space required to install the item of equipment; g) orientation, where necessary, in relation to sun and wind; h) details of the required foundation, under normal conditions, anchorage in the ground and the design and location of the foundation (with a note that care should be taken concerning abnormal conditions); i) details of the foundations and any specific provisions for their accessibility during inspection and maintenance; j) specific instructions if a particular landscape profile is necessary for safe operation, e.g. falling height; k) free height of fall (for impact attenuation surfacing needs); l) need for and details of the application of any painting or treatment: and m) removal of assembly aids before the equipment is used. Drawings and diagrams shall clearly specify the principal dimensions of the equipment and the relevant space, heights and areas required for installation. The manufacturer/supplier shall supply the details necessary for inspection of the playground equipment prior to its first use.		
6.1.4	**Inspection and maintenance information**	Not required by client.	P ☐ F ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	NOTE Attention is drawn to EN 1176–7.		N/A ☐ N/T ☒
6.1.4.1	The manufacturer/supplier shall provide instructions for maintenance (marked with the number of this standard), which shall include a statement that the frequency of inspection will vary with the type of equipment, e.g. equipment where the stability relies on one post, or materials used and other factors, e.g. heavy use, levels of vandalism, coastal location, air pollution, age of equipment. The manufacturer/supplier shall also provide drawings and diagrams necessary for maintenance, inspection and checking of correct operation and, when appropriate, repair of the equipment.	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒
6.1.4.2	The instructions shall specify the frequency with which the equipment or its components should be inspected or maintained and shall include guidance on the following, where relevant: a) routine visual inspection (see 3.26); NOTE 1 For playgrounds subject to heavy use or vandalism, daily inspection of this type might be necessary. NOTE 2 Examples of visual and operational inspection points are: cleanliness, equipment ground clearances, ground surface finishes, exposed foundations, sharp edges, missing parts, excessive wear (of moving parts) and structural integrity. b) operational inspection (see 3.27); This should be done every 1 to 3 months, or as indicated by the manufacturer's instruction. Special attention should be given to 'sealed-for-life' parts and equipment where stability relies on one post. c) annual main inspection (see 3.28). Special attention should be given to 'sealed-for-life' parts and equipment where stability relies on one post. NOTE 3 The annual main inspection may require excavation or dismantling of certain parts.	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒
6.1.4.3	The instructions shall also specify the following: a) if necessary, the servicing points and methods of servicing, e.g. lubrication, tightening of bolts, re-tensioning of ropes; b) that replacement parts shall conform to manufacturer's specifications;	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	c) if special disposal treatment is required for some equipment or parts; d) identification of spare parts; e) any additional measures to be taken during the run-in period, e.g. tightening of fastenings, tensioning of ropes; f) the need to keep drainage holes clear: g) that surfacing shall be maintained: in particular, the levels of loose fill materials. h) that GRP (glass-reinforced plastics) should be replaced or repaired before the glass fibres become exposed through wear or damage. This particularly applies to slides.		
6.2	**Information to be provided by the manufacturer or supplier of impact attenuating surfacing**		
6.2.1	**Pre-information for impact attenuating surfacing** The manufacturer/supplier shall provide the following information concerning the performance of the impact attenuating surfacing prior to the acceptance of the order (does not apply to turf/topsoil): a) where particulate materials that are included in Table 4 are specified, clear information about the type of material (see Table 4) and the depth of the layer to be used shall be provided, or, if not included in Table 4, the critical fall height of the surfacing as tested in accordance with EN 1177, together with copies of test reports or certificates; b) outline of the installation procedure, climatic limitations on installation and other precautions required; c) procedures to be followed for the operation, inspection and maintenance of the surfacing; d) factors that could affect the properties of the impact attenuating surfacing in service; e) period for which the adequate level of impact attenuation is expected with adequate maintenance; f) how the material allows for routine inspection of equipment foundations, particularly where one-post equipment is to be surrounded by wet pour/poured-in place material;	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	g) whether the material is intended for indoor or outdoor use, or both; h) availability of spare parts (if any) and methods to be used for the repair of localized areas of damage; i) compliance of impact attenuating surfacing materials with 4.1 (namely 4.1.6), if applicable; j) a note drawing the operator's attention to the need to increase the frequency of inspection/maintenance if the impact attenuating surfacing is subject to heavy use and/or any conditions that could reduce the impact attenuation (e.g. degradation of organic materials or vandalism as well as influence of ageing due to UV exposure); k) a warning to take care, in relation to specific hazards to children, during incomplete installation or during maintenance.		
6.2.2	**Installation information for impact attenuating surfacing** The manufacturer/supplier of playground surfacing shall provide full and detailed installation instructions in the appropriate language(s) of the country in which the surfacing is to be installed and used. These instructions shall conform to the following: a) instructions shall be printed legibly and in a simple form; b) illustrations shall be used wherever possible; and c) instructions shall include at least the following information: 1) complete procedure for the preparation of the ground, substrate, drainage, etc.; 2) assembly and installation details for the surfacing and equipment required to ensure that the adequate level of impact attenuation is provided; 3) how to deal with edges, perimeters and junctions with other materials, if necessary; 4) any weather limitations during the installation and any subsequent weather protection required; 5) specific instructions if a particular landscape	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	profile is necessary for safe installation and performance; 6) conditions to meet impact attenuation surfacing needs according to the free height of fall of the equipment. The manufacturer/supplier shall supply the details necessary for inspection of the playground impact attenuating surfacing prior to its first use.		
6.2.3	**Inspection and maintenance information for impact attenuating surfacing** NOTE Attention is drawn to EN 1176-7.	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒
6.2.3.1	The manufacturer/supplier of playground surfacing shall provide instructions for maintenance and inspection procedures, e.g. removal of contaminants, with a statement that the frequency of inspection will vary with the type of impact attenuating surfacing material used and its surroundings, e.g. access/exit areas, and other factors, e.g. heavy use, levels of vandalism, coastal location, air pollution, ageing of material. NOTE Lack of maintenance can reduce the impact attenuation properties.	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒
6.2.3.2	Maintenance instructions shall provide all information necessary for retaining the required performance (e.g. minimum depth of particulate impact attenuating surfacing) and, when appropriate, repair or refill of the impact attenuating surfacing. For all types of impact attenuating surfacing particular attention shall be given to the effects of ageing (exposure to UV, heat, cold), pollution, causing degradation or the loss of impact attenuating properties. The instructions shall also specify the following: a) that replacement parts shall conform to manufacturer's specifications; b) if special disposal treatment is required for the material or parts; c) the identification of spare parts (connectors, slabs, …); d) any additional measures to be taken, specifically methods of cleaning, disinfecting, repairing etc.; e) the need to keep drainage system functioning;	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	f) that surfacing shall be maintained: in particular, the depth of loose fill materials. NOTE The annual main inspection may require excavation and access to foundations and subsequent repair of the impact attenuating surfacing.		
6.2.4	**Identification of impact attenuating playground surfacing** The surfacing shall be labelled by the manufacturer or supplier, or written information shall be provided for its identification and performance.	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒
7	**Marking**		
7.1	**Equipment identification** The equipment shall be marked legibly, permanently and in a position visible from ground level with at least the following: a) name and address of manufacturer or authorized representative; b) equipment reference and year of manufacture; and c) the number and date of this European Standard, i.e. EN 1176-1:2017.	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒
7.2	**Basic level mark** Equipment shall be marked legibly and permanently with the basic level mark (see Figure 24).	Not required by client.	P ☐ F ☐ N/A ☐ N/T ☒
A	**Annex A** (normative) **Loads**		P ☐ F ☐ N/A ☒ N/T ☐
A.1	**Permanent loads**		P ☐ F ☐ N/A ☒ N/T ☐
A.2	**Variable loads**		P ☐ F ☐ N/A ☒ N/T ☐
	Table A.1 — Total vertical load for playground intended for use by children of all ages		

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*

Number of users n	Mass of n users G_n kg	Dynamic factor C_{dyn}	Total vertical user load $F_{tot;v}$ N	Vertical load per users $F_{1;v}$ N
1	69,5	2,00	1 391	1 391
2	130	1,50	1 948	974
3	189	1,33	2 516	839
5	304	1,20	3 648	730
10	588	1,10	6 468	647
15	868	1,07	9 259	617
20	1 146	1,05	12 033	602
25	1 424	1,04	14 810	592
30	1 700	1,03	17 567	586
40	2 252	1,025	23 083	577
50	2 801	1,02	28 570	571
60	3 350	1,017	34 058	568
∞		1,00		538
NOTE At infinity the vertical load per user equals the average mass.				

A.3	**Number of users on the equipment**		P ☐ F ☐ N/A ☒ N/T ☐
B	**Annex B** (normative) **Method of calculation of structural integrity**		P ☒ F ☐ N/A ☐ N/T ☐
B.1	**General principles: Limit state**		P ☒ F ☐ N/A ☐ N/T ☐
B.2	**Load combinations for static analysis**		P ☒ F ☐ N/A ☐ N/T ☐
B.3	**Worked example of the calculation of user loads (without safety factors)**		P ☒ F ☐ N/A ☐ N/T ☐
B.4	**Calculation of forces acting on a swing seat**		P ☒ F ☐ N/A ☐ N/T ☐
B.5	**Worked examples for forces acting on a swing (without safety factors)**		P ☒ F ☐ N/A ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
			N/T ☐
B.6	**Calculation of forces acting on the cable of a cableway**		P ☒ F ☐ N/A ☐ N/T ☐
C	**Annex C** (normative) **Physical testing of structural integrity**		P ☐ F ☐ N/A ☒ N/T ☐
C.1	**Pass/fail criteria**		P ☐ F ☐ N/A ☒ N/T ☐
C.2	**Test load for equipment**		P ☐ F ☐ N/A ☒ N/T ☐
C.3	**Load application**		P ☐ F ☐ N/A ☒ N/T ☐
D	**Annex D** (normative) **Test methods for entrapment**		P ☒ F ☐ N/A ☐ N/T ☐
D.1	**General**		P ☒ F ☐ N/A ☐ N/T ☐
D.2	**Head and neck entrapment**		P ☒ F ☐ N/A ☐ N/T ☐
D.3	**Entrapment of clothing (toggle test)**		P ☒ F ☐ N/A ☐ N/T ☐
D.4	**Finger entrapment**		P ☒ F ☐ N/A ☐ N/T ☐
D.5	**Chain openings**		P ☒ F ☐ N/A ☐ N/T ☐
D.6	**Measuring rebound effect of a bouncing facility**		P ☐ F ☐ N/A ☒ N/T ☐
E	**Annex E** (informative)	informative	P ☐ F ☐

Absatz *Clause*	**Anforderungen - Prüfungen /** *Requirements - Tests*	**Messergebnisse – Bemerkungen/** *Measuring results - Remarks*	**Ergebnis** *Result*
	Overview of possible entrapment situations		N/A ☒ N/T ☐
F	**Annex F** (informative) **Illustrations of calculation of free height of fall (FHF)**	informative	P ☐ F ☐ N/A ☒ N/T ☐
G	**Annex G** (informative) **Illustration of sieve test**	informative	P ☐ F ☐ N/A ☒ N/T ☐
H	**Annex H** (normative) **Procedure for confirming the adequate level of impact attenuation after installation of impact attenuating surfacing**	informative	P ☐ F ☐ N/A ☒ N/T ☐
I	**Annex I** (informative) **A–deviations**	informative	P ☐ F ☐ N/A ☒ N/T ☐
I.1	**General**	informative	P ☐ F ☐ N/A ☒ N/T ☐
I.2	**France**	informative	P ☐ F ☐ N/A ☒ N/T ☐
I.3	**Germany**	informative	P ☐ F ☐ N/A ☒ N/T ☐

-- End of Test Report --