

(4) Such other conditions as are necessary to maintain adequate supervision and control over the article.

(b) Upon receipt of a written request for extension of time to complete such operations, containing reasonable grounds therefor, the area office director may grant such additional time as he deems necessary.

(c) An authorization may be amended upon a showing of reasonable grounds therefor and the filing of an amended application for authorization with the area office director.

(d) If ownership of a hazardous substance covered by an authorization changes before the operations specified in the authorization have been completed, the original owner will be held responsible, unless the new owner has executed a bond and obtained a new authorization. Any authorization granted under this section shall supersede and nullify any previously granted authorization with respect to the article.

§ 1500.271 Bonds.

(a) The bonds required under section 14(b) of the act may be executed by the owner or consignee on the appropriate form of a customs single-entry or term bond, containing a condition for the redelivery of the merchandise or any part thereof upon demand of the collector of customs and containing a provision for the performance of conditions as may legally be imposed for the relabeling or other action necessary to bring the hazardous substance into compliance with the act in such manner as is prescribed for such bond in the customs regulations in force on the date of request for authorization. The bond shall be filed with the collector of customs.

(b) The collector of customs may cancel the liability for liquidated damages incurred under the above-mentioned provisions of such a bond, if he receives an application for relief therefrom, upon the payment of a lesser amount or upon such other terms and conditions as shall be deemed appropriate under the law and in view of the circumstances, but the collector shall not act under this regulation in any case unless the area office director is in full agreement with the action.

§ 1500.272 Costs chargeable in connection with relabeling and reconditioning inadmissible imports.

The cost of supervising the relabeling or other action necessary in connection

with an import of a hazardous substance that fails to comply with the act shall be paid by the owner or consignee who files an application requesting such action and executes a bond, pursuant to section 14(b) of the act. The cost of such supervision shall include, but not be restricted to, the following:

(a) Travel expenses of the supervising officer.

(b) Per diem in lieu of subsistence of the supervising officer when away from his home station as provided by law.

(c) Services of the supervising officer, to be calculated at a flat rate of \$8 per hour (which shall include administrative expense), except that such services performed by a customs officer and subject to the provisions of the Act of February 13, 1911, as amended (sec. 5, 36 Stat. 901 as amended; 19 U.S.C. 267), shall be calculated as provided in that act.

(d) Services of analyst, to be calculated at a flat rate of \$10 per hour (which shall include the use of the chemical laboratories and equipment of the Consumer Product Safety Commission).

(e) The minimum charge for services of supervising officers and of analysts shall be not less than the charge for 1 hour, and time after the first hour shall be computed in multiples of 1 hour, disregarding fractional parts less than one-half hour.

PART 1505—REQUIREMENTS FOR ELECTRICALLY OPERATED TOYS OR OTHER ELECTRICALLY OPERATED ARTICLES INTENDED FOR USE BY CHILDREN

Sec.	
1505.1	Definitions.
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AUTHORITY.—Secs. 2(f)(1)(D), (r), (s), (t), 3(e)(1), 74 Stat. 372, 374, 375, as amended, 83 Stat. 187-89 (15 U.S.C. 1261, 1262).

SOURCE: 38 FR 27032, Sept. 27, 1973, unless otherwise noted.

NOTE.—This Part 1505 was originally promulgated as 21 CFR Part 191b in the FEDERAL REGISTER of March 7, 1973 (38 FR 6138), with an effective date of September 3, 1973.

§ 1505.1 Definitions.

(a) The following definitions apply to this Part 1505:

(1) The term "electrically operated toy or other electrically operated article intended for use by children" means any toy, game, or other article designed, labeled, advertised, or otherwise intended for use by children which is intended to be powered by electrical current from nominal 120 volt (110–125 v.) branch circuits. Such articles are referred to in this part in various contexts as "toy" or "electrically operated toy." If the package (including packing materials) of the toy or other article is intended to be used with the product, it is considered to be part of the toy or other article. This definition does not include components which are powered by circuits of 30 volts r.m.s. (42.4 volts peak) or less, or articles designed primarily for use by adults which may be used incidentally by children.

§ 1505.2 Scope of part.

This part sets forth the requirements whereby electrically operated toys and other electrically operated articles intended for use by children (as defined in § 1505.1(a)(1)) are not banned toys or banned articles under § 1500.18(b)(1) of this chapter.

§ 1505.3 Labeling.

(a) *General.* Electrically operated toys, and the instruction sheets and outer packaging thereof, shall be labeled in accordance with the requirements of this section and any other applicable requirements of the Federal Hazardous Substances Act and regulations promulgated thereunder. All labeling shall be prominently and conspicuously displayed under customary conditions of purchase, storage, and use. All required information shall be readily visible, noticeable, clear, and, except where coding is permitted, shall be in legible English (other languages may also be included as appropriate). Such factors governing labeling as location, type size, and contrast against background may be based on necessary condensations to provide a reasonable display.

(b) *Specific items.* (1) The toy shall be marked in accordance with the provisions of paragraph (d) of this section to indicate:

(i) The electrical ratings required by paragraph (c) of this section.

(ii) Any precautionary statements required by paragraph (e) of this section.

(2) The shelf pack or package of the toy shall be labeled in accordance with the provisions of paragraph (d) of this section to indicate:

(i) The date (month and year) of manufacture (or appropriate codes).

(ii) The electrical ratings required by paragraph (c) of this section.

(iii) Any precautionary statements required by paragraph (e) of this section.

(3) Each toy shall be provided with adequate instructions that are easily understood by children of those ages for which the toy is intended. The instructions shall describe the applicable installation, assembly, use, cleaning, maintenance (including lubrication), and other functions as appropriate. Applicable precautions shall be included as well as the information required by paragraphs (b)(1) and (2) of this section. The instructions shall also contain a statement addressed to parents recommending that the toy be periodically examined for potential hazards and that any potentially hazardous parts be repaired or replaced.

(4) If a toy is produced or assembled at more than one establishment, the toy and its shelf pack or package shall have a distinctive mark (which may be in code) identifying the toy as the product of a particular establishment.

(c) *Rating.* (1) A toy shall be marked to indicate its rating in volts and also in amperes and/or watts.

(2) If a toy utilizes a single motor as its only electric energy consuming component, the electrical rating may be marked on a motor nameplate and need not be marked elsewhere on the toy if the nameplate is readily visible after the motor has been installed in the toy.

(3) A toy shall be rated for alternating current only, direct current only, or both alternating and direct current.

(4) The alternating current rating shall include the frequency or frequency range requirement, if necessary because of a special component.

(d) *Markings.* (1) The markings required on the toy by paragraph (b) of this section shall be of a permanent nature, such as paint-stenciled, die-stamped, molded, or indelibly stamped. The markings shall not be permanently obliterated by spillage of any material intended for use with the toy and shall not be readily removable by cleaning with ordinary household cleaning substances. All markings on the toy and labeling of

the shelf pack or package required by paragraph (b) of this section shall contrast sharply with the background (whether by color, projection, or indentation) and shall be readily visible and legible. Such markings and labeling shall appear in lettering of a height not less than that specified in paragraph (d) (2) of this section, except that those words shown in capital letters in paragraph (e) of this section shall appear in capital lettering of a height not less than twice that specified in paragraph (d) (2) of this section.

(2) Minimum lettering heights shall be as follows:

SURFACE AREA DISPLAYING MARKING, MINIMUM HEIGHT OF LETTERING	
Square inches	Inches
Under 5.....	1/16
5 or more and under 25.....	1/8
25 or more and under 100.....	3/16
100 or more and under 400.....	1/4
400 or more.....	1/2

(e) *Precautionary statements*—(1) *General.* Electrically operated toys shall bear the statement: “CAUTION—ELECTRIC TOY.” The shelf pack or package and the instructions of such toys shall bear the statement in the upper right-hand quarter of the principal display panel: “CAUTION—ELECTRIC TOY: Not recommended for children under ____ years of age. As with all electric products, precautions should be observed during handling and use to prevent electric shock.” The blank in the preceding statement shall be filled in by the manufacturer, but in no instance shall the manufacturer indicate that the article is recommended for children under 8 years of age if it contains a heating element. In the case of other electrically operated products which may not be considered to be “toys” but are intended for use by children, the term “ELECTRICALLY OPERATED PRODUCT” may be substituted for the term “ELECTRIC TOY.”

(2) *Thermal hazards.* (i) Toys having Type C or Type D surfaces (described in § 1505.6(g) (2)) which reach temperatures greater than those shown in paragraph (e) (2) (ii) of this section shall be defined as hot and shall be marked where readily noticeable when the hot surface is in view with the statement: “HOT—Do Not Touch.” When the marking is on other than the hot surface, the word “HOT” shall be followed by appropriate descriptive words such as “Molten Material,” “Sole Plate,” or “Heating Element,”

and the statement “Do Not Touch.” An alternative statement for a surface intended to be handheld as a functional part of the toy shall be “HOT ----- Handle Carefully,” the blank being filled in by the manufacturer with a description of the potential hazard such as “Curler” or “Cooking Surface.”

(ii) Surfaces requiring precautionary statements of thermal hazards are those exceeding the following temperatures when measured by the test described in § 1505.6(g) (4) :

Surface type (see § 1505.6 (g) (2))	Thermal inertia type ¹	Temperature	
		Degrees C.	Degrees F.
C.....	1	65	149
C.....	2	75	167
C.....	3	85	185
C.....	4	95	203
D.....	1	55	131
D.....	2	70	158
D.....	3	80	176
D.....	4	90	194

¹ Thermal inertia types are defined in terms of lambda as follows:

- Type 1: Greater than 0.0045 (e.g., most metals).
 - Type 2: More than 0.0005 but not more than 0.0045 (e.g., glass).
 - Type 3: More than 0.0001 but not more than 0.0005 (e.g., most plastics).
 - Type 4: 0.0001 or less (e.g., future polymeric materials).
- The thermal inertia of a material can be obtained by multiplying the thermal conductivity (cal./cm./sec./degrees C.) by the density (gm./cm.³) by the specific heat (cal./gm./degrees C.)

(3) *Lamp hazards*—(i) *Replaceable incandescent lamps.* A toy with one or more replaceable incandescent lamps, having a potential difference of more than 30 volts r.m.s. (42.4 volts peak) between any of its electrodes or lampholder contacts and any other part or ground, shall be marked inside the lamp compartment where readily noticeable during lamp replacement with the statement: “WARNING—Do not use light bulbs larger than ____ watts”, the blank being filled in by the manufacturer with a number specifying the wattage rating of the lamp. Such toys shall bear the statement: “WARNING—Shock Hazard. Pull plug before changing light bulb” on the outside of the lamp compartment where it will be readily noticed before gaining access to the lamp compartment.

(ii) *Nonreplacement incandescent lamps.* A toy which utilizes one or more nonreplaceable incandescent lamps (other than pilot or indicator lamps) shall be marked where clearly visible with the statement: “SEALED UNIT—Do not attempt to change light bulb” or equivalent.

(4) *Water.* If not suitable for immersion in water, a toy cooking appliance (such as a corn popper, skillet, or candy-maker) or other article which may conceivably be immersed in water shall be marked with the statement: "DANGER—To prevent electric shock, do not immerse in water; wipe clean with damp cloth" or equivalent.

§ 1505.4 Manufacturing requirements.

(a) *General.* (1) Only materials safe and suitable for the particular use for which the electrically operated toy is intended shall be employed.

(2) Toys shall be produced in accordance with detailed material specifications, production specifications, and quality assurance programs. Quality assurance programs shall be established and maintained by each manufacturer to assure compliance with all requirements of this part.

(3) The manufacturer or importer shall keep and maintain for 3 years after production or importation of each lot of toys (i) the material and production specifications and the description of the quality assurance program required by paragraph (a)(2) of this section, (ii) the results of all inspections and tests conducted, and (iii) records of sale and distribution. These records shall be made available upon request at reasonable times to any officer or employee of the Consumer Product Safety Commission. The manufacturer or importer shall permit such officer or employee to inspect and copy such records, to make such inventories of stock as he deems necessary, and to otherwise verify the accuracy of such records.

(4) Toys shall be constructed and finished with a high degree of uniformity and as fine a grade of workmanship as is practicable in a well-equipped manufacturing establishment. Each component of a toy shall comply with the requirements set forth in this part.

(b) [Reserved]

(c) *Protective coatings.* Iron and steel parts shall be suitably protected against corrosion if the lack of a protective coating would likely produce a hazardous condition in normal use or when the toy is subjected to reasonably foreseeable damage or abuse.

(d) *Mechanical assembly.*—(1) *General.* A toy shall be designed and constructed to have the strength and rigidity necessary to withstand reasonably foreseeable damage and abuse without

producing or increasing a shock, fire, or other accident hazard. An increase in hazards may be due to total or partial structural collapse of the toy resulting in a reduction of critical spacings, loosening or displacement of one or more components, or other serious defects.

(2) *Mounting.* Each switch, lamp-holder, motor, automatic control, transformer, and similar component shall be securely mounted and shall be prevented from turning, unless the turning of such component is part of the design of the toy and produces no additional hazard such as reduced spacings below acceptable levels or stress on the connection. Friction between tight-fitting surfaces shall not be considered sufficient for preventing the turning of components. The proper use of a suitable lockwasher or a keyed and notched insert plus a suitable lockwasher for single-hole mountings shall be acceptable. Each toy shall be designed and constructed so that vibrations occurring during normal operation and after reasonably foreseeable damage or abuse will not affect it adversely. Brush caps shall be tightly threaded or otherwise designed to prevent loosening.

(3) *Structural integrity.* Heating elements shall be supported in a substantial and reliable manner and shall be structurally prevented from making contacts inside or outside of the toy which may produce shock hazards. The current-carrying component(s) of the heating element shall be enclosed, and the enclosure shall be designed or insulated to prevent the development of a shock or fire hazard that may result from element failure. A toy operating with a gas or liquid under pressure, such as an electrically operated steam engine, shall be tested with respect to its explosion hazard and shall be provided with a pressure relief device that will discharge in the safest possible direction; that is, avoiding direct human contact and avoiding the wetting of electrical contacts.

(e) *Insulating material.* (1) Material to be used for mounting uninsulated live electrical elements shall be generally accepted as suitable for the specific application, particularly with regard to electrical insulation (voltage breakdown) and good aging characteristics (no significant change in insulating characteristics over the expected lifetime of the toy).

(2) Material used to insulate a heating element from neighboring parts shall be suitable for the purpose. If plain asbestos in a glass braid is used to so insulate the heating element, it shall be tightly packed and totally enclosed by the braid, and the overall thickness, including the braid, shall not be less than one-sixteenth inch. Hard fiber may be used for electrically insulating bushings, washers, separators, and barriers, but is not sufficient as the sole support of uninsulated live metal parts.

(f) *Enclosures*—(1) *General*. Each toy shall have an enclosure constructed of protective material suitable for the particular application, for the express purpose of housing all electrical parts that may present a fire, shock, or other accident hazard under any conditions of normal use or reasonably foreseeable damage or abuse. Enclosures shall meet the performance requirements prescribed by § 1505.6(b).

(2) *Accessibility*. An enclosure containing a wire, splice, brush cap, connection, electrical component, or uninsulated live part or parts at a potential of more than 30 volts r.m.s. (42.4 volts peak) to any other part or to ground:

(i) Shall be sealed by welding, riveting, adhesive bonding, and/or by special screws or other fasteners not removable with a common household tool (screwdriver, pliers, or other similar household tool) used as intended; and

(ii) Shall have no opening permitting entry of a 0.010-inch-diameter music wire that could contact a live part. Cross-notch-head screws, spring clips, bent tabs, and similar fasteners shall not be considered suitable sealing devices for enclosures since they are easy to remove with common household tools. Bent tabs shall be acceptable if, due to metal thickness or other factors, they successfully resist forceful attempts to dislodge them with ordinary tools.

(3) *Nonapplication*. The requirements of this paragraph are not applicable to an insulating husk enclosure or equivalent that covers the electrodes of a replaceable incandescent lamp and its lampholder contacts. The primary function of an enclosure containing a lamp shall be to protect it from breakage during normal use or reasonably foreseeable damage or abuse.

(g) *Spacings*. The distance, through air or across the surface of an insulator, between uninsulated live metal parts and a metallic enclosure and between

uninsulated live metal parts and all other metal parts shall be suitable for the specific application as determined by the dielectric strength requirements prescribed by § 1505.6(e) (2). Electrical insulating linings on barriers shall be held securely in place.

(h) *Special safety features*—(1) *Moving parts*. If the normal use of a toy involves accident hazards, suitable protection shall be provided for the reduction of such hazards to an acceptable minimum. For example, rotors, pulleys, belt-ing, gearing, and other moving parts shall be enclosed or guarded to prevent accidental contact during normal use or when subjected to reasonably foreseeable damage or abuse. Such enclosure or guard shall not contain openings that permit entrance of a ¼-inch-diameter rod and present a hazardous condition.

(2) *Switch marking*. Any toy having one or more moving parts which perform an inherent function of the toy and which may cause personal injury shall have a switch that can deenergize the toy by a simple movement to a plainly marked "OFF" position. Momentary contact switches which are normally in the "OFF" position need not be so marked.

(3) *Electrically operated sewing machines*. Electrically operated toy sewing machines shall be designed and constructed to eliminate the possibility of a child's finger(s) being pierced by a needle. For the purpose of this subparagraph, a clearance of not more than five thirty-seconds of an inch below the point of the needle when in its uppermost position or below the presser foot, if provided, shall be considered satisfactory.

(4) *Pressure relief valves*. A pressurized enclosure shall have an automatic pressure relief device and shall be capable of withstanding hydrostatic pressure equal to at least five times the relief pressure.

(5) *Containers for heated materials*. Containers intended for holding molten compounds and hot liquids shall be designed and constructed to minimize accidental spillage. A pot or pan having a lip and one or more properly located pouring spouts and an adequately thermally insulated handle may provide satisfactory protection. Containers intended solely for baking need not be designed and constructed to minimize accidental spillage. Containers shall be of such material and construction that they will not deform or melt when subjected to

the maximum operating temperature occurring during normal use or after reasonably foreseeable damage or abuse.

(6) *Water*. Electrically operated toys (such as toy irons) shall not be designed or manufactured to be used with water except for toy steam engines or other devices in which the electrical components are separate from the water reservoir and are completely contained in a sealed chamber. Toys requiring occasional or repeated cleaning with a wet cloth shall be constructed to prevent seepage of water into any electrically active area that may produce a hazardous condition.

§ 1505.5 Electrical design and construction.

(a) *Switches*. (1) Switches and other control devices of electrically operated toys shall be suitable for the application and shall have a rating not less than that of the load they control (see § 1505.6 (e) (5) (ii) regarding electrical switch overload). A switch that controls a replaceable incandescent lamp, electrode, or lampholder contact which is at a potential of more than 30 volts r.m.s. (42.4 volts peak) to any other part or to ground shall open both sides of the circuit and shall have a marked "OFF" position. A switch that may reasonably be expected to be subjected to temperatures higher than 50° C. (122° F.) shall be constructed of materials which are suitable for use at such temperatures.

(2) Switches shall be located and protected so that they are not subject to mechanical damage that would produce a hazard in normal use or from reasonably foreseeable damage or abuse (see § 1505.6(b)).

(b) *Lamps*. (1) A replaceable incandescent lamp having a voltage of more than 30 volts r.m.s. (42.4 volts peak) between any of its electrodes or lampholder contacts and any other part or ground shall be in an enclosure that has at least one door or cover permitting access to the lamp. Such door(s) or cover(s) of the enclosure shall be so designed and constructed that they cannot be opened manually or with a flat bladed screwdriver or pliers.

(2) With all access doors and covers closed, the lamp enclosure shall have no opening that will permit entry of a

straight rod 6 inches long and one-fourth inch in diameter if such entry would present an electrical hazard. The lamp shall be located no less than one-half inch from any ¼-inch-diameter opening in the enclosure.

(3) A toy having one or more lampholders shall be designed and constructed so that no live parts other than the contacts of the lampholders are exposed to contact by persons removing or replacing lamps. The shells of all lampholders for incandescent lamps shall be at the same potential.

(4) If the potential between the contacts of a lampholder for a replaceable incandescent lamp and any other part or ground is greater than 30 volts r.m.s. (42.4 volts peak), the contacts shall be located in an insulating husk or equivalent.

(c) *Transformers*. Transformers that are integral parts of toys shall be of the 2-coil insulated type.

(d) *Automatic controls*. Automatic controls for temperature regulation shall have the necessary capacity and reliability for their particular application.

(e) *Power supply connections (cords and plugs)*. (1) A toy shall be provided with a suitable means for attachment to the power supply circuit.

(2) A toy requiring a power cord shall have a flexible cord that is permanently attached to the toy.

(3) The perimeter of the face of the attachment-plug cap shall be not less than five-sixteenths of an inch from any point on either blade of the plug.

(4) The body of the attachment-plug cap shall decrease in cross section from the face but shall have an expansion of the body, after a suitable distance from the face, sufficient to provide an effective finger grip.

(5) A flexible electrical power cord provided on a toy shall be type SP-2 (as defined in the "National Electrical Code," Chapter 4, article 400, pages 184-194 (1971),³ published by the National Fire Protection Association), or its equivalent, or a heavier general-use type, and shall be not less than 5 feet nor more than 10 feet in length when measured as

³ Copies may be obtained from: National Fire Protection Association, 60 Batterymarch Street, Boston, MA 02110.

the overall length of the attached cord outside the enclosure of the toy, including fittings, up to the face of the attachment-plug cap.

(6) A flexible cord and plug shall have a current-carrying capacity of not less than the ampere rating of the toy.

(7) Cords on toys which are intended to come in direct contact with water or other liquids during use shall be of a jacketed type. Cords on toys with which water or other liquids are to be indirectly used (such as for cooling a mold) shall be plastic covered.

(8) Transformers in which the primary coil connects directly to the branch circuit outlet shall not be subject to the requirements of paragraphs (e) (2), (4), and (5) of this section.

(f) *Bushings.* (1) At the point where a power supply cord passes through an opening in a wall, barrier, or the overall enclosure of a toy, a suitable and substantial bushing, insulating bushing, or equivalent shall be reliably secured in place and shall have smooth surfaces and well-rounded edges against which the cord may bear.

(2) If a cord hole is in wood, porcelain, phenolic composition, or other suitable insulating material, the surface of the hole is acceptable without a bushing if the edges of the hole are smooth and well-rounded. Where a separate insulating bushing is required, a bushing made of ceramic material or a suitable molded composition is acceptable if its edges are smooth and well-rounded.

(3) In no instance shall a separate bushing of wood, rubber, or any of the hot-molded shellac-and-tar compositions be considered acceptable.

(g) *Wiring.* (1) The internal wiring of a toy shall consist of suitable insulated conductors having adequate mechanical strength, dielectric properties, and electrical capacity for the particular application.

(2) Wireways shall be smooth and entirely free of sharp edges, burrs, fins, and moving parts that may abrade conductor insulation. Each splice and connection shall be mechanically secure, shall provide adequate and reliable electrical contact, and shall be provided with insulation at least equivalent to that of the wire involved unless adequate spacing be-

tween the splice and all other metal parts is permanently assured.

(3) A wire connector for making a splice in a toy shall be a type that is applied by a tool and for which the application force of the tool is independent of the force applied by the operator.

(4) Soldered connections shall be made mechanically secure before soldering.

(5) Current-carrying parts shall be made of silver, copper, a copper alloy, or other electrically conductive material suitable for the particular application.

(h) *Strain relief.* (1) A means of strain relief shall be provided to prevent mechanical stress on a flexible cord from being transmitted to terminals, splices, or interior wiring.

(2) If suitable auxiliary insulation is provided under a clamp for mechanical protection, clamps of any material are acceptable for use on Type SF-2 (as defined in the "National Electrical Code," chapter 4, article 400, pages 184-194 (1971),³ published by the National Fire Protection Association), or equivalent rubber-insulated cord. For heavier types of thermoplastic-insulated cord, clamps may be without auxiliary insulation unless the clamp may damage the cord insulation.

(3) A flexible cord shall be prevented from being pushed into the toy through the cord-entry hole if such displacement would result in a hazardous condition.

(4) A knot in the cord shall not be considered an acceptable means of strain relief, but a knot associated with a loop around a smooth, fixed structural component shall be considered acceptable.

(i) *Additional requirements.* Except for the electrodes of a replaceable incandescent lamp and its lampholder contacts, a potential of more than 30 volts r.m.s. (42.4 volts peak) shall not exist between any exposed live part in a toy and any other part or ground.

§ 1505.6 Performance.

(a) *General.* Electrically operated toys and components thereof shall be tested by the appropriate methods described in this section and shall pass the tests in such a manner as to provide the

³ Copies may be obtained from: National Fire Protection Association, 60 Batterymarch Street, Boston, MA 02110.

necessary assurance that normal use and reasonably foreseeable damage or abuse will not produce a hazard or a potentially hazardous condition. The toy shall be capable of passing all applicable tests with any door, cover, handle, operable part, or accessory placed in any normal position. A toy shall not present a fire, casualty, or shock hazard when operated continuously for 6 hours under conditions of normal use and reasonably foreseeable damage or abuse, including the most hazardous position in which the toy can be left.

(b) *Enclosures.* For purposes of this section, the term "enclosure" means any surface or surrounding structure which prevents access to a real or potential hazard. An enclosure shall withstand impact, compression, and pressure tests (see paragraphs (b) (1), (2), and (3) of this section) without developing any openings above those specified, reduction of electrical spacings below those specified, or other fire, casualty, or shock hazards, including the loosening or displacement of components but excluding breakage of a lamp. After completion of each test, the toy shall comply with the requirements of the dielectric strength test described in paragraph (e) (2) of this section and, upon visual examination, shall not evidence the development of any hazards. Rupture of a fuse shall be considered a test failure.

(1) *Impact test.* A toy weighing 10 pounds or less shall be dropped four times from a height of 3 feet onto a 2½ inch thick concrete slab covered with 0.125 inch nominal thickness vinyl tile. The impact area shall be at least 3 square feet. The test shall be conducted while the toy is energized and operating and with all dead metal of the toy that may be energized connected together electrically and grounded through a 3-ampere plug fuse. The toy shall be dropped in random orientation. After each drop the test sample shall be allowed to come to rest and examined and evaluated before continuing.

(2) *Compression test.* Any area on the surface of the enclosure that is accessible to a child and inaccessible to flat-surface contact during the impact test shall be subjected to a direct force of 20 pounds for 1 minute. The force shall be applied

over a period of 5 seconds through the axis of a ½-inch-diameter metal rod having a flat end with the edge rounded to a radius of one thirty-second of an inch to eliminate sharp edges. The axis of the rod shall be perpendicular to the surface being tested. During the test the toy shall rest on a flat, hard surface in any test-convenient position.

(3) *Pressure test.* If any portion of the top of a toy has a flat surface measuring 24 square inches or more and a minor dimension of at least 3 inches, that surface shall be subjected to a direct vertical pressure increasing to 50 pounds over a period of 5 seconds and maintained for 1 minute. The force shall be applied through a steel ball 2 inches in diameter. During the test the toy shall be in an upright position on a flat, horizontal solid surface.

(c) *Handles and knobs*—(1) *General.* For the purposes of tests in this paragraph, the parts of a lifting handle on a toy that are within seven-sixteenths of an inch of the surface to which the handle is attached, or the parts of a lifting knob that are within one-fourth inch of the surface to which the knob is attached, are considered to be for support purposes, and the remainder of the handle or knob is considered to be generally functional in nature. A handle or knob shall withstand crushing and lifting tests (see paragraphs (c) (2) and (3) of this section) without fracture of the handle or knob, development of an opening that may pinch the hand, or breakage of the means used to fasten the handle or knob in place.

(2) *Crushing test.* The functional portion of a handle or knob shall be subjected to a crushing force increasing to 20 pounds over a period of 5 seconds and maintained for 1 minute. The force shall be applied through two flat and parallel hardwood blocks, each at least 2½ inches thick and each having dimensions slightly exceeding those of the handle or knob being tested. The crushing force between the blocks shall be exerted in any direction perpendicular to the major axis of the handle or knob.

(3) *Lifting test.* The support portion of a handle or knob shall be subjected to a force equal to four times the weight of the object it is intended to support. The

direction of the lifting force shall be as intended by the design of the toy and shall be applied through a ½-inch-wide strap through or around a handle or by fingers or the equivalent on a knob. The force shall be applied over a period of 5 seconds through the center of gravity of the toy and maintained for 1 minute.

(d) *Stability.* A toy shall not overturn while resting in an upright position on a flat surface inclined 15° from horizontal. No spillage of molten material or hot liquids from containers shall occur while the toy is operating in this position under normal conditions of use. During this test, casters, if any, shall be in the position most likely to result in tipping, but shall not be artificially held in one position to prevent a natural rotation to another position.

(e) *Electrical.*—(1) *Power input.* The actual current flow in a toy without a heating element shall not exceed 110 percent of the rated value, and shall not exceed 5.5 amperes, at rated voltage. The power input to a toy with a heating element shall not exceed 105 percent of the rated value at rated voltage. The power input rating of a toy employing one or more incandescent lamps as the only power-consuming components shall be considered to be the total rated wattage of such lamps. The rated voltage shall be considered to be the mean value of a marked voltage range.

(2) *Dielectric strength.* (i) A toy shall be capable of withstanding without breakdown for 1 minute a 60-cycle-per-second (60 Hertz) essentially sinusoidal potential of 1,000 volts applied between live parts and any dead metal parts.

(ii) If a toy employs a low-voltage secondary winding (either in the form of a conventional transformer or as an insulated coil of a motor), the toy shall also be capable of withstanding without breakdown for 1 minute a sinusoidal test potential applied between the high-voltage and low-voltage windings. The test potential shall be applied at the rated frequency of the toy and shall have a value of 1,000 volts plus twice the rated voltage of the high-voltage winding. The test potential shall be supplied from a suitable capacity-testing transformer, the output voltage of which can be regulated. The waveform of the test voltage

shall approximate a sine wave as closely as possible.

(iii) The applied test potential shall be increased rapidly and uniformly from zero until the required test value is reached and shall be held at that value for 1 minute. Unless otherwise specified, the toy shall be at the maximum operating temperature reached in normal use prior to conducting the tests.

(iv) The dielectric strength requirements of this subparagraph may also be determined by subjecting the toy to a 60-cycle-per-second (60 Hertz) essentially sinusoidal potential of 1,200 volts for 1 second. If the dielectric strength is determined by this method, the toy need not be in a heated condition.

(3) *Leakage current and repeated dielectric withstand tests.* (i) Both before and after being conditioned, a toy intended to operate from a source exceeding 42.4 volts peak shall:

(a) Not have a leakage current exceeding 0.5 milliamperes, except that during the interval beginning 5 seconds and terminating 10 minutes after the toy is first energized, the leakage current of toys with heating elements other than lamps shall not exceed 2.5 milliamperes; and

(b) Comply with the requirements of a repeated dielectric withstand test both with and without preheating.

(ii) All accessible parts of a toy shall be tested for leakage current. If an insulating material is used for the enclosure or part of the enclosure, the leakage current shall be measured using a metal foil with an area not exceeding 10 by 20 centimeters in contact with accessible surfaces of such insulating material. Where the accessible surface of insulating material is less than 10 by 20 centimeters, the metal foil shall be the same size as the surface. The metal foil shall be so applied that it will not affect the temperature of the toy. The accessible parts shall be tested individually, collectively, and from one part to another.

(iii) Following the initial leakage current test, the toy shall be cooled down or heated up to 32° C. (90° F.). The toy shall then be conditioned for 48 hours in air at a temperature of 32°±2° C. (89.6°±3.6° F.) and with a relative

humidity of 90–95 percent. The specified relative humidity shall be maintained inside a closed compartment in which a saturated solution of potassium sulphate is kept in a suitable container. Leakage current measurements shall be made, as specified in paragraph (e) (3) (ii) of this section and before the toy is energized, while the toy is in the humidity compartment.

(iv) With the connections intended for the source of supply connected thereto and then connected to the ungrounded side of a power supply circuit having a voltage equal to 110 percent of the rated voltage of the toy, the leakage current through a noninductive 1,500-ohm resistor connected between the grounded side of the supply circuit and each dead metal part (accessible and inaccessible) shall, when stable, be measured in accordance with the test provisions established in ANSI Standard C 101.1–1971, “American National Standard for Leakage Current for Appliances,” approved November 17, 1970,⁴ published by American National Standards Institute.

The toy shall then be removed from the humidity chamber, energized, and tested again after attaining its normal operating temperature. From these measurements, a leakage current with no resistance shall be calculated and used to determine compliance.

(v) For a toy whose outer enclosure consists wholly or partly of insulating material, the term “dead metal part” means metal foil tightly wrapped around the exterior of the enclosure in a manner that covers, but does not enter into, any enclosure openings.

(4) *Motor operation.* (i) A motor provided as part of a toy shall be capable of driving its maximum normal load in the toy without introducing any potentially hazardous condition. The performance of the toy shall be considered unacceptable if, during the test, temperatures in excess of those specified in § 1505.7 for Type D surfaces are attained on any accessible surface. The performance of the toy shall also be considered unacceptable if the rise in temperature during the test causes melting, scorching, embrittlement, or other evidence of thermal dam-

age to the insulating material used to prevent exposure of live metal parts.

(ii) A motor-operated toy shall be tested with the motor stalled if the construction of the toy is such that any person can touch moving parts associated with the motor from outside the toy. The performance of the toy shall be considered unacceptable if, during the test, temperatures higher than those specified in § 1505.8 are attained or if temperatures higher than those specified for Type C surfaces in § 1505.7 are attained on any accessible surface of the motor.

(5) *Overload.*—(i) *Motor.* A motor-control switch that is a part of a toy shall be horsepower-rated to cover the load or shall be capable of performing acceptably when subjected to an overload test consisting of 50 cycles of operation by making and breaking the stalled-rotor current of the toy at maximum rated voltage. There shall be no electrical or mechanical failure nor any visible burning or pitting of the switch contacts as a result of this test.

(ii) *Switch.* To determine if a motor-control switch is capable of performing acceptably when subjected to overload conditions, the toy shall be connected to a grounded supply circuit of rated frequency and maximum rated voltage with the rotor of the motor locked into position. During the test, exposed dead metal parts of the toy shall be connected to ground through a 3-ampere plug fuse such that any single pole, current-rupturing device will be located in the ungrounded conductor of the supply circuit. If the toy is intended for use on direct current, or on direct current as well as alternating current, the exposed dead metal parts of the toy shall be so connected as to be positive with respect to a single pole, current-rupturing device. The switch shall be operated at a rate of not more than 10 cycles per minute. The performance of the toy shall be considered unacceptable if the fuse in the grounding connection is blown during the test.

(f) *Hydrokinetic.*—(1) *General.* Electrically operated toy steam engines shall be capable of performing acceptably when subjected to the tests described in this paragraph.

(2) *Preliminary test.* The ultimate strength of the boiler assembly shall

⁴ Copies may be obtained from: American National Standards Institute, 1430 Broadway, New York, NY 10018.

first be determined by applying a hydrostatic pressure to the boiler with all openings blocked (the pressure-relief valve, steam exhausts, and any whistle or other accessory shall be removed and the resulting openings sealed); however, a water or other type of gage shall be left in place. The hydrostatic pressure shall be applied slowly and the ultimate value which is attained shall be recorded.

(3) *Pressure-relief test.* A pressure gage shall be connected to the boiler assembly which shall then be operated normally. The pressure at which the pressure-relief valve functions shall be noted while the engine is shut off (if a shutoff valve is provided) and with the whistle, if any, turned off. The test shall be discontinued and shall be considered a failure if the observed pressure exceeds one-fifth the value attained in the preliminary test described in paragraph (f) (2) of this section.

(4) *Operating pressure test.* If the boiler is still intact and no failure has occurred, the pressure-relief valve shall then be rendered inoperable and all other valves (such as a whistle and exhaust from the assembly) shall be tightly closed. Operations shall be continued until the pressure becomes constant. This test shall be discontinued and shall be considered a failure if the observed pressure exceeds one-third the value attained in the preliminary test described in paragraph (f) (2) of this section. During this test, all valves, gaskets, joints, and similar components shall be sufficiently tightened to prevent leakage. Rupture of the boiler or of any other fittings supplied with the engine shall be considered a failure.

(5) *Hydrostatic test.* If there has been no failure, two previous untested toys shall withstand for 1 minute a hydrostatic pressure of 5 times the pressure at which the safety valve operated or 3 times the constant pressure observed with the pressure relief valve inoperable, whichever is greater. During this test, all openings shall be blocked (the pressure-relief valve, steam exhaust from the assembly, and any whistle or other outlet); however, a water or other type of gage shall remain in place. Rupture of the boiler or of a gage shall be considered a failure.

(g) *Thermal*—(1) *General.* The normal operation of a toy includes perform-

ance in normal use and after being subjected to reasonably foreseeable damage or abuse likely to produce the highest temperatures or, in the case of motor-operated toys, the load that most closely approximates the severest conditions of normal use or reasonably foreseeable damage or abuse.

(2) *Classification.* Parts or surfaces of a toy are classified according to their use or function as follows (for the purposes of paragraph (g) (2) (v), (vi), and (vii) of this section, accessibility shall be defined as the ability to reach a heated surface with a ¼-inch-diameter rod 3 inches long):

(i) *Type A.* A part or surface of a toy (such as a handle) likely to be grasped by the hand or fingers for the purpose of carrying the toy or lifting a separable lid.

(ii) *Type B.* A part or surface of a toy that is (a) part of a handle, knob, or similar component, as in Type A (described in paragraph (g) (2) (i) of this section), but which is not normally grasped or contacted by the hand or fingers for carrying (including parts of a handle within seven-sixteenths of an inch of the surface to which the handle is attached and parts of a finger knob within ¼ inch of the surface to which the knob is attached, if the remainder of the knob is large enough to be grasped), or (b) a handle, knob, or part that may be touched but which need not be grasped for carrying the toy or lifting a lid, door, or cover (e.g., support part of a handle or knob).

(iii) *Type C.* A part or surface of a toy that can be touched by casual contact or that can be touched without employing the aid of a common household tool (screwdriver, pliers, or other similar household tool) and that is either (a) a surface that performs an intended heating function (e.g., the soleplate of a flat-iron, a cooking surface, or a heating element surface), or (b) a material heated by the element and intended to be used as the product of the toy, excluding pans, dishes, or other containers used to hold the material to be cooked or baked if a common utensil or other device is supplied with the toy and specific instructions are established for using such a device to remove the container from the heated area.

(iv) *Type C marked.* A Type C surface which has been marked with a precautionary statement of thermal hazards in accordance with § 1505.3(e) (2).

(v) *Type D.* An accessible part or surface of a toy other than Types A, B, C, or E (see paragraph (g) (2) (i), (ii), (iii) and (vii) of this paragraph).

(vi) *Type D marked.* A Type D surface which has been marked with a precautionary statement of thermal hazards in accordance with § 1505.3(e) (2).

(vii) *Type E.* A heated surface in an oven or other article that is inaccessible or protected by an electrical-thermal safety interlock. Such interlocks shall prohibit the operation of a heating device whenever such surfaces are accessible and shall not allow accessibility to such surfaces until the temperatures of those surfaces have been reduced to levels below those established for Type D surfaces (paragraph (g) (2) (v) of this section).

(3) *Requirements.* When tested under the conditions described in paragraph (g) (4) of this section, a toy shall not attain a temperature at any point sufficiently high to constitute a fire hazard or to adversely affect any materials employed and shall not show a maximum temperature higher than those established by §§ 1505.7 and 1505.8. These maximum surface temperature requirements are not applicable to educational- or hobby-type products such as lead-casting sets and wood-burning tools which are appropriately labeled on the shelf pack or package as being intended only for children over 12 years of age provided that the maximum surface temperature of any such toy does not exceed that reasonably required to accomplish the intended technical effect. Such toys shall be provided with specific instructions and the warning statements required by and in accordance with § 1505.3 (d) and (e), and shall be appropriately identified as educational or hobby-type products.

(4) *Test conditions*—(i) *General.* Tests shall be conducted while the toy is connected to a circuit of 60-cycle-per-second (60 Hertz) current using the materials supplied with the toy or using materials otherwise intended to be used

with the toy. Following such tests, the toy shall be energized for a 6-hour period to determine that no hazardous conditions would result from unattended use of the toy.

(ii) *Temperature.* Normally, tests shall be performed at an ambient (room) temperature of 25° C. (77° F.); however, a test may be conducted at any ambient temperature within the range of 21° to 30° C. (69.8° to 86° F.).

(iii) *Voltage.* The toy shall be tested at the voltage indicated in the manufacturer's rating or at 120 volts, whichever is greater.

(5) *Temperature measurements*—(1) *General.* Temperatures shall be measured by means of instruments utilizing thermocouples of No. 30 AWG (American Wire Gage) wire (either copper and constantan or iron and constantan) and potentiometer-type instruments that are accurate and are calibrated in accordance with current good laboratory practices. The thermocouple wire shall conform with the requirements for "special" thermocouples as listed in the table of limits of error of thermocouples (Table VIII) in "American Standard for Temperature Measurement Thermocouples, C96.1-1964,"⁵ approved June 9, 1964, by American National Standards Institute, Inc. The Standard was sponsored and published by the Instrument Society of America.

(ii) *Test procedures.* The thermocouple junction and adjacent thermocouple lead wire shall be securely held in good thermal contact with the surface of the material whose temperature is being measured. In most cases, good thermal contact will result from securely taping or cementing the thermocouple in place. If a metal surface is involved, brazing or soldering the thermocouple to the metal may be necessary. The surface temperatures of a toy shall be measured with the toy operating in any unattended condition (e.g., with and without opening and closing doors or covers) for a sufficient period of time to

⁵ Copies may be obtained from: Instrument Society of America, 530 William Penn Place, Pittsburgh, PA 15219.

allow temperatures to become constant, or, in the case of a toy with a thermostatically controlled heating element, for a sufficient period of time to determine the maximum surface temperature attained. A temperature shall be considered to be constant when three successive readings taken at 15-minute intervals indicate no change.

(iii) *Heating devices.* Toy ovens, casting toys, popcorn and candymakers, and other toys requiring the insertion of any materials or substances shall be additionally tested by feeding crumpled strips of newspaper and tissue paper into or onto the toy in place of the intended materials or substances. The test strips shall be conditioned for at least 48 hours in air at a temperature of $25^{\circ} \pm 4^{\circ}$ C. ($77^{\circ} \pm 7^{\circ}$ F.) and a relative humidity of 50 percent ± 5 percent. The test strips shall be 2 inches wide by 8 inches long before crumpling. The crumpled paper shall occupy not more than 25 percent of the accessible volume. The performance of the toy shall be considered unacceptable if flaming occurs within a 60-minute period following the attainment of normal operating temperatures. If a light bulb is used for heating purposes, the test shall be conducted using the largest wattage bulb that can be easily inserted into the socket.

(h) *Strain-relief test.* (1) The strain-relief means provided on the flexible power cord of a toy shall be capable of withstanding a direct pull of 35 pounds applied to the cord for 2 minutes without displacement of the strain-relief unit or a deformation of the anchoring surface that would produce a stress which would result in a potentially hazardous condition. A 35-pound weight shall be attached to the cord and supported by the toy in such a manner that the strain-relief means is stressed from any angle that the construction of the toy permits. The test shall be conducted with the electrical connection within the toy disconnected.

(2) The initial 2-minute test shall be conducted with the force vector parallel to the longitudinal axis of the cord and perpendicular to the anchoring surface of the strain-relief unit. Each test at

other angles of stress shall be conducted for periods of 1 minute. The strain-relief means is not acceptable if, at the point of disconnection of the cord, there is any movement of the cord to indicate that stress would have resulted on the connections.

(3) Except for toys weighing more than 10 pounds, the strain-relief unit and its support base shall be designed and constructed in such a manner that no indication of stress would result which would produce a hazard when the cord is held firmly in place 3 feet from the strain-relief unit and the toy is dropped the 3 feet at any angle.

[38 FR 27032, Sept. 27, 1973, 38 FR 30105, Nov. 1, 1973]

§ 1505.7 Maximum acceptable surface temperatures.

The maximum acceptable surface temperatures for electrically operated toys shall be as follows:

Surface type (as described in § 1505.6 (g)(2))	Thermal inertia type ¹	Temperatures	
		° C.	° F.
A.....	1	50	122
A.....	2	55	131
A.....	3	60	140
B.....	1	55	131
B.....	2	65	149
B.....	3	75	167
C (unmarked)...	1	65	149
C (unmarked)...	2	75	167
C (unmarked)...	3	85	185
C (unmarked)...	4	95	203
C marked.....	1	70	158
C marked.....	2	90	194
C marked.....	3	110	230
C marked.....	4	130	266
D (unmarked)...	1	55	131
D (unmarked)...	2	70	158
D (unmarked)...	3	80	176
D (unmarked)...	4	90	194
D marked.....	1	60	140
D marked.....	2	75	167
D marked.....	3	100	212
D marked.....	4	125	257
E.....	(2)	(1)	(*)

¹ Thermal inertia types are defined in terms of lambda da as follows:

Type 1: Greater than 0.0045 (e.g., most metals).

Type 2: More than 0.0005 but not more than 0.0045 (e.g., glass).

Type 3: More than 0.0001 but not more than 0.0005 (e.g., most plastics).

Type 4: 0.0001 or less (e.g., future polymeric materials).

The thermal inertia of a material can be obtained by multiplying the thermal conductivity (cal./cm./sec./degrees C.) by the density (gm./cm.³) by the specific heat (cal./gm./degrees C.).

* All types.

* No limit.

§ 1505.8 Maximum acceptable material temperatures.

The maximum acceptable material temperatures for electrically operated toys shall be as follows (Classes 105, 130, A, and B are from "Motors and Generators," Standard MG-1-1967^o published by the National Electrical Manufacturers Association):

Material	Degrees C.	Degrees F.	
Capacitors.....	(1)	(1)	
Class 105 insulation on windings or relays, solenoids, etc.:			
Thermocouple method ²	90	194	
Resistance method.....	110	230	
Class 130 insulation system.....	110	230	
Insulation:			
Varnished-cloth insulation.....	85	185	
Fiber used as electrical insulation.....	90	194	
		Class A	Class B
Insulation on coil windings of a.c. motors (not including universal motors) and on vibrator coils:			
In open motors and on vibrator coils—thermocouple or resistance method ²	100	120	212
In totally enclosed motors—thermocouple or resistance method ²	105	125	221
Insulation on coil windings of d.c. motors and of universal motors:			
In open motors:			
Thermocouple method ²	90	110	194
Resistance method.....	100	120	212
In totally enclosed motors:			
Thermocouple method ²	95	115	203
Resistance method.....	105	125	221
Phenolic composition ³		150	302
Rubber- or thermoplastic-insulated wires and cords ³		60	140
Sealing compound.....		(4)	(5)
Supporting surface while the toy is operating normally.....		90	194
Wood and other similar combustible material.....		90	194

¹ If the capacitor has no marked temperature limit, the maximum acceptable temperature will be assumed to be 65° C. (149° F.) for an electrolytic type and 90° C. (194° F.) for other than an electrolytic type.
² The temperature indicated refers to the hottest spot on the outside surface of the coil measured by the thermocouple method.
³ The limitations on rubber- and thermoplastic-insulated wires and cords and on phenolic composition do not apply if the insulation or the phenolic has been investigated and found to have special heat-resistant properties, or if the insulation meets the thermal requirements.
⁴ 40 less than melting point.
⁵ 104 less than melting point.

PART 1508—REQUIREMENTS FOR FULL-SIZE BABY CRIBS

Banning of Hazardous Full-Size Baby Cribs; Establishment of Safety Requirements

- Sec.
- 1508.1 Definitions.
- 1508.2 Scope of part.
- 1508.3 Dimensions.
- 1508.4 Spacing of crib components.
- 1508.5 Component spacing test method for § 1508.4.
- 1508.6 Hardware.
- 1508.7 Construction and finishing.
- 1508.8 Assembly instructions.
- 1508.9 Identifying marks and warning statement.
- 1508.10 Recordkeeping.

AUTHORITY: Secs. 2(f) (1) (D), (q) (1) (A), (s), 3(e) (1), 74 Stat. 372, 374, 375, as amended, 80 Stat. 1304-05, 83 Stat. 187-89 (15 U.S.C. 1261, 1262).

SOURCE: 38 FR 32129, Nov. 21, 1973, unless otherwise noted.

^o Copies may be obtained from: National Electrical Manufacturers Association, 155 East 44th Street, New York, NY 10017.

§ 1508.1 Definitions.

For the purposes of this part:
 (a) "Full-size baby crib" means a bed (1) that is designed to provide sleeping accommodations for an infant, (2) that is intended for use in the home, and (3) that is within a range of ±5.1 centimeters (±2 inches) of the interior length or width dimensions specified for full-size baby cribs in § 1508.3.

§ 1508.2 Scope of part.

This part sets forth the requirements whereby full-size baby cribs (as defined in § 1508.1(a)) are not banned articles under § 1500.18(a) (13) of this chapter.

§ 1508.3 Dimensions.

Full-size baby cribs shall have dimensions as follows:

(a) *Interior.* The interior dimensions shall be 71±1.6 centimeters (28±⁵/₈)