TEST REPORT
RAPPORTO DI PROVA

CONFORMITY TEST ACCORDING TO EN 1176:2008 ON PLAYGROUND EQUIPMENT
PROVE DI CONFORMITA' IN ACCORDO ALLA EN 1176:2008 SU ATTREZZATURE PARCHI GIOCO

Customer *(Richiedente):*

- Dept./Firm *(Ente/Società):* METALCO SPA
- Mr./Mrs *(Sig./Sig.ra.):* Raffaele Lazzari
- Address *(Indirizzo):* Via Fornace, 44 31033 Castelminio di Resana (TV)

Test Request Form no.: *Modulo Richiesta Prova n.:*	Test Report sent to: *Rapporto inviato a:*
MEC 14157.00	Raffaele Lazzari
Name and Signature of the test engineer: *Nome e Firma esecutore prova:*	Name and Signature of the Technical Reviewer: *Nome e Firma del Revisore Tecnico:*
Matteo Neri	Paolo Bertotti
Date of test samples receipt: *Data ricevimento campioni:*	Date of test execution: *Data esecuzione prove:*
From 2014.11.20 to 2014.11.21	From 2014.11.20 to 2014.11.21
Site of test execution (if different from the address in the footer): *Località esecuzione prove (se diversa dal piè pagina):*	Witness to the test: *Presenti alle prove:*
Metalco Via Fornace, 44 31033 Castelminio di Resana (TV)	Ernesto Collino

The test results contained in this Test report relate to the tested samples only.
I risultati del presente rapporto di prova si riferiscono esclusivamente al campione sottoposto a prova.

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1 TEST SETUP
SETUP DI PROVA

1.1 SAMPLE IDENTIFICATION
IDENTIFICAZIONE CAMPIONE

1.1.1 Product/material subjected to test: *Prodotto/materiale sottoposto a prova:*	Playground Equipments
1.1.2 Description: *Descrizione:*	Swings
1.1.3 Level (Series product, prototype, etc.): *Livello (Prodotto di serie, prototipo, ecc.):*	prototype
1.1.4 Part number: *Codice prodotto:*	J501
1.1.5 Serial number: *N° Matricola:*	Na
1.1.6 Sample identification code: *Codice identificativo del campione:*	Na

1.2 AUXILIARY DEVICES *DISPOSITIVI AUSILIARI*	None
1.3 TEST CONFIGURATION *CONFIGURAZIONE DI PROVA*	Operanting
1.4 DIAGNOSTIC SYSTEM *SISTEMA DIAGNOSTICO*	Visual inspection

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2 TEST LIST
ELENCO DELLE PROVE

Test Description	Reference document	Standardized	Differencies
2.1 Safety Requirements *Requisiti di sicurezza*	EN 1176-1:2008 §4 and sub clauses	Yes	None
2.2 Test methods and reports *Metodi di test e rapporto di prova*	EN 1176-1:2008 § 5 and sub clauses	Yes	None
2.3 Information to be provided by the manufacturer/supplier *Informazioni che devono essere fornite dal produttore/rivenditore*	EN 1176-1:2008 § 6 and sub clauses	Yes	None
2.4 Marking *Marcatura*	EN 1176-1:2008 § 7 and sub clauses	Yes	None
2.5 Safety Requirements *Requisiti di sicurezza*	EN 1176-2:2008 §4 and sub clauses	Yes	None
2.6 Additional type requirements *Requisiti addizionali*	EN 1176-2:2008 §5 and sub clauses	Yes	None

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3 TEST EQUIPMENT USED

APPARECCHIATURE UTILIZZATE

Description	Manufacturer	Model	Serial no./ID	Used in test n.:
DYNAMOMETER	AEP Transducers	DNA 500 Kg	715554	§ 5
Calibro digitale 150 mm	Mitutoyo	Code N°: 500-181U Model N°:CD-15CP	02080451 (CLB_04)	§ 5
Inclinometro digitale	Mitutoyo	Pro 3600	950-316 (INC_38)	§ 5
Flessometro analogico/digitale	BOSCH	DMB 5 plus	0 603 096 402 (FLE_144)	§ 5
Astina 8 mm	TUV ITALIA	Astina 8 mm - EN 1176	AST_23	§ 5
Astina 8,6 mm	TUV ITALIA	Astina 8,6 mm - EN 1176	AST_24	§ 5
Astina 12 mm	TUV ITALIA	Astina 12 mm - EN 1176	AST_25	§ 5
Astina 25 mm	TUV ITALIA	Astina 25 mm - EN 1176	AST_26	§ 5
Alamaro	TUV ITALIA	Catena Ø 3,2mm,	ALA_27	§ 5
Sagoma C tras.	TUV ITALIA	Sagoma C - 89 mm	SAG_31	§ 5
Sagoma D tras.	TUV ITALIA	Sagoma D - EN 1176 Ø 230 mm	SAG_32	§ 5
Sagoma E tras.	TUV ITALIA	Sagoma E Ø 130 mm [Teflon]	SAG_33	§ 5
Sagoma V	TUV ITALIA	Sagoma V EN 1176	SAG_34	§ 5
Anello	TUV ITALIA	Anello di prova Øint. 44 mm Altezza 22 mm	ANE_35	§ 5

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4 ENVIRONMENTAL CONDITIONS
CONDIZIONI AMBIENTALI

4.1	**ROOM TEMPERATURE** *TEMPERATURA AMBIENTE*	25°C
4.2	**RELATIVE HUMIDITY** *UMIDITA' RELATIVA*	Na
4.3	**PRESSURE** *PRESSIONE*	Na

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5 MEASUREMENT UNCERTAINTY
INCERTEZZA DI MISURA

Measurement uncertainties was estimated as expanded uncertainty obtained multiplying the standard uncertainty by the coverage factor k corresponding to a confidence level of about 95%. Declared uncertainties are obtained with factor k=2 except if otherwise specified.

Measurement	Expanded uncertainty	Found in test n.:
Forces	0/+5%	§ 2.3
Time	± 5 s	§ 2.3

6 SAMPLING PLAN
PIANO DI CAMPIONAMENTO

Sample selected by the customer.

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7 TEST AND/OR MEASUREMENT RESULTS

RISULTATI DELLE PROVE E/O MISURE

7.1 TEST N.1

PROVA N.

Clause	Requirement -Test	Measuring result - Remark	Verdict
4	***Safety requirements***		
4.1.1	***Materials*** *Materials shall conform to 4.1.2 to 4.1.5. Materials shall be selected and protected such that the structural integrity of the equipment manufactured from them is not affected before the next relevant maintenance inspection.*	Structure or components made with the following material: Frame made in Stainless steel Other parts made in Polyethylene material For reference, see technical data sheet.	P
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.*	No parts of these equipments with textile material	N/A
4.1.3	***Timber*** *Wood preversation by construction*	No timber parts	N/A
	Timber with constantly earth contact *Resistance class 1 and 2 in accordance to EN 350-2:1994, constructive methiods, timber preservation*		N/A
	Ply wood *in accorance with EN 636-3:2006*	No ply wood parts	N/A

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4.1.4	***Metals*** *Wether resistant,* *metals that produce toxic oxides that scale or flake shall be protected by a non-toxic coating.*	All metal parts are protecting against corrosion by varnish layer or zinc treatment.	P
4.1.5	***Synthetics*** *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 should be replaced.*		P
	Consideration should also be given to degradation of structural components through ultraviolet influences.		N/A
4.1.6	***Dangerous substances*** *Dangerous substances shall not be used in playground equipment in such a way that they can cause adverse health effects to the user of the equipment.*	No dangerous substances. See technical data sheet of paint and plastic material.	P
4.2	***Design and manufacture*** *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.*	Structure open for young children and of less able or less competent child. No water stagnation in the equipments	P
4.2.1	***Gaming risk*** *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.*	The equipment are designed so that the risk involved in play is apparent and foreseeable by the child.	P
	Except when intended for water play, all parts of playground equipment should be designed so that they do not accumulate water.	No water play	NA

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4.2.2	***Structural integrity*** *Calculation or physical testing*	Test in according to sub clause „C“; Calculation in according to EN 1176 part 6.	P
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.*	No closing parts of the equipments, adults can help the child during the play activities.	P
4.2.4	***Protection against falling***	H	
	ee Figure 8		
	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. Height of the guardrail: 600 mm < x > 850 mm.	Swings	N/A
	For easily accessible equipment barriers shall be provided when the platform is more than 600 mm above the playing surface. For equipment other than easily accessible, barriers shall be provided when the platform is more than 2 000 mm above the playing surface. *Height of the barriers: > 700 mm*	Swings	N/A
4.2.5	***Finish of equipment*** *Wood contains low aamounts of splints, other materials (e.g. glass fibre) shall be non-splintering.* *No protruding nails, wire outstanding free ends or pointed or sharp parts*	All surface are smooth, no free burs or sharp edges.	P
	protruding scews *permanently covered or less than 8 mm protruding, or minimum 3 mm radius*	All nut or end of screws are protect by plastic taps or special screws with semi spherical head are used.	P
	Corners and edges *Corners, edges and projections with a radius less than 3mm may be in other accessible parts of the equipment only if they are not sharp.*	All ends are rounded with minimum radius 3 mm	P

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Clause	Requirement -Test	Measuring result - Remark	Verdict
4.2.6	***moving parts*** *- no crushing points or shearing points* *- 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 to the ground.*	In all cases is prevent the shearing or squeezing effect with a 25 mm gaps between moving and fixed parts.	P
4.2.7	***Protection against entrapment***	H	
4.2.7.2	***Entrapment of the head and neck*** *no head and neck entrapment* - *completely bound openings through which a user may slide feet first or head first;* - *partially bound or V-shaped openings;* - *other openings (e.g. shearing or moving openings).*	Equipments easily accessible, On the completely bound opening no parts of the equipments where the probe C or E pass, the probe D pass also. On the partially opener, no neck entrapment when tested in according to the probe D 2 No cases with stage 2 are present.	P
4.2.7.3	***Entrapment of clothing/hair*** - *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;* - *protrusions; and* - *spindles/rotating parts*	No clothing or hair entrapments	P
4.2.7.4	***Entrapment of the whole body*** *- tunnels into which children can crawl with their whole body; and* *-suspended parts which are heavy or have rigid suspension.*	No tunnel or parts of the equipments with possibility to trap.	N/A

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Clause	Requirement -Test	Measuring result - Remark	Verdict
4.2.7.5	***Entrapment of the foot or leg*** *- completely bound rigid openings in surfaces on which children can run or climb; and* *- footholds, handholds, etc. extending from these surfaces.*	No walking surface	N/A
4.2.7.6	***Entrapment of fingers*** - *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* - *variable gaps (excluding chains).*	No open tube. All tube extremities and others holes are covered by plastic taps to prevent finger entrapments. Where the 8 mm finger rod passes through the opening, the 25 mm finger rod (see Figure D.10 b)) also pass through the opening, provided that the opening does not permit access to another finger entrapment site. No entrapment on the chain	P
4.2.8	***Protection against injuries during movement and falling***	H	
4.2.8.1	***Determination of free height of fall*** *Unless stated otherwise, the free height of fall shall be as given in Table 2.* *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.*	Max free fall height: 1500 mm The safety instruction are clear and contain the correct information for the complete setting of area (foundation, restrict area for other accessories, etc.). See technical draws	P
4.2.8.2	***Determination of spaces and areas***		
4.2.8.2.3	***Minimum space***		
	Dimensions *See table 3*		
	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.	The determination of free space necessary around the equipments is described in the technical draws of singular equipments.	P

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4.2.8.2.4	***Extent of the impact area*** *See picture 17*	See single assembly and installation draws of the manufacturer Safety area and safety space are marked.	P
4.2.8.2.5	***Extent of the falling space*** *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.*	The determination of minimum dimension of safety area necessary around the equipments is described in the technical draws of singular equipments.	P
4.2.8.3	***Protection against injuries in the free space for users undergoing a movement that is forced by the equipment*** *Unless stated otherwise, there shall be no overlapping of adjacent free spaces, or of free space and falling space.* *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.*	No obstacles are allowed on the safety area. See single assembly and installation draws	P
4.2.8.4	***Protection against injuries in the falling space*** *Not any obstacles onto which a user could fall and cause injuries, e.g. posts not flush with adjacent parts or exposed foundations. 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.*	No exposed foundation. See assembly and installation of the equipments. No other parts of the equipments or other obstacles are allowed in the safety space. See single assembly and installation draws	P

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Clause	Requirement -Test	Measuring result - Remark	Verdict
4.2.8.5	***Protection against injuries from the surface of the impact area*** *Impact area in accordance with the height of fall* *If loose particulate material is used it shall be installed to a layer thickness of 100 mm more than that determined by testing to EN 1177 to achieve the required critical fall height.* *Adjacent platforms* *If the free height of fall between adjacent platforms is more than 1m, the upper surface of the lower platform shall present the necessary impact attenuating properties.*	In the instruction of installation is described to avoid corners or risk of injury in the safety and adjacent area.	P
4.2.8.6	***Protection against injuries due to other types of movement*** No any obstacles that the user is not likely to expect and which could cause injuries if hit by the user.	No protrusion parts of the equipments.	P
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* - *Rungs and steps shall be non-rotating and equally spaced.* - *Wooden components shall have positive connections that cannot be undone or shifted.* - *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* - *Rungs and steps shall be horizontal to within ± 3°.* - *Ladders shall have rungs and/or styles that conform to the requirements for grasp or shall have handrails that conform to the requirements for grip*	Swings	N/A

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4.2.9.2	***Stairs*** - *protection against falling.* - *Guardrails for platforms up to 1 m in height* - *Guardrails and/or barriers from the first step* - *set of stairs is higher than 1 m and of a greater inclination than 45°, the barrier shall comply with the requirements for grasp or a handrail shall be provided.* - *inclination of stairs shall be constant and the stairs shall have at least three risers. 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°.* - *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 21).* - *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. The line of the stairs shall not be continuous, but shall be offset by at least the width of the set of stairs, or shall change direction by at least 90°. Intermediate landings shall be at least as wide as the set of stairs and at least 1 000 mm long.*	Swings	N/A
4.2.9.3	***Ramps (38°)*** *-horizontal (+/- 3°)* *- guardrail to platforms up to1 m* *- guardrail or rail from the beginning*	Swings	N/A

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Clause	Requirement -Test	Measuring result - Remark	Verdict
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.*	Swings	N/A
4.2.10	***Connections*** *removable only with a tool*	Connections are secured such that they cannot come loose of their own accord unless specifically designed to do so. Connections are safeguarded by self-locking nuts and are not possible disassembly without tools.	P
4.2.11	***Consumable components*** *removable only with a tool*	Note on the maintenance inspection are indicate to control and in case substitute the bearings when damage. The swing nest the bearings are substitute by nylon bearing.	P
4.2.12	***ropes***		
4.2.12.1	***Ropes fixed at one end*** *Distance min 600 mm for H <2 m* *Distance min 900 mm for H> 2 m* *Min distance 1 m to parts of equipment* *H between 2 to 4 m* *Rope ∅ = 25 </ = x </ = 45 mm* *Combination with swings inadmissible*	No ropes	N/A
4.2.12.2	***Ropes fixed at both ends (climbing ropes)*** *- No loop, which fits in the specimen C* *- Rope ∅ = 16 </ = x </ = 45 mm* *Additional requirements for ropes on ramps!* *-No overlapping edge over ramps* *Max amplitude. 20% length*	See above	N/A

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Clause	Requirement -Test	Measuring result - Remark	Verdict
4.2.12.3	***Steel ropes*** *- No torsion,* *- Corrosion-resistant* *-Ferrules shall conform to EN 13411-3 and the rope end shall coincide with the edge of the grip.* *-Rope grips shall be in accordance with EN 13411-5.*	No steel ropes	N/A
Clause	***Requirement -Test***	***Measuring result - Remark***	***Verdict***
4.2.12.4	***Sheathed wire ropes*** *-No monofilament or split yarns.*	No monofilament ropes.	N/A
4.2.12.5	***Fibre ropes (textile type)*** *Fibre ropes shall either:* *-conform to EN ISO 9554 or EN ISO 2307, or* *- manufacturer shall supply a works certificate stating the material used and the safe working load.* *- soft and nonslip covering of strands*	No textile ropes.	N/A
4.2.13	***chains*** max. 8,6 mm Verbindungsstellen 8,6 < x > 12 mm *max. 8.6 mm* *connections 8.6 <x> 12 mm*		P
4.2.14	***foundations*** *-Loose-ground: 400 mm below ground or* *-Tops tapered 200 mm below ground or* *-Covered-by components from above*		P
4.2.15	***Heavy suspended beams*** *- Mass of </ = 25 kg* *- Minimum ground clearance of 400 mm* *- Changes in the beam profile with a radius of at least 50 mm* *- The range of movement not exceed 100 mm and shall not go beyond the support posts.* *- Distance between the support post and the heavy suspended beams shall be less than 230 mm throughout its full range of movement.*	No heavy suspended beans	N/A

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Clause	Requirement -Test	Measuring result - Remark	Verdict
6	***Product information prior information, installation instructions, Maintenance in tasks*** *-Installation instructions* *-Max weight* *-Installation time* *-Special Tools* *-Foundation plan* *-Hazards indication to cardinal direction* *-Safety free space* *-Required fall protection* *-Maintenance means* *-Maintenance cycles* *-Control information*	The following documents are available: - Installation instructions -Max weight -Installation time -Special Tools -Foundation plan -Hazards indication to cardinal direction -Safety free space -Required fall protection -Maintenance means -Maintenance cycles -Control information	P
7	***Marking*** - *Name / address of the manufacturer* *- equipment reference and year of manufacture* *- Number and date of this European Standard: EN 1176-1:2008.* *- Basic level mark*	All equipments are identify with a permanent marking with the following information:. Name and full address of the manufacturer; Code of equipments; Standard reference.	P
	Documentation *drawings* *material certificates* *calculations*	The following documents are available: Drawing, Material certificates calculation	P

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EN 1176-2:2008

Scope

This part of EN 1176 specifies additional safety requirements for swings intended for permanent installation for use by children.

Anwendungsbereich

Dieser Teil von EN 1176 legt zusätzliche sicherheitstechnische Anforderungen an standortgebundene Schaukeln fest, die zur Benutzung durch Kinder vorgesehen sind.

Clause	Requirement -Test	Measuring result - Remark	Verdict
4.1 Safety requirements			
4.1	**General** Swings shall conform to EN 1176-1 unless otherwise specified in this part of EN 1176.	See part 1 of EN 1176 on this test report	P
4.2	**Ground clearance** The minimum ground clearance at rest position shall be 350 mm. For tyre seats of swings of Types 1, 2 and 3, the ground clearance in the resting position shall be at least 400 mm. In the case of contact swings with vertical tyres as seats, the ground clearance can be reduced to 100 mm minimum.	h_4= 400 mm	P
4.3	**Seat clearance for single point swing (Type 3)** The minimum seat clearance shall be at least 400 mm except in the direction of the beam on which the suspension is fixed.	No type 3	N/A

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Clause	Requirement -Test	Measuring result - Remark	Verdict
4.4	**Minimum clearance and lateral stability of swing seats with more than one point of Suspension**		
4.4.1	**Minimum space between the seats of swings** C > 0,2 h2 + 200 mm (Structure / Swing seat) S > 0.2 h2 + 300 mm (Swing seat / Swing seat) h2= length of the suspension member For Type 4 swings the minimum distance between the seat surface and the central axis shall be 400 mm when the seat is at an angle of 90°	C= 556 mm S= 660 h_2= 1610 mm	P
4.4.2	**Lateral stability of swing seats** F ≥ G + 5 % h_2. For contact swings F ≥ G + 30% h_2.	F= 540 mm G= 430 mm h_2= 1610	P
4.5	**Means of suspension** Fully rigid suspension members shall not be used (see EN 1176-1:2008, 4.2.12 and 4.2.13). The triangular openings formed by the chain or suspension members branching towards the swing seat are exempt from the requirements of EN 1176-1:2008, 4.2.7.2.	No rigid main of suspension. In all equipments are used chain except	P
4.6 Impact attenuation of swing seats			
4.6.1	**Swing seats and vertical tyre seats** When tested in accordance with Annex B, there shall be no peak values of acceleration greater than 50 g and the average surface compression shall not exceed 90 N/cm^2.	All seat are covered by TUV SUD certificate See copy of certificate	P

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Clause	Requirement -Test	Measuring result - Remark	Verdict
4.6.2	**Cradle swing seats** The seat section of cradle swing seats shall conform to 4.6.1. If the outermost edge of the superstructure (X) protrudes beyond a vertical line drawn from the outermost edge of the seat when tipped at an angle of 30° as shown in Figure 8, then this shall also conform to 4.6.1.	All seat are covered by TUV SUD certificate See copy of certificate	P
4.6.3	**Swing seats and platforms for several users** If the diameter of the platform is greater than 900 mm, when tested in accordance with Annex B there shall be no peak values of acceleration greater than 120 g and the average surface compression shall not exceed 90 N/cm2. If the diameter is less than 900 mm it shall conform to 4.6.1. Test in accordance with B.3.1.	No seat for several users	N/A
4.7	**Dynamic load for swing equipment** When tested in accordance with Annex C the components in the suspension system shall show no cracks,permanent deformation or damage and no connection shall be loosened. There shall be no dimensional change in the components that can be seen with normal/corrected vision.	The structure don't collapse during the test, no permanent deformation are registered.	P
4.8 Structural integrity			
4.8.1	When calculated in accordance with EN 1176-1:2008, Annex B, the reaction forces of the structure shall be greater than the calculated forces resulting from use.	Test conducted in according to Annex C	N/A
4.8.2	When tested in accordance with EN 1176-1:2008, Annex C, there shall be no signs of cracks, or permanent deformation when examined with normal corrected vision.	The structure don't collapse during the test, no permanent deformation are registered.	P

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Clause	Requirement -Test	Measuring result - Remark	Verdict
4.9	**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. Swing frames or their top bar should only be attached to other equipment where specific measures are taken to segregate them from other activities, e.g. additional 1,5 m circulation area, barriers, enclosures.	Max 2 seat	P
4.10 Height of fall and impact area ***Fallhöhe und Aufprallfläche***			
4.10.1	**Free height of fall** The free height of fall D of a swing is determined from the middle of the seat vertically to the ground when the swing seat is raised by 60°. Alternatively, the free height of fall can be determined by the formula	D= 1250 mm	P
4.10.2 Dimensions of falling space and impact area			

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4.10.2.1	The falling space shall correspond to the impact area extended to a height equivalent to D . For all swings the extent of the impact area shall be calculated by taking the point A reached horizontally by the centre of the swing seat when it has travelled through an arc of 60° (which can be calculated as 0,867 × the length of the suspension member, h) and adding a fixed distance B or C (depending on the construction of the surface). In the case of an impact area that is level with the surrounding surface (normally synthetic) the fixed additional length B shall be 1,75 m and in the case of surface that is contained (normally loose fill) the fixed additional length C shall be 2,25 m Additionally for an impact area that is level with the surrounding surface, where B is 1,75 m, there shall be an additional area with a length of 0,5 m in the swing direction free from obstacles. The falling spaces of swing seats attached to different swing frames shall not overlap. Falling space may overlap with free space, when swing seats are attached to the same swing frame, provided that they comply with 4.4.1. When swings are placed near other items of play equipment, the falling space of the swing and the falling space of the other play equipment shall not overlap.	Determination of max falling space: For all models: Required: h_2= 1610 mm 3146 mm for synthetic + 500 mm of free space. 3646 mm for loos fill The dimension and the material allowed on the safety area are explained on the assembly draws.	P
4.10.2.2	For swing seats with a width not greater than 500 mm suspended by one or more rotational axis (Types 1, 2 and 4), the impact area shall have a minimum width of 1,75 m. If the seat is greater than 500 mm the width of the impact area shall be increased by the difference between 500 mm and the actual width of the seat.		P
4.10.2.3	For single point swings (Type 3) the extent of the impact attenuating surface shall be circular with a radius as specified in 4.10.2.1.	No type 3	N/A

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Clause	Requirement -Test	Measuring result - Remark	Verdict
4.11	**Additional requirements for swings with several rotational axes (Type 2)** If there is a backrest the angle between the backrest and the actual seat shall not change when the swing is in motion. When measured in one direction the clear distance between the backrest and the actual seat shall be not less than 60 mm and not more than 75 mm.	No type 2	N/A
4.12	**Additional requirements for single-point swings (Type 3)** The fixing point shall be such that when the swing revolves the supporting cables will not twist. If a universal joint is used that is not specifically designed and engineered for the purpose, there shall be a secondary means of supporting the swing seat to prevent collapse if the primary joint between the cables or chains and the supporting structure collapse.	No type 3	N/A
4.13	**Additional requirements for contact swings (Type 4)** Seats shall be constructed to discourage jumping from them to the central axis while swinging. This can be achieved, e.g. by using a vertical tyre or a restraining bar. Seats shall conform to the requirements of 4.6..	No type 4	N/A
6	**Marking** Swings shall be marked in accordance with EN 1176-1:2008, Clause 7.	See EN 1176-1 of this test report	P

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Clause	Requirement -Test	Measuring result - Remark	Verdict
Annex A (informativ)	**Recommendations for design and siting of swings** Further to the recommendations in EN 1176-1:2008, 4.2.8.2.1, if fences are used as an enclosure, they should have one or more entrances in corners of the enclosure nearer the centre of the play ground to discourage children from waiting or moving behind the swings. Entrances should be designed so as to restrict the speed of entry. Fences should be positioned at least 1,5 m from the side edge of the swing seat.	Noted	P
Annex B (normative)	Determination of swing seat impact attenuation		
Annex C (normative)	Dynamic load test for suspension systems of swings		

-End of this report-

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7.1.1 TEST OBJECTIVE
SCOPO DELLA PROVA

Determination of load resistance and safety requirements

7.1.2 TEST RESULTS
RISULTATI DI PROVA

All products has passed the test.

8 REMARKS
NOTE

None

9 APPENDIX
APPENDICE

9.1 PHOTO DOCUMENTATION
DOCUMENTAZIONE FOTOGRAFICA



9.2 ATTACHMENTS
ALLEGATI

None

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10 SUMMARY

SOMMARIO

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