



Report: EUR-14-TR0020

Rainbow Play Systems Internal Audit & Report

Date of Audit: 10-Feb-2014

Date of Report: 10-Feb-2014

**Model #/Description: 2014 EU Original Sunshine Castle Package II Residential Wood
Roof**

Reference standard: EN71-1:2011 and EN71-8:2011



Performed by: Ryan Drake

R & D Director: Scott Vomacka

Legend: Pass (P), Fail (F), Not Applicable (NA)**Audit Summary: EN71-1:2011**

4	General requirements	P	
4.1	Material	P	
4.2	Assembly: Instructions important to Safety	NA	
4.3	Flexible plastic sheeting	NA	
4.4	Toy bags	NA	
4.5	Glass	NA	
4.6	Expanding materials	NA	
4.7	Edges	P	
4.7a	Edges of metal or glass	NA	
4.7b	Edges in overlap joints	NA	
4.7c	Edges of metal fasteners (burrs)	P	
4.7d	Edges of functional edges	NA	
4.8	Points and wires	P	
4.8a	Sharp points	P	
4.8b	Functional points	NA	
4.8c	Wires likely to be bent	NA	
4.8d	Metallic wires	NA	
4.9	Protruding parts	NA	
4.10	Parts moving against each other	NA	
4.10.1	Folding and sliding mechanisms: part d may apply	NA	
4.10.2	Driving mechanisms	NA	
4.10.3	Hinges	NA	
4.10.4	Springs	NA	
4.11	Mouth-actuated toys	NA	
4.12	Balloons	NA	
4.13	Cords of toy kites and other flying toys	NA	
4.14	Enclosures	NA	
4.15	Toys intended to bear the mass of a child	NA	
4.16	Heavy immobile toys: Stability	NA	
4.17	Projectiles	NA	
4.18	Aquatic toys	NA	
4.19	Percussion caps designed for use in toys: requirements and warnings	NA	
4.20	Acoustics	NA	
4.21	Toys containing a heat source	NA	
4.22	Small balls: warnings	NA	
5	Toys intended for children under 36 months	NA	
5.1	General requirements	NA	
5.2	Filling materials	NA	
5.3	Plastic sheeting	NA	
5.4	Cords on toys	NA	
5.5	Liquid-filled toys	NA	
5.6	Speed limitation of electrically driven toys	NA	
5.7	Glass and porcelain	NA	
5.8	Shape and size of certain toys	NA	
5.9	Toys comprising monofilament fibres	NA	
5.10	Small balls	NA	
5.11	Play figures	NA	
5.12	Hemispheric-shaped toys	NA	
5.13	Suction cups	NA	
6	Packaging	NA	
7	Warnings and instructions	P	
7.1	General requirements	P	
7.2	Toys not intended for children under 36 months	P	

7.3	Latex balloons	NA	
7.4	Aquatic toys	NA	
7.5	Functional toys	NA	
7.6	Hazardous sharp functional edges and points	NA	
7.7	Projectiles	NA	
7.8	Imitation protective masks and helmets	NA	
7.9	Toy kites	NA	
7.10	Roller skates, inline skates and toy skateboards	NA	
7.11	Toys intended to be strung across a cradle	NA	
7.12	Liquid-filled teethingers	NA	
7.13	Percussion caps designed for use in toys	NA	
7.14	Acoustics	NA	
7.15	Toy bicycles	NA	
7.16	Toys intended to bear the mass of a child	NA	
7.17	Toys comprising monofilament fibres	NA	
7.18	Toy scooters	NA	

Audit Summary: EN71-8:2011

4	Requirements	P	
4.1	General	P	
4.1.1	Static strength	P	
4.1.2	Maximum height	P	
4.1.3	Corners and edges	P	
4.1.4	Protruding parts	P	
4.1.5	Climbing and swinging ropes	P	
4.2	Barriers, ladders, etc.	P	
4.2.1	Barriers and handrails preventing the child from falling down	P	
4.2.2	Means of access to toys	P	
4.3	Entrapment	P	
4.3.1	Head and neck entrapment	P	
4.3.2	Entrapment of clothing and hair	P	
4.3.3	Entrapment of feet	P	
4.3.4	Entrapment of fingers	P	
4.4	Stability of activity toys other than slides, swings, and toys with crossbeams	P	
4.4.1	Stability of activity toys with a free height of fall of 600mm or less	NA	
4.4.2	Stability of activity toys with a free height fall of more than 600mm	P	
4.5	Slides	P	
4.5.1	Stability of slides	P	
4.5.2	Retaining sides for slides	P	
4.5.3	Starting, sliding, and run-out section on slides	P	
4.5.4	Means of access to slides	P	
4.6	Swings	P	
4.6.1	Stability of swings and other activity toys with crossbeams	P	
4.6.2	Strength of crossbeams, swing devices, and suspension connectors	P	
4.6.3	Swings intended for children under 36 months	NA	
4.6.4	Impact from swing elements	P	
4.6.5	Minimum clearance between swing elements and adjacent structures	P	*3 SWINGS ONLY, NO TRAP
4.6.6	Lateral stability of swing elements	P	
4.6.7	Minimum clearance between swing elements and the ground	P	
4.6.8	Suspension connectors and means of suspension	P	
4.7	See-Saws	NA	

4.8	Carousels and rocking activity toys	NA	
5	Warnings and labeling	P	
5.1	Labeling	P	
5.2	Assembly and installation instructions	P	
5.3	Maintenance	P	

Structural Integrity & Stability Testing

Structure Data:

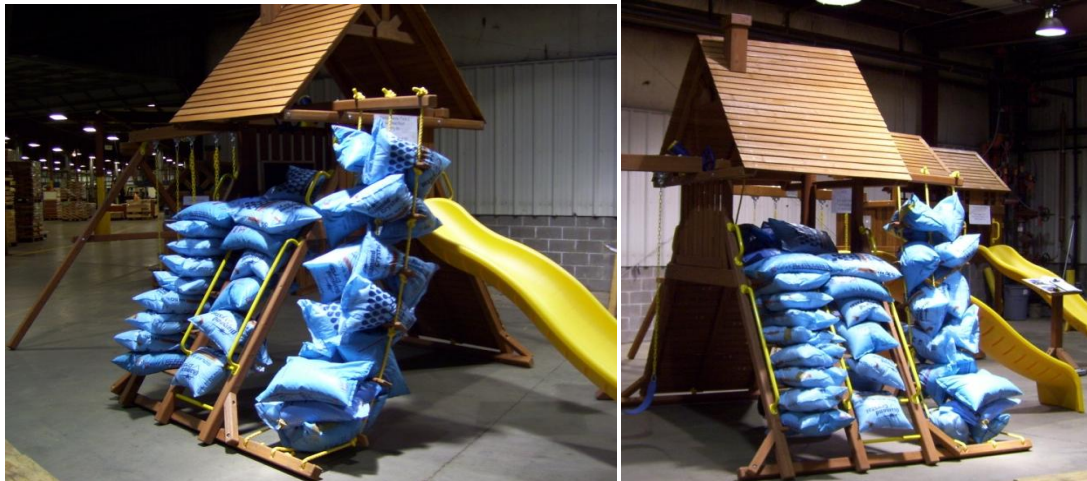
- 45" L x 56" W x 58" Deck Height (Base foot print: 65" L x 120" W)
- 86" Swing Beam Height
- Unit shall not exceed the use of 8 Children exceeding a combined weight of 1000lbs.
- Swing Beam Bundle 9-24-1516 (3-07-0006)
- 3" x 3" Top Joists & Arms (Barrier)

4.1.1 Static Strength (tested in accordance to 6.2.1 – strength of toys other than swings):

Load the toy in the most onerous position with a mass of $50\text{kg} \pm 0,5 \text{ kg}$ ($110\text{lbs} \pm 1\text{lb}$). Where a toy is intended to bear the mass of more than one child at a time, test every sitting or standing area or center of a crossbeam simultaneously.

Loaded unit as follows:

- Deck (110lbs @ 4 locations) 440lbs
 - Step Ladder (110lbs per step) 440lbs
 - Rope Ladder(100lbs per rung) 680lbs
- Total = 1560lbs



Results: No components of the play system showed structural failure after supporting the total test load of 1560lbs for a period of 1 hour.

4.2.1 Barriers and handrails (tested in accordance to 6.3 – dynamic strength):

A sudden horizontal impact stress is applied to the barrier or handrail through a pad by a falling load. A pad with a length of 200mm (7.875") and a height of 50mm (2") minimum made of textile, leather or similar material and stuffed with suitable material and with a shape able to install on top of a barrier or rail. Load the device with a mass of 25kg (55lbs) \pm 1kg (2.2lbs) attached to a non-elastic cord with a pulley able to give a vertical impact to the pad through free fall.



Results: No structural test was performed on the 3" x 3" barrier. The 5/4 x 6 barrier of the Carnival Club was deemed most likely to fail the barrier load. Testing was performed on the 5/4 x 6 barrier of the Carnival Club and passed the 66lbs load applied.

4.4.2 Stability of activity toys with a free height of fall more than (23.62") (tested to 6.1.2):

A horizontal force is applied at the top of the toy to simulate a child climbing on the toy. Use a suitable device (pulley) to apply a horizontal force of $120\text{N} \pm 5\text{N}$ ($27\text{lbs} \pm 1\text{lb}$). Apply a force of 120N (27lbs) (per maximum intended children intended to play on the structure at one time) to the highest graspable point.

The apparatus was loaded with a weight of 240lbs ($30\text{lbs} \times 8$ children) and attached at the upper most graspable point of the play set.



Results: The Fiesta Clubhouse has the smallest base footprint of the 2011 boxed kits making it the most likely to fail the stability test. The Fiesta Club remained stable with the applied load of 240lbs .

4.6.1 Stability of swings and other activity toys (tested to 6.1.4):

A horizontal force is simultaneously applied at each suspension point to simulate horizontal force created by pendulum effect.

Use a suitable device (pulley) to apply a horizontal force of $500\text{N} \pm 20\text{N}$ ($112\text{lbs} \pm 4.5\text{lbs}$). A pallet was loaded with 340lbs and a fixture was used to apply the load equally to each of the three swings.



Results: The play system (swing beam) remained stable with the applied load of 340lbs.

4.6.2 Strength of crossbeams, swing devices and suspension connectors (tested to 6.2.2):

When tested to 6.2.2, structures and/or crossbeams shall not collapse and swing devices, suspension connectors and climbing frames shall not become deformed, so that the toy does not comply with relevant requirements of EN 71.

Apply a load of 200kg (440lbs) on each standing or sitting surface in turn for a period of 1 hour. Then apply a load of 50kg (110lbs) on each standing or sitting surface simultaneously for 1 hour.



460 lbs



140 lbs each

Results: No failure of all affected components was visible after loads of 460lbs and 140lbs were applied per above testing specifications.

Testing Notes:

- Tests 4.4.2 and 4.6.1 utilized 90° Brackets anchored to the floor to simulate anchoring of the play set.