SG Standard for Board Type Riding Gear with Wheels

1. Purpose

The purposes of this standard are to set requirements for the quality of safety of board type riding gear with wheels and for the prevention of incorrect use by consumers, and to prevent damages to general consumers' bodies and to ensure safety of life.

2. Scope of Application

This standard is applied to the gears and similar products which are intended for users to ride on them while standing without fixing their legs, have multiple boards and wheels with a single or connected mechanism, are intended to be used by a single user, are driven only by human strength, and whose direction of travel is controlled by a control stick or a user's weight shift (hereinafter collectively the "Riding Gear"), and do not correspond to any of the following:

- Products designed to be used on non-paved road
- Products with drive systems such as chains and belts
- Products with saddles (seats) for users

3. Categorization

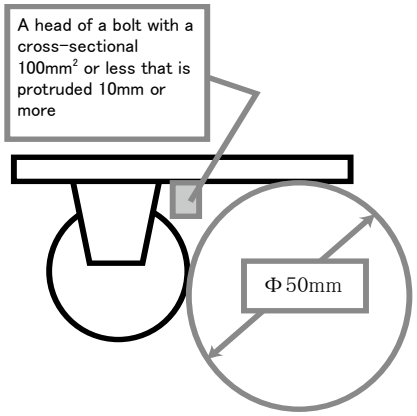
Categorization of the Riding Gear is as follows.

- For Young Children: Products intended to be used by those who are 18 months or older and who weigh less than 20kg.
- For Children: Products intended to be used by those who weigh 20kg or more and less than 50kg.
- For General Use: Products intended to be used by those who weigh 20kg or more and less than 100kg.

4. Quality of Safety

The quality of safety of the Riding Gear shall be as follows.

Item	Standard	Checking Method
1. Appearance and structure	1. Appearance and structure of the Riding Gear shall be as follows. (1) It has a smooth finish without sharp points, burrs, cracks, scratches,	1. Check by the method described below. (1) Check by eye, hand, etc. This check shall be performed after performing the checks under 3. Strength and 4. Durability.

Item	Standard	Checking Method
	deformation, etc. that may cause physical injury when used.	
	(2) Sharp points such as bolt heads protruding from the outside surface shall be located where users do not touch.	(2) Sharp points such as bolt heads with a cross-sectional area of 100mm^2 or less that protrudes 10mm or more to the outside surface shall be located where it does not contact a test cylinder with a diameter of 50mm and a length of 75mm as shown in Figure 1.  Figure 1. Method for Checking a Sharp Point Using a Test Cylinder
	(3) In case of movable parts (excluding fastenings) of those for young children where two or more parts are connected, the gap between these two or more parts shall not be 5mm or more and less than 12mm.	(3) Check by scale, etc. This check shall be performed after performing the checks under 3. Strength and 4. Durability.

Item	Standard	Checking Method
	(4) Connection, assembly, etc. of each part are fine and there are no backlashes.	(4) Check by eye, hand, manually moving, etc. This check shall be performed after performing the checks under 3. Strength and 4. Durability.
	(5) Fastenings for fixing wheels and movable parts shall have a preventive measure against looseness.	(5) After removing fastenings as needed, check by eye that nylon nuts, claw nuts, etc. are used.
2. Friction resistance	2. The static friction coefficient in the direction perpendicular to the direction of rotation of wheels (limited to those contacting a road surface) shall be 0.3 or more.	2. Place the Riding Gear on a stainless steel plate with a smooth surface, and from above, apply a force which is the sum of 200N and the gravitational force that acts on the mass of the Riding Gear. The force shall be applied to each of the two points on a deck where a user usually place his/her feet. Under this condition and using a push pull gauge, etc., measure the magnitude of the force generated by horizontally pulling the Riding Gear until it starts moving. Measure it five times. From the measured values, calculate an average value of three forces excluding the largest and the smallest values, and calculate the static friction coefficient by dividing with a force to which the average value is added. This check shall be performed after performing the check under 4. Durability.
3. Strength	3. The strength of the Riding Gear shall be as follows. (1) In the case of those with extendable control sticks, the control sticks shall not	3. Check by the method described below. (1) Check by instruments such as a push pull gauge.

<table>
<tr><th>Item</th><th>Standard</th><th>Checking Method</th></tr>
<tr><td></td><td>shorten and there shall be no deformation, damages, etc. that affect the use when the sticks are pushed into the direction of extension/shortening using the force specified in Table 1.

Table 1: Force for Pushing into the Direction of Extension/Shortening
<table><tr><th>Category</th><th>Push Force</th></tr><tr><td>For Young Children
For Children</td><td>150N</td></tr><tr><td>For General Use</td><td>300N</td></tr></table>
(2) In the case of those with control sticks, there shall be no deformation, damages, etc. that affect the use when a force of 250N (in the case of those for young children/children) and of 500N (in the case of those for general use) are applied to the sticks in the direction of travel front to back.

(3) There shall be no damages that affect the use when the impact energy specified in Table 2 is applied to the frontal part of traveling</td><td>(2) Check by instruments such as a push pull gauge.

(3) Attach a weight with a mass appropriate for the Riding Gear. With that condition, check by making the Riding Gear swing like a pendulum while using a pole as its axis, hitting a test wall with the Riding</td></tr>
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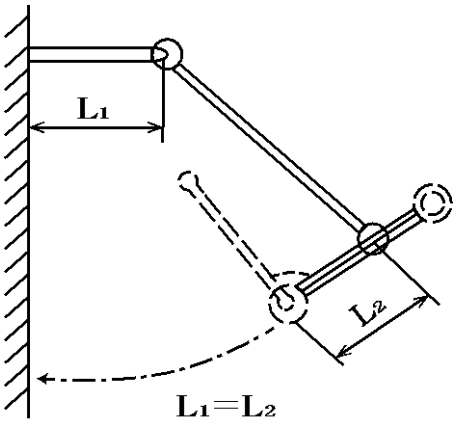
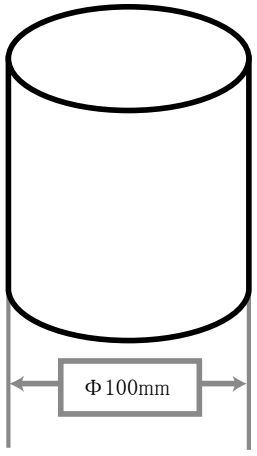
<table>
<tr><th>Item</th><th>Standard</th><th>Checking Method</th></tr>
<tr><td></td><td>direction.

Table 2: Frontal Impact Energy
<table><tr><th>Category</th><th>Impact Energy</th></tr><tr><td>For Young Children</td><td>38J</td></tr><tr><td>For Children For General Use</td><td>135J</td></tr></table>
(4) There shall be no damages that affect the use when the weight specified in Table 3 is dropped from the height specified in Table 3 onto a deck surface.

Table 3: Mass and Drop Height of Weight
<table><tr><th>Category</th><th>Mass of Weight</th><th>Drop Height</th></tr><tr><td>For Young Children For Children</td><td>20kg</td><td>200mm</td></tr></table></td><td>Gear, and applying an impact energy as shown in Figure 2.

 
Figure 2: How to Apply Frontal Impact Energy

(4) Check by dropping the weight specified in Figure 3 and Table 3 three times from the height specified in Table 3 onto positions where users usually place their feet.

 
Figure 3: Shape of Weight</td></tr>
</table>

<table>
<tr><th>Item</th><th>Standard</th><th>Checking Method</th></tr>
<tr><td></td><td>
<table>
<tr><td>For General Use</td><td>20kg</td><td>300mm</td></tr>
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</td><td></td></tr>
<tr><td>4. Durability</td><td>4. The durability of the Riding Gear shall be as follows.
(1) There shall be no damages that affect the use when making the Riding Gear travel for 25km with the weight specified in Table 4 fixed to it.

Table 4: Mass of Weight
<table>
<tr><th>Category</th><th>Mass of Weight</th></tr>
<tr><td>For Young Children</td><td>20kg</td></tr>
<tr><td>For Children</td><td>40kg</td></tr>
<tr><td>For General Use</td><td>60kg</td></tr>
</table>
(2) For those with a mechanism by which they obtain a driving force using the movement of parts, etc. which fix frames or wheels</td><td>4. Check by the method described below.

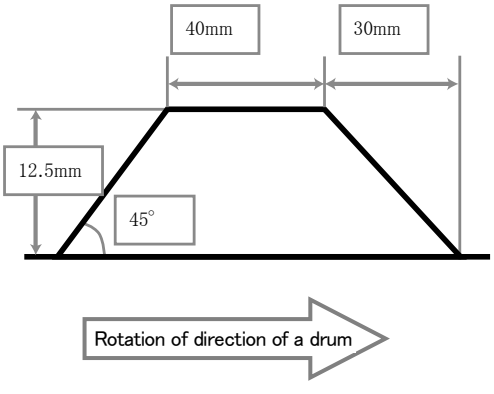
(1) Place the Riding Gear on a test drum (attach obstacles to the test drum as shown in Figure 4) with the wheels contacting the drum and with the weight of the specified mass in Table4 placed on the Riding Gear. Next, check by rotating the test drum at a speed equivalent to the Riding Gear’s traveling speed of approx. 1.0m/sec. and making the Riding Gear travel in a way that it passes the obstacles every 1.5sec. In principle, this check shall be performed for all wheels for traveling.
 

Figure 4: Shape of Obstacle

(2) Check by eye and hand.</td></tr>
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<table>
<tr><th>Item</th><th>Standard</th><th>Checking Method</th></tr>
<tr><td></td><td>(hereinafter the “Driving Mechanism”), there shall be no damages that affect the use when the Driving Mechanism is operated as specified in Table 5

Table 5: Number of Operation
<table>
<tr><th>Category</th><th>Operation Method</th></tr>
<tr><td>For Young Children</td><td>Have the Driving Mechanism operate 5,000 times using a force by which the operation is completely performed or a force of 200N whichever is smaller.</td></tr>
<tr><td>For Children</td><td>Have the Driving Mechanism operate 5,000 times using a force by which the operation is completely performed or a force of 500N whichever is smaller.</td></tr>
<tr><td>For General</td><td>Have the</td></tr>
</table></td><td></td></tr>
</table>

Item	Standard	Checking Method
	Use: Driving Mechanism operate 5,000 times using a force by which the operation is completely performed or a force of 1,000N whichever is smaller.	
	(3) In case of movable parts, other than the Driving Mechanism, that have points which bear force due to a user's weight when traveling, there shall be no damages that affect the use when these points are repeatedly operated 5,000 times.	(3) Check by eye and hand.
5. Material	5. For those for young children, materials that have no harmful effect on human body shall be used.	5. Synthetic resin parts as well as parts painted with synthetic resin paint shall conform with the *Article 4 Provision on Toys of the Public Notice of the Ministry of Health and Welfare No.370 based on the Food Sanitation Act*.

5. Indications and User's Manual
Indications on the Riding Gear and a user's manual of the Riding Gear shall be as follows.

Item	Standard for Approval	Checking Method
1. Indications	1. Indicate the following information on a product using means that do not easily wear off. (3) shall be indicated where easily viewable on the outside surface of packaging as well. (However, they may be omitted if these indications on a product are visible through the outside surface of packaging.) (1) Name or an abbreviated name of an applicant (manufacturer, importer, etc.) (2) The year and month of manufacture or importation or their abbreviation (3) Intended user's weight. The lower limit of an intended user's age in the case of those for young children. (4) Precautions for use (a) Instructions to use helmets, knee pads, elbow pads, and gloves. (b) Instructions not to use gear where its use is prohibited.	1. Check by eye and hand.
2. User's manual	2. Attach a user's manual to a product that clearly indicates	2. Check that it does not use technical terms and it is easily comprehensible for general

Item	Standard for Approval	Checking Method
	the following information. (1) and (2) shall be indicated where easily viewable such as the cover page, etc. of a user's manual, and make (3) more easily recognizable by placing safety warning marks like (⚠) or by other measures. Make (3)(a) through (c) especially stand out compared to other precautions by using boxed texts, bold font, and/or larger fonts. (1) Intended user's weight. The lower limit of an intended user's age in the case of those for young children. (2) Instructions to make sure to read the user's manual and to keep it after reading. (3) Precautions for use. (a) Instructions to use helmets, knee pads, elbow pads, and gloves. (b) Instructions to use gear while paying sufficient attention to automobiles, pedestrians, etc. and not to use it where its use is prohibited. (c) Instructions to sufficiently practice in a safe place before using and to use it where there is supervision of a guardian (this is	consumers.

Item	Standard for Approval	Checking Method
	applied only to those for young children). (d) Instructions to check for any damages and deformations before using and not to use gear if there is any. (e) Instructions not to wear clothes that may easily get caught in rotating parts when using. (f) Instructions to check that wheels and other parts are not loose. (g) Instructions to check that couplings and connections are secure (this is limited for the Riding Gear used with its parts coupled/connected). (h) Instructions to replace wheels when they are worn out because they tend to sideslip when they are worn. (i) Instructions not to use on wet surfaces because it may cause unexpected sideslips and it is difficult to travel on such surfaces. (j) Instructions to practice enough and master how to stop. (k) Because brakes and wheels may become hot right after	

Item	Standard for Approval	Checking Method
	using, instructions not to touch them until they cool down. (l) Instructions to use with sufficient attention because even small obstacles, bumps, and dips in roads may be causes of fall. (m) Instructions to use with sufficient attention because a slight gap may be a cause of fall. (4) How to use, maintain, inspect, and store (a) Parts which especially require maintenance including replacement of expendable parts, as well as maintenance methods. (b) Parts which especially require inspection, inspection methods, as well as how to handle defects. (c) Information particularly necessary for the purpose of storing. (5) Statement that the SG Mark system is a compensation system for bodily injury caused by defects of this product. (6) Name, address, and phone number of a manufacturer, importer, or distributor.	