SG Standard for Shoes Type Riding Gear with Wheels

1. Purpose

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

2. Scope of Application

This standard is applied to the gears and similar products which have been equipped with shoes or are intended to be used by fixing shoes to them, are intended to be used by a single user, are driven only by human strength, travel by the rotation of wheels (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 system such as chains and belts

3. Categorization

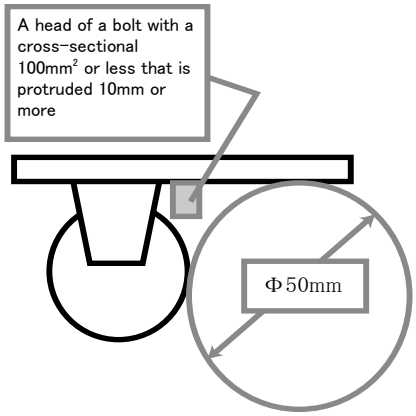
Categorization of the Riding Gear is as follows.

- 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, deformation, etc. that may cause physical injury when	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
	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) Those with dedicated shoes shall not have any sharp points protruding inside of the shoes or any parts that excessively compress feet.	(3) Check by eye, hand, etc. This check shall be performed after performing the checks under 3. Strength and 4. Durability.
	(4) In case of movable parts (excluding fastenings) of those for young children where two or more parts are connected, the gap between	(4) Check by scale, etc. This check shall be performed after performing the checks under 3. Strength and 4. Durability.

Item	Standard	Checking Method
	these two or more parts shall not be 5mm or more and less than 12mm.	
	(5) Connection, assembly, etc. of each part are fine and there are no backlashes.	(5) Check by eye, hand, manually moving, etc. This check shall be performed after performing the checks under 3. Strength and 4. Durability.
	(6) Fastenings for fixing wheels and movable parts shall have a preventive measure against looseness.	(6) After removing fastenings as needed, check by eye that nylon nuts, claw nuts, etc. are used.
	(7) The Riding Gear shall have a brake.	(7) Check by eye.
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 400N and the gravitational force that acts on the mass of the Riding Gear. 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.

<table>
<tr><th>Item</th><th>Standard</th><th>Checking Method</th></tr>
<tr><td>3. Strength</td><td>3. The strength of the Riding Gear shall be as follows.
(1)
1) For those with dedicated shoes, the attaching strength of the dedicated shoes shall be 1,000N or more. Also, after removing the force, there shall be no damages on each part that affect the use.
2) For those without dedicated shoes, the attaching strength of belts, etc. for attaching shoes shall be as shown in Table 1. Also, after removing the force, there shall be no damages on each part that affect the use.

Table 1: Attaching Strength of Belts, Etc.
<table><tr><th>Belt position</th><th>Magnitude of Strength</th></tr><tr><td>Other than the rearmost part</td><td>400N or more</td></tr><tr><td>Rearmost part</td><td>500N or more</td></tr></table>
(2) 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>3. Check by the methods described below.

(1)
1) Check by fixing the frame of the Riding Gear and applying a force of 1,000N at a speed of 20mm/min.

2) Check by fixing the Riding Gear, applying the force specified in Table 1 to a belt at a speed of 20mm/min, and then removing the force.

(2) Check by making the Riding Gear swing like a pendulum while using a pole as its axis, hitting a test wall with the Riding Gear, and applying an impact energy as shown in Figure 2.</td></tr>
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<tr><th>Item</th><th>Standard</th><th>Checking Method</th></tr>
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<td>direction (if there is a removable brake attached in the front, apply it after removing the brake).
If there is a brake in the front, the brake shall not come off when the impact energy specified in Table 3 is applied to the brake.

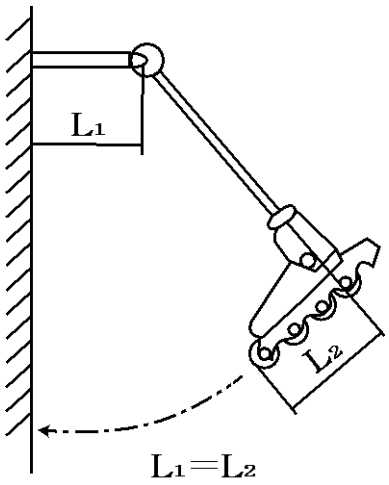
Table 2: Frontal Impact Energy
<table>
<tr><th>Category</th><th>Impact Energy</th></tr>
<tr><td>For young children</td><td>38J</td></tr>
<tr><td>For children</td><td>90J</td></tr>
<tr><td>For general use</td><td>135J</td></tr>
</table>
Table 3: Frontal Brake Impact Energy
<table>
<tr><th>Category</th><th>Impact Energy</th></tr>
<tr><td>For young children</td><td>25J</td></tr>
<tr><td>For children</td><td>60J</td></tr>
<tr><td>For general use</td><td>90J</td></tr>
</table>
(3) There shall be no damages that affect the use when the impact energy specified in Table 4 is applied to the bottom of wheels.
If there is a brake at the rear, the brake shall not come off when the impact energy</td>
<td> 

Figure 2. How to Apply Frontal Impact Energy

(3) Check by making the Riding Gear swing like a pendulum while using a pole as its axis, hitting a test wall with the Riding Gear, and applying an impact energy as shown in Figure 3.</td>
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<table>
<tr><th>Item</th><th>Standard</th><th>Checking Method</th></tr>
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<td></td>
<td>specified in Table 5 is applied to the brake.

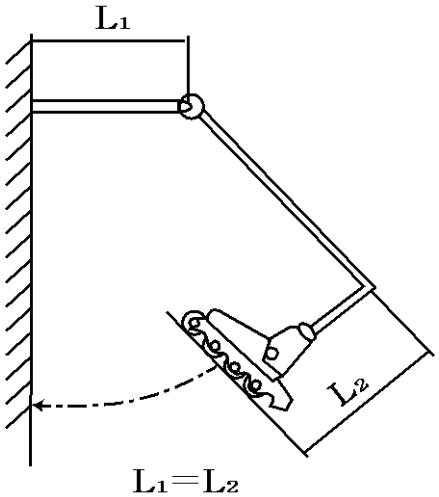
Table 4: Bottom Impact Energy
<table>
<tr><th>Category</th><th>Impact Energy</th></tr>
<tr><td>For young children</td><td>38J</td></tr>
<tr><td>For children</td><td>90J</td></tr>
<tr><td>For general use</td><td>135J</td></tr>
</table>
Table 5: Rear Brake Impact Energy
<table>
<tr><th>Category</th><th>Impact Energy</th></tr>
<tr><td>For young children</td><td>14J</td></tr>
<tr><td>For children</td><td>30J</td></tr>
<tr><td>For general use</td><td>50J</td></tr>
</table>
(4) In case of those other than for young children and those without dedicated shoes, there shall be no damages that affect the use when the weight specified in Table 6 is dropped from the height specified in Table 6 onto a surface to which a shoe is fixed.</td>
<td> 

Figure 3: How to Apply Bottom Impact Energy

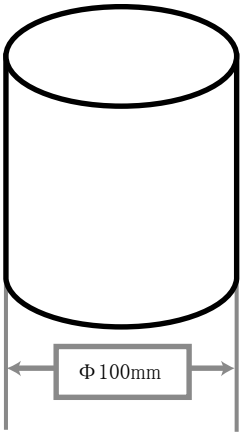
(4) Check by dropping a weight specified in Figure 4 and Table 6 from the height specified in Table 6 onto the position specified in Figure 5 which is on the surface to which a shoe is fixed.
 

Figure 4: Shape of Weight</td>
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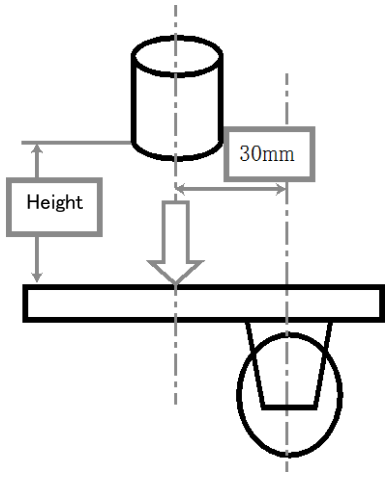
<tr><th>Item</th><th>Standard</th><th>Checking Method</th></tr>
<tr><td></td><td>Table 6. Mass and Drop Height of Weight
<table>
<tr><th>Category</th><th>Mass of Weight</th><th>Drop Height</th></tr>
<tr><td>For Children</td><td>10kg</td><td>150mm</td></tr>
<tr><td>For General Use</td><td>15kg</td><td>250mm</td></tr>
</table></td><td> 

Figure 5: Fall Position</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 three hours with the weight specified in Table 7 fixed to it.
Table 7: 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></td><td>4. Check by the methods described below.
(1) Place the Riding Gear on the test drum (attach obstacles to the test drum as shown in Figure 6) with the wheels contacting the drum and with the weight of the specified mass in Table 7 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. 0.5m/sec. and making the Riding Gear travel in a way that it passes the obstacles every 1.5sec.</td></tr>
</table>

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<tr><th>Item</th><th>Standard</th><th>Checking Method</th></tr>
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<td></td>
<td>(2) For those with a mechanism by which they obtain a driving force using the movement of parts, etc. which fix frames or wheels (hereinafter the “Driving Mechanism”), there shall be no damages that affect the use when the Driving Mechanism is operated as specified in Table 8.

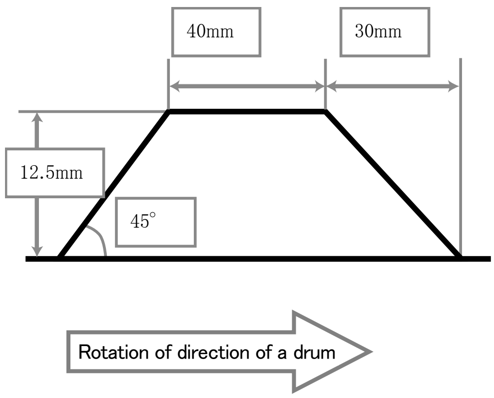
Table 8: Number of Operation
<table>
<tr><th>Category</th><th>Operation Method</th></tr>
<tr><td>For Young Children</td><td>Have the Driving Mechanism operate for 5,000 times using a force by which the operation is completely performed or a</td></tr>
</table>
</td>
<td> 

Figure 6: Shape of Obstacle

(2) Check by eye and hand.</td>
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</table>

<table>
<tr><th>Item</th><th>Standard</th><th>Checking Method</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>force of 200N whichever is smaller.</td></tr>
<tr><td>For Children</td><td>Have the Driving Mechanism operate for 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 Use</td><td>Have the Driving Mechanism operate for 5,000 times using a force by which the operation is completely performed or a force of 1,000N whichever is smaller.</td></tr>
</table>
(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 for 5,000 times.
</td><td>(3) Check by eye and hand.</td></tr>
</table>

Item	Standard	Checking Method
5. Material	5. The materials for the Riding Gear shall be as follows. (1) For those with dedicated shoes for which fiber is used inside of the shoes, the materials shall conform to *the Section Regarding Formaldehyde in the Appendix 1 of Article 1 of the Ordinance of the Ministry of Health and Welfare No.34 of 1974 based on the Act on Control of Household Products Containing Harmful Substances* (adhesives used for, underwear, nightwear, gloves, and socks (excluding those for infants and toddlers 24-month-old or younger), Japanese socks, wigs, fake eyelashes, fake beards, or sock glue).	5. Check by the methods described below. (1) Check by the test method specified by *the Section Regarding Formaldehyde in the Appendix 1 of Article 1 of the Ordinance of the Ministry of Health and Welfare No.34 of 1974 based on the Act on Control of Household Products Containing Harmful Substances* (adhesives used for, underwear, nightwear, gloves, and socks (excluding those for infants and toddlers 24-month-old or younger), Japanese socks, wigs, fake eyelashes, fake beards, or sock glue).
	(2) For those for young children, materials that have no harmful effect on human body shall be used.	(2) 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 follow s.

Item	Standard	Checking Method
1. Indications	1. Indicate the following information on a product using means that do not easily wear off. (3) and (4) 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 case of those for young children. (4) A size of a shoe or a foot corresponds to gear. (5) 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	Checking Method
	the following information. (1) through (3) shall be indicated where easily viewable such as the cover page, etc. of a user's manual, and make (4) more easily recognizable by placing safety warning marks like (⚠) or by other measures. Make (4)(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) A size of a shoe or a foot corresponds to gear. (3) Instructions to make sure to read the user's manual and to keep it after reading. (4) 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	consumers.

Item	Standard	Checking Method
	where there is supervision of a guardian (this is 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 to stop using when it feels uncomfortable after wearing gear. (f) Instructions that putting on and taking off of gear shall be done by a guardian and to check that the gear is properly equipped (this is applied only to those for young children). (g) Instructions to replace wheels when they are worn out because they tend to sideslip when they are worn. (h) Instructions not to use on wet surfaces because it may cause unexpected sideslips and it is difficult to travel on such surfaces. (i) Instructions to reduce speed by maneuvering gear and to use the brake after speed is sufficiently reduced. (j) Because brakes and wheels	

Item	Standard	Checking Method
	may become hot right after using, instructions not to touch them until they cool down. (k) Instructions to use with sufficient attention because even small obstacles, bumps, and dips in roads may be causes of fall. (l) Instructions to use with sufficient attention because a slight gap may be a cause of fall. (5) 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. (6) Statement that the SG Mark system is a compensation system for bodily injury caused by defects of this product.	

Item	Standard	Checking Method
	(7) Name, address, and phone number of a manufacturer, importer, or distributor.	