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General Technical Requirements of Electrically Driven Vehicles for Children

电动童车通用技术条件

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard was proposed by China National Light Industry Council.

This Standard shall be under the jurisdiction of the National Standardization Technical Committee on Toys (SAC/TC 253).

The drafting organizations of this Standard: Goodbaby Child Products Co., Ltd., Weikesi Children Toys Co., Ltd., Pinghu Jiajia Baby Carriage Co., Ltd., Pinghu Jinhou Baby Carriage Co., Ltd., Jinjianfeng Children Tricycle Co., Ltd., Pinghu Institute of Product Quality Supervision and Inspection, Guangdong Inspection and Quarantine Bureau Inspection and Quaratine Technology Center Toy Laboratory, Vkan Certification & Testing Co., Ltd. Jiangsu Inspection and Quarantine Bicycle Testing Center, Toy Testing Technology Center of Shenzhen Entry-Exit Inspection and Quarantine Bureau and Beijing Certification Center of Light Industry Council.

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General Technical Requirements of Electrically Driven Vehicles for Children

1 Application Scope

This Standard specifies the general technical requirements and test methods for electrically driven vehicles for children.

NOTE The safety requirements for electrically driven vehicles for children are specified in GB 6675.1 to GB 6675.4 and GB 19865.

This Standard applies to electrically driven vehicles for children under 14 years old.

This Standard does not apply to electrically driven vehicles for children for the following intended applications:

-- special-purpose electrically driven ride-on vehicle for children, such as electrically driven vehicles for children for beach and electrically driven vehicles for children for racing; and

-- electrically driven vehicles for children for public places and commercial purposes.

2 Normative References

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

GB 5296.5, *Instructions for use of products of consumer interest – Part 5: toys*

GB 6675.1, *Toys safety – Part 1: Basic code*

GB 6675.2, *Safety of toys – Part 2: Mechanical and physical properties*

GB 6675.3, *Safety of toys – Part 3: Flammability*

GB 6675.4, *Safety of toys – Part 4: Migration of certain elements*

GB 19865, *Electric toys – Safety*

GB/T 22753, *Technical requirements of surface coatings on toys*

GB/T 29777, *Toy coating technology condition*

3 Terms and Definitions

For the purpose of this document, the following terms and definitions apply.

NOTE The term “month” used in this Standard indicates a complete number of months (e.g. 18 months indicates 18 months old and below).

3.1

Electrically driven vehicles for children

the toy vehicles intended to be ridden-on by children under 14 years old, driven by electric battery and not intended for traffic, such as the electrically driven vehicles for children including bicycles (equipped with jockey pulley devices), tricycles and quadricycles.

3.2

track

the distance between two wheels sharing the same axle, i.e. the external dimension of two wheels in contact with the ground. If the wheels have a second contact surface with the height difference not greater than 3 mm in the design, they can be deemed as the actual contact points.

3.3

steering gear

the mechanism assembly which is used to control the direction of vehicles manually or remotely

3.4

basket

box (basket) or similar device on vehicles used for decoration or to carry a small load

3.5

assist-push-rod

the mechanism with which a guardian helps riding children go forward and backward or steer through a push rod

3.6

jockey pulley device

4.5.3 Remote-control distance

Under regular service conditions, the maximum remote control capacity tested in accordance with 5.6.2 shall not be less than 80% of the nominal remote control distance or range value of the products.

4.5.4 Key configuration

Remote control shall not be provided with vehicle automatic driving key or automatic switch or similar key functions.

4.5.5 Drop resistance of remote control

After the drop test in accordance with 5.6.3, remote control shall not have any structural or functional damage.

4.6 Control device

4.6.1 Location and operating performance

The devices used to control all functions and speeds of electrically driven vehicles for children, including switches, keys, rotary knobs, handles and rotary handles, shall be at the locations convenient for the operation of consumers, which shall be convenient for operation without distinctive jamming. The designed automatic reset device shall reset automatically during the operating process. The speed-control rotary handle shall be installed at the right-hand location of the rider. It shall be tested in accordance 5.7.1. The low value point can accomplish zero potential and the high value point can accomplish rated voltage/ current value. In absence of external forces, it reset zero potential automatically. The rotary handle shall be capable of regulating the speed of vehicles smoothly without distinctive impact.

4.6.2 Displacement and run-out of speed-control rotary handle

Speed-control rotary handle is tested in accordance with 5.7.2. The axial displacement of speed-control rotary handle shall not be greater than 1.0 mm and the radial run-out 1.0 mm.

4.6.3 Strength

It shall be tested in accordance with 5.7.3. The control device shall have no functional damage after the test.

4.7 Breaking device

4.7.1 Design and operation

The breaking system shall function effectively without distinctive jamming. If a foot brake is designed, the area of pedals shall not be less than 15 cm^2 and the pedal surfaces shall be slip-resistant.

4.10.1 Pedal design

Pedals shall be designed with a skid resistant structure. Their width measured in accordance with 5.11.1 shall not be less than 60 mm.

4.10.2 Center distance of pedals

The distance from the center point of one-side pedal to the vertical plane of vehicle center shall not be greater than 1/2 of the maximum track of vehicles; if the distance from the center point of one-side center point to the vertical plane of vehicle center is greater than or equal to 1/2 of the maximum track of vehicles, then the test shall be carried out in accordance with 5.11.2 and the vehicles shall not overturn.

4.10.3 Pedal strength

After being tested in accordance with the method specified in 5.11.3, the permanent deformation of pedals is not greater than 15 mm and no part shall show any visible crack.

4.11 Basket

4.11.1 Goods-carrying basket

Basket is designed to carry articles of certain weight; load is applied in accordance with 5.12; and basket maintains its original functions after all tests along with vehicles.

4.11.2 Dismountable basket

Basket of a convenient and dismountable structure is designed; no article from the vehicle noumenon after dismounting is allowed to cause harm to children; no article affects the other functions of vehicles after dismounting.

4.12 Assist-push-rod

If vehicles are provided with an assist-push-rod operated by a guardian, the strength test shall be carried out for those which are intended to be ridden by children below 36 months old and the original functions shall remain.

4.13 Wire

4.13.1 Sectional area

The driving power line shall be capable of bearing the rated current of the working area; the nominal sectional area of core shall not be less than the corresponding values of Table 1.

Table 1 – Correspondence of rated current and core sectional area of driving power line

Rated current // A	Core sectional area/ mm^2

4.19 Forced stoppage

After the test in accordance with 5.20, all functions of complete vehicles shall not be lost.

4.20 Advancing and backing durability

After the test in accordance with 5.21, complete vehicles shall not collapse, functions shall not be lost and parts shall not be damaged.

4.21 Durability requirements

After vehicles are tested in accordance with 5.22, they shall have no functional damage.

4.22 Mechanical strength

After the test in accordance with 5.23, complete vehicles shall not collapse and parts shall not be fractured.

4.23 Surface coating

The surface coating shall be as specified in GB/T 22753.

4.24 Surface plating

The surface plating shall be as specified in GB/T 29777.

4.25 Appearance quality

4.25.1 The surface of plastic parts shall be free from visible deformation, sink mark, bubble, layering or distinctive sprues or scratches.

4.25.2 Parts and components which are intended to be the same color in design shall be free from visible color change, fading, mixture or aberration.

4.25.3 Metal parts shall be free from the defects including crack, slag inclusion, burn-through or lack of penetration.

4.25.4 Riveting parts shall be smooth without bending, deflection or severe cracking.

4.26 Product marking and operating instructions

4.26.1 The marking and operating instructions of electrically driven vehicles for children shall simultaneously:

1) be as specified in the relevant requirements of this Standard;

2) be as specified in the compulsory articles of GB 5296.5; and

3) be as specified in the relevant requirements of GB 6675.1 to GB 6675.4 and GB 19865.

In accordance with the functions expressed in the products and relevant documents, operate for 3 times as in normal use to examine whether such functions are satisfactory and whether they work normally.

5.3 Driving battery

In accordance with the operating instructions on the instruction manual or the power marking on the product, maintain the battery in a fully charged state; apply a load in accordance with the maximum load capacity of vehicles; drive continuously along the arc of minimum turning radius of vehicles on the barrier-free flat cement floor, based on full function and maximum speed; and calculate the time from activation to complete stop.

After the tests specified in this Standard and relevant safety requirements are completed, examine whether the driving battery is fixed securely.

5.4 Reducer

After the tests specified in this Standard and relevant safety requirements are completed, examine whether there is any leakage of oil, tooth breaking of gear, box crack and bending failure of shaft occurred in the reducer; when any abnormal noise occurs during the test, open the reducer to examine its quality.

5.5 Steering mechanism

5.5.1 Steering angle

Fix the vehicle; draw the axis of the vehicle right ahead of the vehicle; steer the direction wheels to the limits on the left and right; and measure the steering angle.

5.5.2 Steering force

The steering mechanism shall rotate flexibly without distinctive jamming. Place the vehicle on the flat cement floor, locate it appropriately in accordance with the normal service conditions and place the “specified load” in 5.1c) on the seat. On the location where the steering wheel or handle produces the maximum torque, apply a 30 N tangential tension on electrically driven vehicles for children below 36 months old; apply a 50 N tangential tension on electrically driven vehicles for children 36 months old and above. The direction wheel shall be capable of rotating to the maximum steering angle. If the steering control is of a clutch structure, the clutch is in a disengaged state during the test.

5.5.3 Strength

Assembly the steering mechanism in accordance with the operating instructions; use an appropriate method to fix the direction wheels; apply a (15 ± 0.2) N·m torque on the location where the handle or steering wheel can produce the maximum destruction effects and maintain it for 3 min.

continuously for 100 times and apply the torque within 5 s and maintain it for 10 s for each test; for the other control devices, apply a (100 ± 2) N force on the normal operating position in the most adverse direction within 5 s and maintain it for 10 s, repeat the test for 3 times and examine whether the functions are effective after unloading.

5.8 Braking device

5.8.1 Examine the conformance of the structure of the braking device; apply a (50 ± 2) N force on the center of the braking device in the braking direction within 5 s; and examine whether the vehicle is in the braking state.

5.8.2 On the operating location of the braking device, apply a 150 N force in the normal braking direction within 5 s and maintain it for 3 min, and examine whether the braking function is effective after unloading; if the braking device is located on the plane which needs to bear the weight of children fully/ partially, use appropriate weights to apply vertically on the braking device in accordance with the “specified load” in 5.1c), maintain it for 5 min, and operate the braking device continuously in accordance with the normal operating method for 100 times after unloading.

5.9 Wheel installation

Place the vehicle on the test platform and fix the wheel axle to make the wheel to be tested hang in the air. Use the appropriate mechanical structure to make the tension transfer in the wheel axle shaft direction to the installing structure of the shaft through the wheels. Apply the specified tension without impact and test each wheel by changing position for 3 times in accordance with 3 × 120°.

5.10 Jockey pulley device

5.10.1 Place the vehicle vertically on the flat floor and measure the distance between the lowest point of the jockey pulley and the ground.

5.10.2 Use an appropriate device to lift the main wheel assisted to make the jockey pulley and other wheels on the equal-altitude horizontal plane; locate the vehicle; and apply the load specified in Table 2 on the seat. And remove the load and measure the permanent deformation after 10 min.

Use blocks to retain the front wheels to prevent their movement or steering to either side of the vehicle during the test. On the use position provided by the manufacturer, apply a force on the assist-push-rod forwards without impact to lift the rear wheels 30 mm above the ground, and maintain it for 3 min;

After repeating the above-mentioned process for 10 times, examine the assist-push-rod and its connecting parts with the vehicle.

5.13.2 Vehicles intended to be used by children 3 years old and above

Fix the vehicle on the ground, apply a 100 N force horizontally forwards without impact on the use position provided for the product and maintain it for 3 min. Apply a 100 N force horizontally backwards without impact one the use position provided for the product and maintain it for 3 min. Examine whether the specifications are met after unloading.

5.14 Wire

Measure the maximum current value of the driving line during the climbing test specified in 4.18; and use the mean value of 3 measurements to compare with the corresponding values in Table 2.

5.15 Plugging durability

Connect charger with power supply; carry out 500 times of plugging in the plugging direction at the frequency of (15 ± 5) /min; and examine whether the charging function is lost.

5.16 Minimum ground clearance of vehicles

Apply the “specified load” in accordance with 5.1c); measure the distance from any lowest point of the bottom of the vehicle except the wheels to the ground-contacting point of the wheels.

5.17 Quiescent current

Connect the fully charged driving battery, put all functions of the complete vehicle in a non-working state and use a measuring apparatus to measure the current of all wires connected with the driving battery; if the product is designed with the automatic shut-down function, measure the quiescent current in the shut-down state.

5.18 Vehicle speed

Apply a load of (25 ± 0.2) kg on the seat of the vehicle on a flat cement floor. Charge the driving battery fully. If the driving battery supplied with the vehicle is incapable of achieving the rated voltage after charging. Take the mean value of 3 times of driving in a straight line to obtain the maximum speed of the vehicle. If it is designed with remote control, then test both the manual and remote control states. For the vehicles designed to be driven on special tracks, measure their speed on special tracks.

5.19 Climbing performance

Apply the maximum load capacity indicated in the operating instructions on the saddle; charge the driving battery fully; carry out the climbing test at the maximum advancing speed; and maintain the straight driving direction of the vehicle during the test.

5.20 Forced stoppage

On a flat cement floor, apply the “specified load” on each seat in accordance with 5.1c); charge the driving battery to the rated voltage; keep the center plane of the vehicle perpendicular to the wall surface; drive forwards to lean against the wall; turn on the power and maintain it for 30 s; cut off the power and maintain it for 1 min; turn on the power and repeat the process for 5 times and examine whether the product meets the requirements of 4.19.

5.21 Advancing and backing durability

Apply the maximum load indicated in the operating instructions on the seat; turn on the power and the switch; and use the “forward-back” (“forward-stop” if only forward gear is available) as a cycle. Carry out 2 000 cycles for the travel 2 to 3 m on the flat ordinary cement floor. Take a rest for 10 min after 200 cycles of test in succession. After the test, examine whether the requirements of 4.19 are met. If it is designed with remote control, then carry out 1 000 cycles in the remote control and manual modes respectively. For the vehicles designed to be driven on special tracks, measure their speed on special tracks.

5.22 Durability requirements

Place the vehicle on a flat, barrier-free cement floor in accordance with the state specified in the operating instructions; use an external stabilized voltage supply or replace the battery within a short time; and apply the maximum load capacity indicated in the operating instructions on the seat. Drive the vehicle along the arc of the minimum turning radius, based on full function and maximum speed, including forward driving for 4 × 3 h and back driving for 3 h. The test shall be finished within 2.5 workdays and the continuous test time for each time shall not be less than 3 h. When the single-driving vehicle is tested, the gearbox is placed inside of the turning radius. For the vehicles designed to be driven on special tracks, measure their speed on special tracks.

5.23 Mechanical strength

5.23.1 Backward and forward impact test

Apply the maximum load weight indicated in the operating instructions; charge the driving battery fully; switch on the power; impact a rigid wall of sufficient height at the highest speed on the ordinary cement ground. The vehicle impacts the wall for 3 times in the forward, backward and front-back 45° direction respectively.

5.23.2 Drop test

6.4 Rules of inspection and determination

6.4.1 Take 3 vehicles from the products of the same materials and the same grade from the finished products warehouse for the type inspection.

6.4.2 Carry out the determination of conformance and nonconformance for the inspection items specified in Table 3. Under one of the following circumstances, the product is determined to be nonconformance:

a) one items of type A is nonconformance;

b) two items of type B are nonconformance;

c) three items of type C are nonconformance; and

d) one item of type B and two items of type C are nonconformance.

6.4.3 Ex-factory inspection shall be as specified by the manufacturer. The products can only be delivered after being qualified.

7 Packaging, Transportation and Storage

7.1 Packaging

a) the products shall be packaged with non-corrosive materials;

b) collision or displacement shall be avoided for all kinds of parts after packaging;

c) there shall be packing specifications after packaging of the products; and

d) the packing box shall have sufficient strength to prevent damage or scratch during transportation.

7.2 Transportation

a) handle with care during transportation; and

b) transportation facilities shall be provided with rain-proof measures and kept clean.

7.3 Storage

The products shall be stored in a ventilated and dry place and prevent from rainwater intrusion.

Annex D

(Informative)

Product Marking and Operating Instructions

D.1 Overview

This Annex is the guide to the product marking and operating instructions of electrically driven vehicles for children.

See 4.26 for the requirements for the product marking and operating instructions for electrically driven vehicles for children.

The product marking and operating instructions for electrically driven vehicles for children shall include but not limited to the content of the following articles.

Certain differences in literal expression are allowed in the specific content of instructions to safety warnings, but the content of warnings required in this Standard shall be fully expressed and shall be clear and intelligible and not liable to be misunderstood.

D.2 General information

The product information for the delivery of electrically driven vehicles for children shall include product marking and operating instruction and shall be located at the easily recognizable positions, in order to make sure consumers can use electrically driven vehicles for children correctly and safely and minimize the harms caused by misuse.

When the operating instructions and safety warnings are provided in multiple types (e.g. being marked on the body of electrically driven vehicles for children and/or their package and/or being attached inside of their package), the consistency of their content shall be ensured.

The product marking and operating instructions shall be in standard Chinese characters when the products are sold in China. The typefaces of the safety warnings such as “Danger”, “Warning” and “Note” shall not be smaller than No. 4 boldface and the content of the warnings shall not be smaller than small No. 5 boldface.

The marking of safety warnings (warning signs or warning statements) shall be given with durable labels and shall be attached to the products and their package legibly and indelibly.

Other types of marking are allowed provided that they will not cause misunderstanding.

D.3 Marking content

2) if necessary, provide the assembly instructions to parts and complete vehicles, including assembling tools, assembling sequence, assembling diagram and recommended tightening torque for fasteners, decorative pictures and after-assembly quality evaluation; and

3) indicate the instructions to first use, including lubrication of gearbox and other parts, initial charging time of power supply and so on.

D.3.7 Electrical instructions

Necessary electrical instructions shall be provided in the instruction manual, including control schematic diagram or circuit repair diagram, simple circuit fault analysis and trouble removal method, and list, types or specifications of vulnerable electrical elements and so on.

D.3.8 Maintenance and care

Instructions to regular examination, maintenance, care, cleaning and lubrication shall be indicated for complete vehicles and relevant parts.

For the toy transformers and battery chargers used in combination with electrically driven vehicles for children, indicate in the instruction manual regular examination whether the wire, plug, enclosure and other components are damaged. In case of any damage, stop using immediately until they are repaired.

D.3.9 Safety service life

For the products which requires a definite service life, indicate the manufacturing date and safety service life (marked in the chronological order).

D.3.10 Name and address of manufacturer and dealer

Indicate the name and address of the product manufacturer registered by law.

For the imported products, indicate the country of origin (country/territory) and the name and address registered by the agent, importer or distributor by law in China.

D.3.11 Conformance certification

The products shall be accompanied by conformance certificates, generally indicating the following information: name of production and inspection organization, and product name, type and specification, standard, signature of inspector and inspection time.

D.3.12 Product delivery list

If necessary, electrically driven vehicles for children shall be accompanied by product delivery lists, generally including instruction manual, conformance certificate, list of complete vehicles or parts, list of attached special tools and all information about spare parts and other attached products.

-- rated voltage, V;

-- alternate current or direct current symbol, if applicable;

-- rated input power, W or VA, if the input power is greater than 25 W or 25 VA; and

-- toy transformer symbol, which shall also marked on the package.

The symbols of rated voltage and alternate current or direct current shall be marked near the wiring terminals. If incorrect power supply is not adverse to the conformance of the toys to this Standard, then it is not required to mark the symbol of alternate current or direct current.

c) The dual power electrically driven vehicles for children shall be marked in accordance with the marking requirements for battery toys and transformer toys.

d) The dismountable lamps shall be marked with:

-- rated voltage and type, or

-- maximum input power, or

-- maximum current.

The input power or current of dismountable lamps shall be marked as follows:

lamp maximum … W or lamp maximum … A

When replacing lamps, the marking shall be legible.

NOTE When symbols are used, they shall be marked as follows:

Direct current


Alternate current


Lamp


Safety-isolating transformer for toy (symbol of transformer toy)

D.3.15 Marking requirements for product packing box

a) name and address of manufacturer;

b) name and type of product;

c) reference standard;

g) Functional toys: The functional toys shall have an illustrative marking, in order to warn that the products can only be used under the direct care of an adult. They shall be used under the direct care of an adult.

D.4.2 Relevant safety warnings of GB 19865 which may be involved

a) It shall be declared in the instruction manual of the transformer toys and battery compartment toys that they cannot be connected to power supplies more than the recommended number.

b) For the toys with wire for wireless connection, it shall be declared in the instruction manual that the wire cannot be plugged in an outlet.

c) If applicable, the instruction manual of the battery toys with replaceable battery shall include the following content: The battery power toys shall include proper instructions regarding the safety in use of battery. These instructions shall include the following content:

-- the type of battery which can be used;

-- how to take out and put in battery;

-- non-rechargeable battery shall not be charged;

-- rechargeable battery can only be charged under the care of an adult;

-- rechargeable battery shall be taken out from the toys before charging;

-- different types of batteries or new and old batteries cannot be mixed in use;

-- battery shall be put in based on the correct polarity;

-- exhausted battery shall be taken out from the toys; and

-- no short-circuit shall occur at the terminals of power supply.

d) If applicable, the instruction manual of the transformer toys shall include the following content:

-- the toys are not for children below 3 years old;

-- only the transformers recommended can be used for the toys;

-- the transformers are not toys; and

-- the toys which can be cleaned with liquid shall be disconnected from the transformers before cleaning.

D.4.3 Safety warnings of this Standard

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