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Test method for safety performance of children's high chairs

儿童高椅安全性能试验方法

(ISO 9221-2:2015, Furniture - Children's high chairs - Part 2: Test methods,
MOD)

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Test method for safety performance of children's high chairs

1 Scope

This Standard specifies the test methods for assessing the safety performance of children's high chairs.

This Standard applies to high chairs that are fully installed and ready for use.

This Standard does not apply to infant walkers, push chairs, reclining chairs, rocking chairs and other products after the function of the children's high chair has been transformed.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 531.1, *Rubber vulcanized or thermoplastic - Determination of indentation hardness - Part 1: Durometer method (Shore hardness)* (GB/T 531.1-2008, ISO 7619-1:2004, IDT)

GB/T 531.2, *Rubber vulcanized or thermoplastic - Determination of indentation hardness - Part 2: IRHD pocket meter method* (GB/T 531.2-2009, ISO 7619-2:2004, IDT)

GB/T 2411, *Plastics and ebonite - Determination of indentation hardness by means of a durometer (shore hardness)* (GB/T 2411-2008, ISO 868:2003, IDT)

GB 6675.2-2014, *Safety of toys - Part 2: Mechanical and physical properties* (ISO 8124-1:2000, MOD)

3 Terms and definitions

There are no terms and definitions that need to be defined in this document.

4 General test conditions

4.1 Preparation before tests

- The torque reaches $0.34\text{N}\cdot\text{m}$.

Hold the maximum rotation or required torque for $10\text{s}\pm 2\text{s}$. Make the test part back to a relaxed state. Repeat this process in a counterclockwise direction. If the parts can be removed, they can be placed in the small parts cylinder in any direction without external force;

- c) Place the parts that can be separated or pulled off by applying the following pulling force, without external force, into the small parts cylinder in any direction:
 - When the maximum contact size of the part is less than or equal to 6mm, gradually apply a pulling force of 50N within 5s and keep it for $10\text{s}\pm 2\text{s}$;
 - When the maximum contact size of the part is $>6\text{mm}$, gradually apply 90N pulling force within 5s and keep it for $10\text{s}\pm 2\text{s}$.

If the protrusion, part or assembly is tightly mounted on an accessible rod or bar designed to rotate with it, the rod or bar shall be clamped. Prevent rotation during the test.

If, when the required torque is applied, the parts with the threaded connection become loose, the torque shall be continued until the required torque is exceeded and the parts are loosened or can no longer be loosened.

When using the jaws and test apparatus, be careful not to damage the mechanism of the attachment, body or components.

Components that clearly cannot fit into the small parts cylinder shall not be tested.

6.6 Determination of openings such as holes, crevices and moving parts

6.6.1 Determination of openings between moving parts

Put the high chair in a position wherein normal use, there is no drive mechanism in the accessible area. Use a 5mm hemispherical finger probe as shown in Figure 8 for the clearance between moving parts. Test with a maximum force of 30N. Check if the hemispherical finger probe passes. If it passes, use the 12mm hemispherical finger probe shown in Figure 8 to test. Check if it passes without applying force. In the position where drive mechanisms such as power or springs are used in accessible areas, use the 5mm hemispherical finger probe shown in Figure 8 to test. For clearances between moving parts, use a maximum of 30N to test. Check if the hemispherical finger probe passes. If it passes, use the 18mm hemispherical finger probe shown in Figure 8 to test. Without applying force, check if the hemispherical finger probe passes.

6.6.2 Determination of other openings

Put the high chair on the normal-use rigid part in accessible area. Use the 7mm diameter hemispherical finger probe shown in Figure 8 for holes and gaps with a depth of more

than 10mm. Use a maximum force of 30N to test. Check if the hemispherical finger probe can enter 10mm and above. If it can, use the shape evaluation probe shown in Figure 9 to apply a force of 5N to test. Check if the shape evaluation probe can also enter 10mm and above. Or use a hemispherical finger probe with a diameter of 12mm as shown in Figure 8 to test without force. Check if the hemispherical finger probe can also enter 10mm and above (that is, the scale mark shown in Figure 8).

Align the small torso plug gauge (see 5.13) in a straight line along the longitudinal axis of the plug gauge. Use a maximum force of 30N to insert into the opening in the accessible area of the seat. Check if the plug gauge can enter.

6.7 Determination of the restraint system

6.7.1 Determination of the strength of seat belt/seat belt joint points

Put the high chair with seat on the ground. Adjust back bevel. Make its backrest in its most upright position. Apply a force of 150N to each strap/strap joint point in turn in the normal direction of use. The force is applied gradually within 5s. Keep for 1min. Check if the strap connection is functioning properly. Check if the joint points of the harness are installed independently. Measure the width of the straps and the distance from the strap joint point in front of and above the seam line.

6.7.2 Determination of strength of restraint system components

Gradually apply a force of 150N to the restraint system components in the direction most likely to fail within 5s. Keep it for 1min. Check if all parts of the restraint system are functioning properly.

6.7.3 Determination of the slippage of the straps of the restraint system

Remove the adjuster of the restraint system strap in the high chair (can be cut off). When removing, make sure the straps are about 125mm on either side. Attach the end of the strap that was originally attached to the high chair to the clamp. Allow the entire strap including the adjuster to hang freely. The distance between the clamp and the force application point shall be approximately 200mm. The adjuster shall be approximately halfway between the clamp and the point of application.

Apply force to the other end of the strap as follows. The direction of the force shall be as close as possible to the normal use of the strap:

Gradually apply a force of 10N to the belt within 5s. Hold for $10\text{s} \pm 1\text{s}$. Release this loading force.

Draw a straight line across the width of the strap that is flush with the adjuster (other measurements that give accurate measurements are acceptable).

Gradually apply a force of 150N on the belt within 5s and keep it for $60\text{s} \pm 2\text{s}$. Release this loading force.

Get it as far away from the back end as possible. Place the test model in the center of the substrate as shown in Figure 12. If the high chair has an adjustable backrest, adjust the adjustable backrest to the most upright position. Measure and record the vertical distance between the top of the backrest and the seating surface, the height of the backrest.

6.8.3 Determination of the length of the reclining backrest

Place the angle measuring device (see 5.12) on the centre line of the high chair seat. Make it as close as possible to the rear end of the high chair seat surface. Place the test model in the center of the substrate as shown in Figure 12. Make sure the reclining plate is close to the backrest. Measure and record the length of the backrest.

6.8.4 Determination of strength of reclining backrest mechanism

Secure the high chair to the ground. Adjust the backrest to the middle of its adjustment range. For backrests with only two adjustable positions, adjust the backrest to the most upright position. Apply a force of 100N to the vertical direction behind the backrest by loading the pad (see 5.4) at the center position of the backrest at a distance of 50mm from the top. Hold for 1h.

6.9 Determination of the vertical static load of the seat

Put the high chair on the ground. Place a 40kg weight in a 150mm×150mm area in the middle of the seat. Keep for 1min. Lift the high chair off the ground from the balance point of the side protection. Keep the high chair off the ground for 1min. Remove the weight. Check if the high chair is damaged.

6.10 Determination of vertical static load on foot pedals

Place a 20kg weight in the middle of the pedals in an area of 75mm×150mm. Keep it for 1min. Remove the weight. Check if the high chair is damaged.

6.11 Determination of side protection

6.11.1 Determination of side protection height

Place the test weight (see 5.10) in the center of the seat. Bring the edge of the weight into contact with the seat joint line.

Place the rod (see 5.8.2) on the side protection. Make the 86mm side of the rod level.

Measure the vertical distance between the lower surface of the rod and the lower surface of the test weight (cylinder) as the minimum height of side protection (see Figure 13).

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