

INTERPRETATIONS RELATED TO ASTM F963-16 and ASTM F963-17, Standard Consumer Safety Specification on Toy Safety

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3	Terminology	<p>ASTM F963 has micro requirements for chemical materials, such as liquid, pastes, gels, powders, etc.</p> <ul style="list-style-type: none"> • How do you define powder? • Is glitter powder? • What size of glitter would no longer be considered a “powder”? 		<p>When ASTM standards do not include a definition of a term used in the requirements, the ordinary dictionary definition is to be used. For powder, this is: “fine, dry particles produced by the grinding, crushing, or disintegration of a solid substance.” Glitter would not be considered a powder, as it is typically produced by vacuum-metalizing a PET sheet, then cutting the sheet into small pieces with a crosscutting die. It would therefore be considered a plastic substrate with a surface coating rather than a powder.</p>	4/23/20
4.5 (7); 8.20.1.5 (5)	Acoustic requirements for push/pull toys	<p>(A) Does the language in 4.5(7) and 8.2.15 (5) mean that push/pull toys are excluded from LAFmax evaluation and limit?</p> <p>(B) Stated another way, is only LCpeak SPL evaluated for push/pull toys?</p> <p>(C) Does the added language in the 2017 version (highlighted)</p>	<p>ASTM F963-16 Section 4.5 (7): sounds quantified by A-weighted equivalent sound pressure level, <i>LAeq</i>, produced by pull and push toys as a result of pulling or pushing. This exemption does not apply to the C-weighted peak requirement which is applicable.</p>	<p>A) & B) Push-pull toys are subject only to an LCpeak requirement, while floor and tabletop toys are subject to both LAFmax and LCpeak. Interpreting either ASTM F963-16 or ASTM F963-17 to require both measurements for push-pull toys is incorrect, although the language of F963-16 wasn’t completely clear in this</p>	11/20/17

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		represent a change in requirements or merely a clarification of an existing requirement?	<p>ASTM F963-16 Section 8.20.1.5 (5): Floor and tabletop toys that move, where the sound is caused as a result of the movement imparted on the toy (for example, a noise making mechanism attached to an axle of a toy vehicle) shall be tested using the method for push and pull toys. In addition to the C-weighted peak measurement a maximum A-weighted sound pressure level, <i>LAFmax</i>, shall be made and compared to the requirements of 4.5.1.3.</p> <p>ASTM F963-17 Section 4.5 (7): sounds quantified by A-weighted equivalent sound pressure level, <i>LAeq</i>, produced by pull and push toys as a result of pulling or pushing. This exemption does not apply to the C-weighted peak requirement which is applicable [language identical to ASTM F963-16].</p> <p>ASTM F963-17 Section 8.20.1.5 (5): Floor and tabletop toys that move, where the sound is caused as a result of the</p>	<p>regard, hence the additional sentences added to F963-17.</p> <p>C) The additional language in section 8.20.1.5 of ASTM F963-17 was intended to clarify that, while the <u>test method</u> is the same for both push-pull and floor or tabletop toys, sound level limits for push/pull toys, which did not change, are as specified in the requirements section, 4.5 (7). Again, there has been no change of requirements for acoustic limits of push/pull toys between ASTM F963-16 and F963-17; the only change is additional language attempting to clarify that push-pull toys are subject only to an LCpeak requirement, while floor and tabletop toys are subject to both LAFmax and LCpeak limits.</p>	

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			movement imparted on the toy (for example, a noise making mechanism attached to an axle of a toy vehicle) shall be tested using the method for push and pull toys. In addition to the C-weighted peak measurement a maximum A-weighted sound pressure level, <i>LAFmax</i> , shall be made and compared to the requirements of 4.5.1.2. The toys described in this section do not include push/pull toys as defined in 3.1.68. The scope of requirements for push/pull toys are given in 4.5 (7) [Added language in ASTM F963-17 highlighted; in addition, incorrect section reference to 4.5.1.3 corrected to 4.5.1.2].		
4.16.3	Ventilation requirements for toys that enclose the head	ASTM F963 Section 4.16.3 prescribes ventilation requirements for toys that enclose the head: This section prescribes the following requirements for compliance, all of which must be	ASTM F963-16 4.16.3 <i>Toys that Enclose the Head</i> —Toys that enclose the head, such as space helmets, which are made of impermeable material, shall provide means for breathing by the incorporation of unobstructed ventilation areas. The ventilation areas	The rationale for the requirements of this section of the standard is to assure adequate ventilation (thus the minimum hole area requirement) and to reduce the risk of inadequate ventilation should one hole be blocked by a child’s head or an external surface	5/4/16

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		<p>met, and which are quite clear if only two holes are present:</p> <ol style="list-style-type: none"> 1) two holes must be present; and 2) there must be a minimum distance of six inches (actually 152.4 mm, not 150 mm as the standard states) between the two holes; and 3) the sum of the areas of the two holes must be a minimum of two square inches. <p>However, if more than two holes are present, the situation is less clear regarding the minimum required distance between holes and the total area of the holes.</p>	<p>shall consist of a minimum of two holes, with a total of at least 2 in.² (1300 mm²) of ventilation and at least 6 in. (150 mm) between holes.</p>	<p>(thus the requirements for at least two holes and six inches of separation between them).</p> <p>In order to clarify requirements when more than two holes are used to meet the ventilation requirement, the following interpretation is proposed:</p> <p>If two holes are utilized to meet the ventilation requirement of 4.16.3, they must be separated by a minimum distance of six inches, and the sum of their areas must be a minimum of two square inches. If more than two holes are utilized to meet the ventilation requirement, there must be two discrete areas of ventilation holes, with these areas separated by a minimum of six inches and the total area of all holes so separated must be a minimum of two square inches. Other holes may also be present, but so long as the above conditions are met, the areas of these additional</p>	

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				holes, as well as their inter-hole distances, are irrelevant for the purposes of determining compliance.	
4.21	Projectile toys; stored energy projectile; KED; measuring velocity	BACKGROUND INFORMATION: This product is intended for children 8+. The height of the inflatable rocket, with foam fin, is about 7 feet (2.13m). The total mass is 1.152kg [mass of water (0.760kg) plus mass of rocket (0.392kg)]. It can be launched to at least 30m in height. During flight, the water is expelled, in other words, the mass decreases during flight. For reference below are the steps to use the rocket: 1. Fill water in water tank 2. Connect the pump hose to the tank cap and start pumping until the gauge readings is 6 bars. 3. Hold the bulb launcher controlled by air and give a quick and hard squeeze to launch the rocket. The product has some		The product appears to be more properly categorized as a hobby item and not a toy, and therefore, out of the scope of ASTM F963. However, marketing and sale are key issues here in order to be out of the scope of ASTM F963, it must be marketed and sold as a hobby item and not as a toy; if the item is marketed as a toy, it must comply with requirements of ASTM F963, including those related to projectiles such as KED limitations.	2/3/2019

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		<p>special designs to reduce the potential impact hazard:</p> <ul style="list-style-type: none"> • The rocket can only be launched in vertical orientation. When the rocket is inclined from vertical, it will not launch since the trigger controlled by air. The air in trigger will escape when the base is not horizontal. • If the launching is a failure, when opening the water tank to release air, air will be deflated slowly and the cap on water tank will not be a hazard by unexpected propulsion off the rocket. • There is a balance plastic ring on top of the rocket to ensure the rocket drop in horizontal orientation, thus reducing the potential hazard of being struck by the descending rocket. 			

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		 <p>QUESTION: We think it is projectile with stored energy per ASTM F963, and have some questions about kinetic energy and Kinetic Energy Density (KED) testing.</p> <ul style="list-style-type: none"> • Is this product exempted from section 4.21 in ASTM F963 since the rocket over 7 feet in height (2.13m) and it just can be launched in vertical status? It seems almost no the impact hazard when launched the rocket. Does it fall in the 			

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		<p>exemption scope for projectile inaccessible to a child when they leave the discharge mechanism?</p> <ul style="list-style-type: none"> • If it is not exempted for section 4.21, how to test kinetic energy and Kinetic Energy Density (KED)? The weight and speed are changed during the launching. When we review the test method in ASTM F963, it is just applicable to projectile fired horizontally, it seems it is not applicable to the rocket launched vertically since it is not accelerated entirely if use this method. • If there is no reasonable method to measure the kinetic energy and Kinetic Energy Density (KED) for this product, can we carry the risk assessment for this impact hazard? • We have an idea to conduct the performance test to ensure there is no sidetrack when launched the rocket. In this case, can we give the pass rating to ASTM F963 if the risk 			

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		assessment showing the impact hazard is lower?			
4.21.2	Projectiles	<p>Shall a toy that projects a gel, rather than an object as defined in Section 3.1.63 be exempted from ASTM F963-16 Section 4.21.2 small part restriction?</p> <p>If the gel is exempted from the ASTM F963-16 Section 4.21.2.1 requirement, is a discharge mechanism in which the kinetic energy is determined by the toy and not by the user allowable? The gel flows freely from the gel reservoir to the firing mechanism solely under the force of gravity. Such a mechanism is not capable of firing a solid projectile.</p> <p>If the gel is exempted from the ASTM F963-16 Section 4.21.2.1 requirement on the basis that a</p>	<p>ASTM F963-16 4.21.2 <i>Discharge Mechanisms</i>— Discharge mechanisms shall be unable to discharge potentially hazardous improvised projectiles such as pencils or pebbles without modification by the user.</p>	<p>Fluids, even viscous ones, are not discrete objects, and therefore do not meet the definition of “projectile” in F963. This is analogous to the long-established concept that squirt guns are not projectile launch mechanisms and the water stream they project is not a projectile. Therefore, the issue of stored-energy versus non-stored-energy discharge mechanisms is irrelevant for these types of products, and none of the projectile requirements are applicable.</p>	11/11/16

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		<p>freely flowing 3D gel fluid is not a projectile as defined at ASTM F963-16 Section 3.1.63, would ASTM F963-16 Section 4.21.2.3 be applicable?</p> <p>Our internal interpretation is that the item and the gel should be exempted from the small part projectile requirement, as well as the kinetic energy and Kinetic energy density limits because of the following:</p> <ul style="list-style-type: none"> • The gel is a fluid which moves freely from the reservoir to the cylinder of the syringe, therefore should not be considered a Rigid Part, or a projectile. • The Stored Energy Discharge Mechanism for the gel would be acceptable because it's propelling a Fluid and not a 			

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		<p>projectile as defined at ASTM F963-16 Section 3.1.63.</p> <ul style="list-style-type: none"> The kinetic energy and kinetic energy density requirements should not be applicable because the gel is a freely flowing fluid, not a Rigid Part 			
4.25.11.6	secondary cells; secondary batteries; normal use and discharging; surface temperatures	<p>Regarding the new section 4.25.11.6 (in the update from ASTM F963-11 to ASTM F963-16:</p> <p><i>4.25.11.6 Normal use charging and discharging of a secondary battery when tested in accordance with 8.19.1, 8.19.2, and 8.19.3, shall not result in surface temperature rises on any battery surfaces or any other accessible surface of the toy exceeding: (1) 25°C if the surface is substantially metal, (2) 30°C if the surface is ceramic or glass, (3) 35°C if the surface is wood or plastic. If the battery is permanently installed</i></p>	<p>4.25.11.6 Normal use charging and discharging of a secondary battery when tested in accordance with 8.19.1, 8.19.2, and 8.19.3, shall not result in surface temperature rises on any battery surfaces or any other accessible surface of the toy exceeding: (1) 25°C if the surface is substantially metal, (2) 30°C if the surface is ceramic or glass, (3) 35°C if the surface is wood or plastic. If the battery is permanently installed in the toy, do not disassemble the toy to reach the battery.</p>	<p>As written, Section 4.25.11.6 is clearly intended to limit temperature rise due solely to the normal charging and discharging of the secondary battery(ies). It limits the temperature rise due to unintended or incidental heating either of the battery surface (if such is accessible) or heat generated by the battery and/or its associated circuitry and conducted through intervening materials to accessible surfaces.</p> <p>If a toy contains a heating element or other means intended to create a</p>	8/20/18

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		<p><i>in the toy, do not disassemble the toy to reach the battery.</i></p> <p>Our understanding of the wording "result in surface temperature rises on any battery surfaces or any other accessible surface" means "because of direct contact between the cell, due to physical transmission of heat" (which is what the rules are about), rather than through circuitry to a heating element.</p> <p>However, there are test centers who are inferring it to mean a rise "by any means", whether through contact or not.</p>		<p>temperature rise, such heating is outside the scope of 4.24.11.6.</p> <p>In consideration of this interpretation question, however, there was additional discussion regarding temperature rise and battery power. As a result, the following additional information is provided/recommended, even though peripheral to the original question.</p> <p>Potential amendment to recommend to ASTM F15.22: While temperature limits for heating elements (as well as other toy surfaces) exist in the standard for toys operating from 120-volt household mains circuits (through incorporation of 16CFR 1505 by reference and in Section 4.4), an amendment to extend temperature limits of 16CFR 1505.7 to toys operating from battery power may be worth consideration.</p>	

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4.41	Toy Chests	Regarding the Toy Chest requirements, added back into ASTM F963-16: Now that the requirements for Toy Chests are (again) part of the ASTM F963-16 toy standard does that mean Toy Chests are considered "toys" and now subject to all the other requirements within ASTM F963-16? What about to the toy requirements of the CPSIA regulations?		<p>(Background: The Toy Chests requirements were in the F963-07e1 version of the standard originally made mandatory by CPSIA. When they were removed, CPSC did not accept this change to the mandatory rule; and so they continued to be mandatory, even if no longer found within ASTM F963. The addition of the Toy Chest requirement back into F963-16 serves to reflect their status as mandatory, within a mandatory rule).</p> <p>However, this does not make toy chests "toys". Rather, they are items of furniture intended to store toys; as such, they are children’s products as defined in CPSIA. Their addition back into F963 serves only to return them to their location within a mandatory federal rule.</p> <p>Therefore, toy chests are subject only to the following requirements:</p> <ol style="list-style-type: none"> 1) Section 4.41 (Toy Chests) of ASTM F963-16; 	11/11/16

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				<p>2) Any CPSIA requirements applicable to children’s products such as lead in surface coatings and substrates, tracking labels, etc.</p> <p>One exception to this interpretation would be if a toy chest incorporates toy or toy-like elements with play value; in these cases, the toy attachments would be subject to all other applicable sections of ASTM F963.</p> <p>Proposal of Amendment Language: <i>“1. X The inclusion of toy chests (4.41) in the standard does not make a toy chest a "toy". Rather, they are items of furniture intended to store toys; as such, they are children’s products as defined in CPSIA. Their inclusion in the standard serves only to place them within a mandatory federal rule.”</i></p>	

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8.7.1	Water guns; Drop Test, Impact Test	Should a water gun be filled with water before performing drop test per 8.7.1?		<p>Water guns should be filled with water up to full capacity, or the upper weight limit for the filled toy as below, whichever is less (table from 8.7.1):</p> <p><i>Age Group Weight Criteria, lb (kg)</i> <i>18 months or less</i> <i>less than 3 ± 0.01 (1.4)</i> <i>over 18 months, not over 36 months</i> <i>less than 4 ± 0.01 (1.8)</i> <i>over 36 months, not over 96 months</i> <i>less than 10 ± 0.01 (4.5)</i></p> <p>This is analogous to the requirement in 8.7.1 that battery-operated toys should be tested with batteries (either those recommended by the manufacturer, or if none are recommended, the heaviest commonly available type).</p> <p>This interpretation is also consistent with the following definitions in ASTM F963:</p> <p>3.1.37 hazard—any characteristic of a toy that presents an</p>	06/25/18

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				<p>unreasonable risk of injury or illness during normal use or as a result of reasonably foreseeable abuse.</p> <p>To further define normal use, the standard states the following:</p> <p>3.1.53 normal use—play modes that conform to the instructions accompanying the toy, that have been established by tradition or custom, or that are evident from an examination of the toy.</p> <p>This would strongly suggest that reasonably foreseeable abuse testing should be performed in a manner consistent with normal, expected, or intended use, which in the case of water guns would be when filled with water.</p>	