

Unofficial Translation

Ministerial Notification

No. B.E. 2540 (1997)

Persuant to the Industrial Product Standards Act

B.E. 2511 (1968)

on Amendment to the Thai Industrial Standard for Toys Part 1 (Amendment No. 1)

Whereas it is expedient to revise the Thai Industrial Standard (TIS) 685 Part 1 - 2530 (1987),

By virtue of Section 15 of the Industrial Product Standards Act B.E. 2511 (1968), the Minister of Industry issues the Notification concerning amendment to the Thai Industrial Standard for Toys Part 1 attached to the Ministerial Notification No. (B.E. 2530) dated as follows :

1. The number of this standard should be amended from "TIS 685 Part 1 - 2530" to "TIS 685 Part 1 - 2540".

2. Clause 1.2 should be withdrawn and replaced by the following

:

"1.2 This standard covers all toys including their parts and accessories, except the following :

1.2.1 Decoration strips and materials such as coloured paper, silver strips and gold strips

1.2.2 Bicycles having maximum saddle height of 635 mm

1.2.3 Darts, slingshots and catapults

1.2.4 Public playground equipment

1.2.5 Air guns and air pistols

1.2.6 Handicraft products which are not primarily of play value, but for decorations or collection

1.2.7 Model kits in which the finished item is not primarily of play value

1.2.8 Sporting equipment, camping equipment, athletic equipment, musical instruments, furniture excluding toys that are their counterparts or faithful reproduction of those mentioned equipment which is manufactured for play and suitable for children

1.2.9 Powered models of aircraft, rockets, boats and land vehicles excluding toys that are their counterparts or faithful reproduction of those equipment which is manufactured for play and suitable for children

1.2.10 Adult collectible products

1.2.11 Aquatic equipment intended to be used in deep water and is large enough to support a child, e.g. boats and rafts

- 1.2.12 Professional toys installed in public places such as arcades and malls
 - 1.2.13 Puzzles having more than 500 pieces or without a picture
 - 1.2.14 Fireworks
 - 1.2.15 Products containing heating elements intended for use under the supervision of an adult in a teaching context
 - 1.2.16 Vehicles with combustion engines
 - 1.2.17 Toy steam engines
 - 1.2.18 Video toys that can be connected to a video screen and operated at a nominal voltage greater than 24 Volt
 - 1.2.19 Babies' dummies
 - 1.2.20 Electric ovens, irons or other functional products operated at a nominal voltage greater than 24 Volt
 - 1.2.21 Fashion jewellery for children
 - 1.2.22 flotation aids providing buoyancy in water
 - 1.2.23 Swimming goggles, sunglasses and other eye protectors including bicycle and skateboard helmets
 - 1.2.24 Items that are propelled into free flight by releasing an elastic band in the same way as catapults such as aeroplanes and rockets
 - 1.2.25 Chemistry sets
3. The following should be added as Clause 2.8
 "2.8 FINGER PAINT : Concentrated liquid paint to be used by children in art work by dipping fingers into it and painting on required materials."
 4. Clause 4.1.7.2, "less than 2 mm" should be amended to "less than 5 mm".
 5. The following should be added as Clause 4.1.9
 "4.1.9 Seams of toys made of textile materials
 After being tested in accordance with TIS 685 Part 3, seams and threads in the seam area shall not be torn, or the cover material adjacent to the seams shall not be separate."
 6. Clause 4.2.2 should be withdrawn and replaced by the following
 "4.2.2 Toys with non-detachable components intended for children under 3 years
 Small and non-detachable components shall be so fixed to the toy that they cannot become loosened or detached when they are submitted to the tension in accordance with TIS 685 Part 3 as follows

- (1) 50 N \pm 2 N when the dimension is less than or equal to 6 mm.
 - (2) 90 N \pm 2 N when the dimension is greater than 6 mm.
7. Clause 4.2.4.2, “ 760 mm ” should be amended to “ 750 mm ”.
8. Clause 4.2.9.1 (5), “shall be greater than 12 mm” should be “shall be less than 5 mm or greater than 12 mm”.
9. Clause 4.2.11 should be withdrawn and replaced by the following
 - “4.2.11 Projectile toys or projectile firing toys
 - 4.2.11.1 General requirements
 - (1) Projectile toys shall have a tip radius of not less than 2 mm.
 - (2) Protective components or magnetic materials of resilient materials used as impact surfaces, when tested for tension and torque in accordance with TIS 685 Part 3, shall not become detached and shall not produce hazardous sharp edges or points.
 - (3) Projectile firing toys shall be able to discharge missiles provided only with the toys and shall pass the impact test in accordance with TIS 685 Part 3.
 - 4.2.11.2 Projectile toys without stored kinetic energy
 - (1) Points of darts or arrows shall not be made of metals, except when they are dependent on magnetic forces, they can be made of magnetic materials.
 - (2) Projectile toys in the form of aircraft and missiles, e.g. guns shall not be made of metals and shall have blunt points. Their impact surfaces shall be protected by a resilient material (e.g. rubber) and shall have a cross sectional area of not less than 3 cm².
 - 4.2.11.3 Projectile toys with stored kinetic energy
 - (1) Faithful reproduction of firing weapons shall have bright orange strips with the width of not less than 6 mm.
 - (2) Missiles shall not be made of metal and shall have blunt points.
 - (3) The average kinetic energy of projectile firing toys, when tested for kinetic energy of projectiles shall not exceed 0.08 Joule for rigid missiles without resilient impact surfaces, and 0.5 Joule for resilient missiles or missiles with resilient impact surfaces.

(4) For missiles whose average kinetic energy exceeds 0.08 Joule, their impact surfaces shall be protected by a resilient material (e.g. rubber). The average kinetic energy per unit area of the resilient impact surface, when tested for kinetic energy of projectiles in accordance with TIS 685 Part 3, shall not exceed 0.16 Joule/cm².

4.2.11.4 There shall be a warning instruction and an instruction for use on the label.

10. Clause 4.2.12 should be withdrawn.

11. Clause 4.2.13, “ non-projectile ” should be added in front of “ weapons ”.

12. The following should be added as (4) of Clause 4.2.15

“(4) When tested for shape and size in accordance with TIS 685 Part 3, no portion shall be capable of entering and penetrating to the full depth of the cavity of the test templates A and B.

13. Clause 4.2.21.4, “ 21 °C ” should be “ 25 °C ”, “ 26 °C ” should be “ 30 °C ” and “31 °C” should be “ 35 °C”.

14. Clause 4.2.21.5, “ 41 °C ” should be “ 45 °C ” and “ 51 °C ” should be “ 55 °C ”.

15. Clause 4.2.22 should be withdrawn and replaced by

“4.2.22 Squeeze toys, teething toys and teething toys for children under 3 years

4.2.22.1 When tested for shape and size in accordance with TIS 685 Part 3, no portion shall be capable of entering and penetrating to the full depth of the cavity of the test templates A and B.

4.2.22.2 When tested for leakage in accordance with TIS 685 Part 3, there shall be no leakage of the contents nor any splitting nor cracking nor other damages.

16. Clause 4.3.1 “ Masks ” should be amended to “ Masks and part of masks with hair protruding less than 50 mm, or with no hair ”.

17. Clause 4.3.2 “ Masks and other product with the hair protruding more than 50 mm ” should be amended to “ and masks with fluffy hair or hair protruding more than 50 mm ”.

18. Clause 4.4 should be withdrawn and replaced by the following

“4.4 Chemical properties

4.4.1 Paints

The concentrations of heavy metals in solution extracted from paints shall not exceed those specified

in Table 3. Analysis of paint should be in accordance with TIS 685 Part 3.

4.4.2 Coatings

The concentrations of heavy metals in solution extracted from coatings shall not exceed those specified in Table 3. Analysis of coatings should be in accordance with TIS 685 Part 3.

4.4.3 Writing materials

The concentrations of heavy metals in solution extracted from writing materials shall not exceed those specified in Table 3.

Analysis of writing materials should be in accordance with TIS 685 Part 3.

Table 3 Acceptable heavy metal migration from paints, coatings, writing materials, plastics, paper and paper board

(Clauses 4.4.1, 4.4.2, 4.4.3, 4.4.4 and 4.4.5)

Heavy Metals	Maximum Concentration mg per kg
Antimony	60
Arsenic	25
Barium	1000
Cadmium	75
Chromium	60
Lead	90
Mercury	60
Selenium	500

4.4.4 Plastics

The concentrations of heavy metal in solution extracted from plastics shall not exceed those specified in Table 3.

Analysis of plastics shall be in accordance with TIS 685 Part 3.

4.4.5 Paper and paper boards

The concentrations of heavy metal in solution extracted from paper and paper boards shall not exceed those specified in Table 3.

Analysis of paper and paper boards shall be in accordance with TIS 685 Part 3.

4.4.6 Finger paints and modelling clay

The concentrations of heavy metal in solution extracted from finger paints and modelling clay shall not exceed those specified in Table 3.

Analysis of finger paints and modelling clay shall be in accordance with TIS 685 Part 3.

Table 4 Acceptable heavy metal migration from finger paints and modeling clay

(Clause 4.4.6)

Heavy Metals	Maximum Concentration mg per kg
Antimony	60
Arsenic	25
Barium	250
Cadmium	50
Chromium	25
Lead	90
Mercury	25
Selenium	500

As from

onB.E. 2540

(Signed)

Minister of Industry

**Thai Industrial Standard
for
Toys
Part 1: General Requirements**

1. Scope

- 1.1 This standard specifies materials, requirements, packaging, marking and labelling, sampling and criteria for conformity, testing and analysis of toys.
- 1.2 This standard covers all toys and includes parts and accessories, except the following :
 - 1.2.1 Decoration strips and materials such as coloured paper, silver strips and gold strips
 - 1.2.2 Sports equipment
 - 1.2.3 Aquatic equipment intended to be used in deep water and large enough to support a child such as boats, rafts
 - 1.2.4 Rockets, firecrackers and fireworks
 - 1.2.5 Scale models intended for collection
 - 1.2.6 Pedal bicycles for normal road use
 - 1.2.7 Chemistry sets

2. Definitions

For the purpose of this standard, the following definitions apply :

- 2.1 TOY : Any object designed or manufactured as a plaything for children.
- 2.2 CHILDREN : Persons not over 14 years of age.
- 2.3 FLOATATION TOYS : Toys which are designed to provide buoyancy, swimming aids and other toys used in water.
- 2.4 COATING MATERIALS : A material coated on a toy or part of toy, e.g. paint, varnish, lacquer, metal, etc.
- 2.5 GRAPHIC MATERIAL : Graphic material used as a toy or as part of a toy which can be a rendering of letters, numbers, lines or various figures such as core of a pencil or coloured pencil, ball-point pen ink, crayon, chalk.
- 2.6 PAINT : Oil colours and water colours used as a toy or as part of a toy.
- 2.7 MODELING CLAY : Plasticine and other sorts of clay used for making models.

3. Materials

- 3.1 Toys shall be made from new material or from reprocessed material, such as reprocessed plastics, foam scrap, fibrous scrap from textile production or fabric trimmings from garment manufacturing, that has been so treated that the reprocessed material will not present any hazardous extraneous matter or any substance in such quantities or in such manner that will be hazardous to health and shall comply with the following requirements :
 - 3.1.1 Plastics
 - 3.1.1.1 Plastics shall be made from new resin or reprocessed plastics and free from chemical substances or any materials that will present any hazard or any matter in such quantities or in such manner that will be hazardous to health.
 - 3.1.1.2 Additives such as pigment, stabilizer intended for the purpose of manufacturing shall not exceed that that can be hazardous to health or impair its performance in service.

- 3.1.2 Wood
 - 3.1.2.1 Wood shall be free from mould or signs of attack by termites or insects.
 - 3.1.2.2 Wood shall not be impregnated by wood preservatives that would be toxic or hazardous to health.
- 3.1.3 Glass
 - 3.1.3.1 Glass shall not be used in the construction of toys for children under three years except as beads for rattles.
 - 3.1.3.2 Glass may be used in the construction of toys for children over three years only where its use is necessary for the function of the toys, e.g. telescopes, and shall be not less than 2 mm thick.
- 3.1.4 Stuffing materials
 - 3.1.4.1 Stuffing materials shall not contain any hard or sharp objects or similar objects that would be hazardous to a child.
 - 3.1.4.2 Stuffing materials shall not contain mould, insects or part of insects, manure, caterpillars.
 - 3.1.4.3 Stuffing materials in the form of granules with a maximum dimension of 3 mm or less shall be enclosed in an internal casing which is not itself the outer surface of the toy.
- 3.1.5 Fabrics

Low flammable fabrics shall be used. Self extinguishing of the fabrics shall be within 5 seconds or a duration of burning in 5 seconds shall have the burnt area less than 100 mm², when tested in accordance with TIS 685 "Standard for toys" : Part 3 "Methods of test and analysis".
- 3.1.6 Fuel

Fuel in solid or in liquid form supplied in the toy or separately shall be marked with a warning on the label.
- 3.2 Prohibited materials for toys
 - 3.2.1 A substance that increases in size unusually in the presence of water e.g. sodium polyacrylate.
 - 3.2.2 High fire danger materials are as follow :
 - 3.2.2.1 Celluloid (cellulose nitrate) and materials with the same behaviour in fire except when used in varnish or paint
 - 3.2.2.2 Materials with a pile surface which produces surface flash effect on the approach of a flame
 - 3.2.2.3 Flammable gas
 - 3.2.2.4 A substance which when combined with other substances, the resulting compound has flammable properties.
 - 3.2.2.5 A substance spontaneously flammable or giving out heat at room temperature.
 - 3.2.2.6 A substance giving the flammable gas in the presence of water or moisture, e.g. carbide compounds.

4. Requirements

- 4.1 Workmanship
 - 4.1.1 Surface

The surface shall be clean and free from defects or any imperfections that would cause a wound or be injurious to a child.
 - 4.1.2 Accessible edges

When the accessibility of a part or component of a toy is tested in accordance with TIS 685, Part 3, the accessible edges, if any, shall be so designed to minimize the risk of injury and shall comply with the following requirements :

4.1.2.1 Accessible edges of glass

The edges shall be rounded or coated with a protective substance such as plastics, except when used in microscopes.

Test for hazardous sharp edges shall be carried out in accordance with TIS 685, Part 3.

4.1.2.2 Accessible edges of sheet metal

The edges shall not be sharp or shall be hemmed, rolled or spiralled as shown in Figure 1, or be coated with a protective substance such as plastics.

Test for hazardous sharp edges shall be carried out in accordance with TIS 685, Part 3.

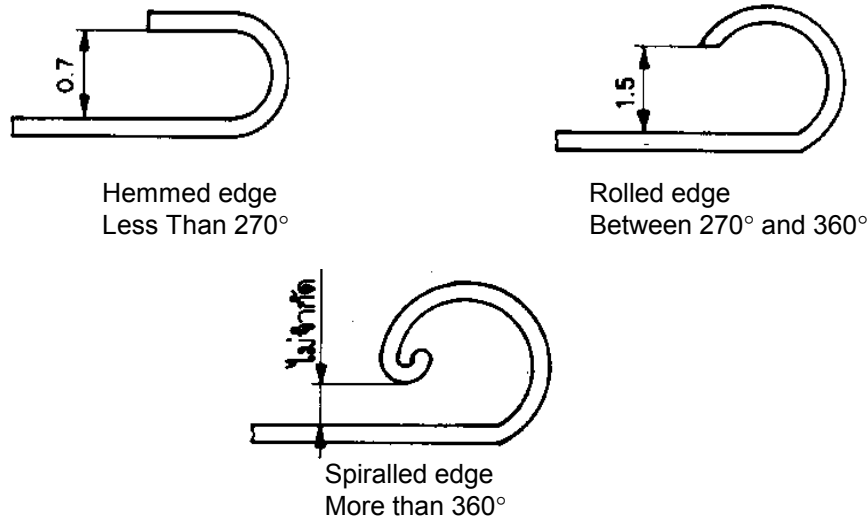


Figure 1 Edge of sheet metal
(clause 4.1.2.2)

4.1.2.3 Other accessible edges of base materials such as plastics, metal, wood shall be free from any defects that would be injurious to children such as splinters, burrs, breakage.

4.1.2.4 Functional cutting edges

The functional cutting edges shall be used only in toys intended for children over 4 years. Caution and instructions for use shall be attached on the label.

4.1.3 Circular holes in thin rigid material

In toys intended for a child aged less than 5 years and having an accessible circular or substantially circular hole in sheet metal or other rigid material having a thickness of 1.6 mm or less and a depth of 10 mm or more, such hole shall either :

4.1.3.1 be less than 5 mm in diameter or;

4.1.3.2 be more than 12 mm in diameter and not be sharp edges, or be coated with a protective substance such as plastics.

Test for hazardous sharp edges shall be carried out in accordance with TIS 685, Part 3.

4.1.4 Fastenings

4.1.4.1 Accessible parts of fastenings shall be free from any defects that would be injurious to children such as burrs.

4.1.4.2 If a fastening has a head which is intended to be countersunk, no part of the head shall protrude above the surface of the finished toy.

4.1.4.3 The pointed end of screws, nails and other similar fastenings used in the manufacture of toys shall not be accessible.

Tests for accessibility of a part or component of a toy shall be carried out in accordance with TIS 685, Part 3.

4.1.5 Points

4.1.5.1 Accessible points

When the accessibility of a part or component of a toy is tested in accordance with TIS 685, Part 3, the accessible points, if any, shall either not be sharp points or be coated with a protective substance such as plastics.

Test for hazardous sharp edges shall be carried out in accordance with TIS 685, Part 3.

4.1.5.2 Wires

Ends of wires shall be rounded or blunted. Wires likely to be bent by the children shall not break when tested for flexibility of the wire in accordance with TIS 685, Part 3.

4.1.5.3 Sharp points which are essential for the functioning or design of toys shall be used only for toys for children over 6 years. Caution and instructions for use shall be attached on the label.

4.1.6 Hinges

Toy having two parts joined by means of one or more hinges, e.g. toys with a door or a lid and with a space between the assembled edges, shall be so constructed that this space is less than 5 mm or greater than 12 mm in any position of the door or lid.

4.1.7 Driving mechanisms

4.1.7.1 Driving mechanisms forming an integral part of a toy that would be injurious to a child such as gear wheels, belts :

(1) shall not be accessible ;

Test for accessibility of a part or component of a toy shall be carried out in accordance with TIS 685, Part 3.

(2) When tested for drop strength in accordance with TIS 685, Part 3, the mechanism shall not become detached.

4.1.7.2 The winding keys or starting handles shall be such that the space between the key or the handle and the body of the toy is less than 2 mm or greater than 12 mm.

4.1.7.3 If starting cords, wires or other similar materials less than 1.5 mm in diameter are used for mechanisms in toys by children under 3 years, the recoil force of the mechanisms shall not exceed 4.5 N.

4.1.8 Springs

The following springs shall be protected.

4.1.8.1 Spiral springs, protection shall be provided if the gap between two consecutive spirals is greater than 3 mm when the spring is at rest.

4.1.8.2 Helical springs, if the gap between two consecutive turns is greater than or equal to 3 mm when the spring is subjected to a tensile force of 40 N.

4.1.8.3 Any springs that might injure a child during use of the toys.

Springs, when tested for reaction of protective components to traction in accordance with TIS 685, Part 3, the protection on springs shall not become detached.

4.2 Requirements applicable to certain types of toys

4.2.1 Small toys and detachable components intended for children under 3 years

Small toys and detachable components shall pass the dimension test as specified in TIS 685, Part 3.

4.2.2 Small toys with non-detachable components intended for children under 3 years

Non-detachable components shall be so fixed to the toy that they cannot become detached or loosened when they are submitted to ;

(1) 50 N when the largest accessible dimension is less than or equal to 6 mm,

(2) 90 N when the largest accessible dimension is greater than 6 mm.

4.2.3 Toys intended to be put to the mouth such as whistles

When a sucking pressure of 10 kPa is applied to the orifice, the ball contained in the toys shall not become detached.

4.2.4 Toy intended to be used in a cradle, cot or perambulator

4.2.4.1 Cords, threads or other similar materials with one end fastened to the cradles, cot or perambulators

- (1) shall have a free length of not more than 300 mm.
 - (2) In the case of loops, the periphery of any loop shall not exceed 350 mm.
 - (3) In the case of elastic cords, when they are stretched by a force of 25 N, the length shall conform to the requirements of sub-clause (1) or (2).
- 4.2.4.2 Elastic cords intended to be fixed across a cradle, cot or perambulator
When stretched using a force of 25 N, the cord lengths shall not exceed 760 mm and their length under these conditions shall be not more than 40% longer than their relaxed length.
- 4.2.5 Toys intended to be pulled along by a child under 3 years
Cords shall be not less than 1.5 mm in thickness or diameter and shall not be sharp.
- 4.2.6 Toys intended to be worn around the neck
- 4.2.6.1 Cords for toys intended to be worn around the neck shall be used only for children over 5 years.
 - 4.2.6.2 Cords shall be not less than 1.5 mm in thickness or diameter and shall not be sharp.
- 4.2.7 Toys which a child can enter having a door, lid, or similar device
- 4.2.7.1 Buttons, zips, bolts, hooks or similar fastening shall not be used.
 - 4.2.7.2 It shall be possible for a child to open the door, lid or similar device from the inside.
 - 4.2.7.3 When the doors, lids and similar devices are closed, ventilation shall be assured.
In cases of toys made from thermoplastics, a cautionary warning label shall be attached.
- 4.2.8 Toys that enclose the head, or cover the mouth and nose which are made of impermeable materials
- 4.2.8.1 Any weak plastics shall have the average thickness not less than 0.038 mm.
 - 4.2.8.2 Toys that enclose the head
Toys that enclose the head shall provide means for breathing by the incorporation of two unobstructed ventilation areas, each of which is at least 6 cm², situated at least 150 mm apart.
 - 4.2.8.3 Toys that enclose the head or cover the nose and mouth
The toys that enclose the head or cover the nose and mouth of a child shall include adequate and unobstructed ventilation to the nose and the mouth area of the toys.
- 4.2.9 Toy intended to bear the mass of a child
- 4.2.9.1 Toys propelled by, and intended to bear the mass of a child, e.g. tricycles, scooters, skateboard, shall comply with the following requirements :
 - (1) The toys, when tested for static strength and dynamic strength in accordance with TIS 685, Part 3, shall not break.
 - (2) The toys, when tested for stability on an inclined plane in accordance with TIS 685, Part 3, shall not tip over. This requirement does not apply to toys with two aligned wheels such as pedal bicycles, scooters, even when fitted with stabilizing means.
 - (3) In the case of mechanical toys with a free wheeling facility, a braking device shall be provided. The device shall be such that, when the toys are tested for braking in accordance with TIS 685 Part 3, the toys shall not move.
 - (4) In the case of chain-driven pedal bicycles, the bicycle shall be provided with a chain, a sprocket and a chain guard as shown in Figure 2. The chain guard shall be so attached that it can not be removed without the use of tools.
 - (5) Spaces between wheels and the body or parts of the toy e.g. mudguards, chain guards shall be greater than 12 mm.

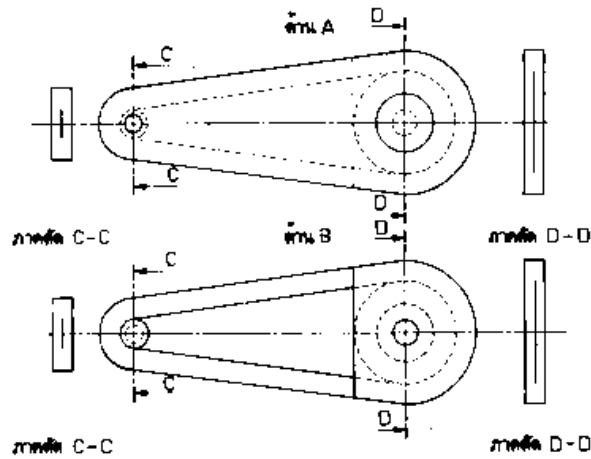


Figure 2 Chain, sprocket and chain guard of a pedal bicycle
(clause 4.2.9.1(1))

4.2.9.2 Immovable stationary toys, e.g. rocking chairs, garden slides, see-saws, but excluding swings, shall comply with the following requirements :

- (1) The toys, when tested for static strength in accordance with TIS 685, Part 3, shall not break or fracture.
- (2) The toys without a device fixing them to the ground, when tested for stability on an inclined plane in accordance with TIS 685, Part 3, shall not tip over.
- (3) If the toys are designed to be used in the open air, means shall be provided to ensure that water that might otherwise accumulate inside to toys are continually able to drain away.

4.2.9.3 Swings

- (1) Swings, when tested for strength of a swing in accordance with TIS 685, Part 3, its components shall not break, damage or impair its performance in use.
- (2) The means of suspension e.g. rope, chain, shall have a minimum average diameter of 10 mm. (In cases of chains, the width of the links shall be measured.)
- (3) Suspension hooks shall be wound over at least 540°.
- (4) When a safety device is designed as to prevent the child from falling off the seat, a protective round bar shall be situated between 200 mm and 300 mm above the seat or a device to fasten the child to the seat.
- (5) A cautionary warning label shall be attached.

4.2.10 Heavy immovable toys of mass in excess of 5 kg but not intended to bear the weight of a child

When the toys are tested for stability of heavy toys in accordance with TIS 685, Part 3, the toys shall not tip over.

4.2.11 Projectiles in the form of a shaft

4.2.11.1 Projectile toys shall not be capable of discharging missiles other than those provided with the toys.

4.2.11.2 Missiles provided with the toys shall be as follows :

- (1) The ends shall be blunted.
- (2) The tips shall be soft or include a soft protective cover except if they are dependent on magnetic forces.
 - (2.1) The protective tip shall have a face area three times the greatest cross sectional area of the projectile and the greatest face area shall be at least 314 mm².
 - (2.2) Missiles, when tested for resistance to torque and resistance to tensile force in accordance with TIS 685, Part 3, the protective

cover or magnetic material shall not become detached or produce a hazardous sharp edges or hazardous sharp points.

(3) Missiles shall pass the impact test in accordance with TIS 685, Part 3.

4.2.11.3 Caution and instruction for use shall be attached on the label.

4.2.12 Projectile toys

Projectile toys shall comply with the requirements of clause 4.2.11.2(1) and (2).

4.2.13 Non-projectile imitation weapons

Non-projectile imitation weapons, e.g. knives, sword, axes shall not have any functional sharp edges or functional sharp points.

Test for hazardous sharp edges or hazardous sharp points shall be carried out in accordance with TIS 685, Part 3.

4.2.14 Imitation protective equipment e.g. helmet, eye-protectors

4.2.14.1 A cautionary warning label shall be attached.

4.2.14.2 In the case of imitations of eye-protectors, e.g. goggles, diving masks, when tested for eye protection in accordance with TIS 685, Part 3, transparent material shall not crack.

4.2.15 Rattles

4.2.15.1 The solid particles shall be smooth and rounded.

4.2.15.2 Seed and materials that have dimensions which increase by more than 5% of their initial value when tested for expansion of material in the water in accordance with TIS 685, Part 3, shall not be used.

4.2.15.3 The rattle, when tested for drop strength and strength of toys in accordance with TIS 685, Part 3, shall not crack or break.

4.2.16 Kites and other flying toys having a hand-held line that is 3 mm or more in length

4.2.16.1 Kites or other flying toys

(1) The kites or other flying toys shall not be made of metal or be coated with metal or a mixture that measures 250 mm or more in any direction.

(2) A cautionary warning label shall be attached.

4.2.16.2 Hand-held line

(1) The hand-held line shall not contain any metallic material.

(2) The hand-held line shall have an electric resistivity of 1 MΩ.m or more. Electric resistivity test on strings of kites or other flying toys shall comply with TIS 685, Part 3.

4.2.17 Aquatic toys

A cautionary warning label shall be attached.

4.2.17.1 Inflatable aquatic toys made of plastics

(1) Plastics shall be in a colour contrasting with water. The physical properties of plastics shall be as given in Table 1.

Table 1
Physical properties of plastics
(clause 4.2.17.1(1))

Length of the longest part before inflation, mm	Thickness, min, mm	Tensile breaking strength in each direction, min, N
Less than 760	0.25	35
760 and over	0.30	45

Note 1) If a seam appears on the longest part of the plastics, measurement shall be started at the inner edge of the seam.

2) Tensile strength in each direction means tensile strength in longitudinal and transverse directions on the apparatus.

- (2) If the length of the longest part of plastics before inflation is 760 and over, at least two independent air chambers shall be provided.
- (3) When air chambers are contained with the pressure specified in Table 2, these shall be free from any defects such as splitting, seam fail, air leaks, cap loose.

Table 2
Pressure in each air chambers
(clause 4.2.17.1(3))

Circumference of air chamber, mm	Pressure, mm Hg
Less than 200	85
200 to less than 400	75
400 to less than 700	60
700 to less than 1000	50
1000 to less than 1300	40
1300 and over	35

Note The length of circumference shall be measured at any direction which gives the maximum tensile force.

- (4) The open and shut system of the air chamber shall be 2 levels and constituents with cover and valve connected around the aperture of the chamber. When a force of 70 N is applied for 10 s, the seam shall not break.
- (5) In the case of string to which is attached the toy, when the force of 70 N is applied for 10 s, the string and attachment shall not break.

4.2.18 Noise-producing toys except for toys intended to produce noise by being struck or blowing

4.2.18.1 Toys that produce impulsive noise with a duration of sound less than 1 s

- (1) Toys intended for a child aged not more than 18 months, the mean sound level shall not exceed 105 dB(A).
- (2) Toys intended for a child aged more than 18 months, the mean sound level shall not exceed 110 dB(A).

4.2.18.2 Toys that produce continuous noise with a duration of sound 1 s or more

- (1) Toys intended for a child aged not more than 18 months, the mean sound level shall not exceed 75 dB(A).
- (2) Toys intended for a child aged more than 18 months, the mean sound level shall not exceed 85 dB(A).

Measurement of noise level shall comply with AS 1647, part 2.

4.2.19 Toys made of flexible plastics sheeting of an area greater than 100×100 mm. The plastics sheeting shall have a minimum thickness of 0.038 mm.

4.2.20 Toys with parts are intended to be exposed to heat
Where glass is used as part of toy and intended to be exposed to heat, only borosilicate glass or other equivalent quality glass shall be used.
Test on type of glass shall be carried out in accordance with TIS 685, Part 3.

4.2.21 Toys containing fuel or other heat sources

- 4.2.21.1 Toys containing a heat source shall not catch fire during continuous operation, nor fumes, nor disagreeable odour.
- 4.2.21.2 In case fuel is supplied with the toy, when tested for fuel containing in accordance with TIS 685, Part 3, toys shall comply with the following requirements :
 - (1) solid fuel shall not escape from fuel container,
 - (2) liquid fuel shall not escape or leak from fuel container.
- 4.2.21.3 In case furnace is used, it shall have a safety device to prevent the introduction of fingers. The closure of the furnace shall have a handle.

4.2.21.4 The rise in temperature of parts that are intended to be touched by hand, for example knobs, handles, control grips, shall not exceed the following values, when the toy is operated until equilibrium temperature is reached :

- (1) 21°C for metal
- (2) 26°C for glass, porcelain
- (3) 31°C for plastics, wood

4.2.21.5 The rise in temperature of other accessible parts of the toy (except of clause 4.2.21.4) shall not exceed the following values when the toy is operated until equilibrium temperature is reached :

- (1) 41°C for metal
- (2) 51°C for other materials

4.2.22 Toys intended to be used for educational purpose that fulfill the same functions as the corresponding model for domestic use and which contain fuel or other heat sources.

4.2.22.1 Functional toys shall comply with the requirements of clause 4.2.21 except for functional heated surfaces where there is no limit for temperature rise.

4.2.22.2 Caution and instruction for use shall be attached on the label.

4.3 Flammability requirements

4.3.1 Masks

Masks, when tested for flammability in accordance with TIS 685, Part 3,

4.3.1.1 shall not be flammable; or

4.3.1.2 if ignition occurs,

- (1) the duration of burning shall be not more than 2 s and,
- (2) the burnt area shall be not greater than 70 mm²

4.3.2 Beards, moustaches, wigs, masks and other product where the hair, pile or other attached material protrudes more than 50 mm from the surface of the product, when tested for flammability in accordance with TIS 685, Part 3, the pile or other attachments

4.3.2.1 shall not be flammable; or

4.3.2.2 if ignition occurs,

- (1) the duration of burning shall be not more than 2 s and,
- (2) the greatest length of pile, hair or other attachments which remain shall be not less than 50% of the greatest initial length when the initial length was 150 mm or more; or not less than 25% of the greatest length, when the initial length was less than 150 mm.

4.3.3 Toys with a pile surface or textile surface

The toys, when tested for flammability in accordance with TIS 685, Part 3, the rate of spread of flame on the surface shall not be more than 50 mm/s.

4.4 Chemical properties

4.4.1 Coating materials

The concentration of leachable elements in coating materials shall not exceed the concentrations specified in Table 3.

Method for determining leachable substances in coating shall be in accordance with TIS 685, Part 3.

Table 3
Concentration of leachable elements in coating materials, graphic materials,
plastics, paper and hard paper
(clauses 4.4.1, 4.4.2, 4.4.3 and 4.4.4)

Element	Maximum concentration
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	mg/kg
Antimony	250
Arsenic	100
Barium	500
Cadmium	100
Chromium	100
Lead	250
Mercury	100

4.4.2 Graphic materials

The concentration of leachable elements in graphic materials shall not exceed the concentrations specified in Table 3.

Method for determining leachable substances in graphic material shall be in accordance with TIS 685, Part 3.

4.4.3 Plastics

4.4.3.1 The concentration of leachable elements in plastics shall not exceed the concentrations specified in Table 3.

4.4.3.2 The concentration of any hexane-soluble substances shall not exceed 10% by mass.

Method for determining leachable substances in plastics shall be in accordance with TIS 685, Part 3.

4.4.4 Paper and paper board

The concentration of leachable elements in paper and paper board shall not exceed the concentrations specified in Table 3.

Method for determining leachable substances in paper and paper board shall be in accordance with TIS 685, Part 3.

4.4.5 Colourants and modeling materials

The concentration of leachable elements in colourants and modeling materials shall not exceed the concentrations specified in Table 4.

Method for determining leachable elements in colourants and modeling materials shall be in accordance with TIS 685, Part 3.

Table 4
Concentration of leachable elements in colourants and modeling material
(clause 4.4.5)

Element	Maximum concentration mg/kg
Antimony	250
Arsenic	50
Barium	250
Cadmium	50
Chromium	25
Lead	100
Mercury	25

4.4.6 Glue and/or solvent used with toys

4.4.6.1 Glue or solvent shall not contain any substance in such quantities or in such a manner that will be hazardous to health.

4.4.6.2 Caution and instructions for use shall be attached on the label.

4.5 Performance

Performance shall be as specified on the label.

5. Packaging

5.1 Packages of toys shall comply with TIS 685, Part 2, "Standard for toys" : "Part 2", Packages and labelling".

6. Marking and labelling

6.1 Marking and labelling shall comply with TIS 685, Part 3.

7. Sampling and criteria for conformity

7.1 General

7.1.1 Lot: Toys made from the same material which are manufactured, delivered or purchased at one time.

7.1.2 Type: Toys of the same component, feature or characteristics.

7.2 Sampling and acceptance shall comply with the following sampling plan or other technically equivalent plan.

7.2.1 Sampling and acceptance for test on material, workmanship, requirements applicable to certain types of toy, flammability requirements, performances, packaging, marking and labelling.

7.2.1.1 Three samples per type shall be drawn at random from the same lot.

7.2.1.2 Provided all the samples comply with the requirements of clauses 3, 4.1, 4.2, 4.3, 4.5, 5 and 6, that lot shall be deemed to comply with the requirements.

7.2.2 Sampling and acceptance for test on chemical properties

7.2.2.1 Three samples shall be drawn at random from the same lot.

7.2.2.2 Provided all the samples comply with the requirements of clause 4.4, that lot shall be deemed to comply with the requirements.

7.3 Criteria for conformity

Provided the samples meet all the requirements of clauses 7.2.1.2 and 7.2.2.2, that lot of toys shall be deemed to comply with this standard.

8. Testing and analysis

8.1 Unless otherwise specified, compliance with the requirements of this standard is checked by visual inspection, and measurement of dimensions, distances, forces, temperature and so on, shall be tested at a temperature of $27 \pm 2^{\circ}\text{C}$ by means of appropriate devices.