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Mr. Todd A. Stevenson, Secretary
U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814
tstevenson@cpsc.gov

**Re: Zen Magnets, LLC: PETITION REQUESTING THE U.S. CONSUMER
PRODUCT SAFETY COMMISSION TO INITIATE A RULEMAKING TO ESTABLISH
SAFETY STANDARDS FOR HIGH-POWERED MAGNET SETS**

Dear Mr. Stevenson:

Enclosed herewith for filing with the Commission is a Zen Magnets' Petition Requesting that the Consumer Product Safety Commission initiate rulemaking to establish safety standards for high-powered magnet sets. Zen is also requesting a hearing before the Commission to address the issues raised in its Petition.

I have also mailed the original and five copies, along with a copy of this letter, to you pursuant to the applicable Rules. If there is more I need to do to be sure that this Petition gets to the Commissioners, please let me know.

Sincerely,

David Japha

DCJ/

cc: Evan House, Esq.
Shihan Qu

**Enclosure: PETITION REQUESTING THE U.S. CONSUMER PRODUCT SAFETY
COMMISSION TO INITIATE A RULEMAKING TO ESTABLISH SAFETY
STANDARDS FOR HIGH-POWERED MAGNET SETS**

**BEFORE THE
U.S. CONSUMER PRODUCT SAFETY COMMISSION**

**PETITION REQUESTING THE U.S. CONSUMER PRODUCT SAFETY
COMMISSION TO INITIATE A RULEMAKING TO ESTABLISH
SAFETY STANDARDS FOR HIGH-POWERED MAGNET SETS**

**PETITION
OF ZEN MAGNETS, LLC**

**BEFORE THE
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INTRODUCTION

Pursuant to Sections 7 and 9 of the Consumer Product Safety Act, 15 U.S.C. §§ 2056 and 2058, the U.S. Consumer Product Safety Commission (“Commission”) regulations, 16 C.F.R. § 1051 and Section 553(e) of the Administrative Procedure Act, 5 U.S.C. § 553(e), Zen Magnets, LLC (“Zen”), files this petition requesting the Commission to initiate rulemaking to (1) establish standards for magnet sets that are intended or marketed to be used with or as magnet sets, and (2) to establish requirements that said magnets be sold in packaging that has on it and inside of it clear and adequate warnings and instructions, as well as (3) requirements respecting the form of warnings and instructions accompanying said magnets. In support of its request, Zen submits the following information:

PROCEDURAL HISTORY

On October 3, 2014, the Commission published its final rule, Safety Standard for Magnet Sets. 79 Fed. Reg. 59,962. Petitioner Zen Magnets, LLC then challenged the rule in the Tenth Circuit Court of Appeals. *See Zen Magnets, LLC v. Consumer Product Safety Commission*, 841 F.3d 1141 (10th Cir. 2016). On November 22, 2016, the Tenth Circuit vacated and remanded the final rule to the Commission. *Id.* at 1155. The Commission voted 5-0 to remove the rule from its regulations on March 1, 2017. This Petition follows.

INTEREST OF THE PETITIONER

Zen Magnets, LLC (“Zen” or “Petitioner”) manufactures and distributes Zen Magnets™ and other small rare earth magnets (“SREMs”) designed to make sculptures and other works of art, as well as to provide educational tools to students, teachers, and researchers of the physical sciences. These are the subject products of this Petition. After the Commission promulgated its Safety Standards for Magnet Sets, 16 C.F.R. Part 1240, in October 2014, Zen was the sole remaining U.S. firm manufacturing and distributing non-industrial magnets with a flux index of over 50 kG²mm² that would fit in the Commission’s small parts cylinder (described in 16 C.F.R. § 1501.4). *See* 79 Fed. Reg. 59,962 (Oct. 3, 2014). While other firms have now entered the U.S. market, Zen endeavors to be an industry leader, ensuring that the subject products are sold to appropriately-aged consumers for safe use. It is for

this reason that Zen now seeks a uniform market safety standard. Magnets are to be respected, but need not be feared.

THE PRODUCTS

The subject magnets, such as Zen Magnets sold by Petitioner, are consumer products, as defined by the Consumer Product Safety Act (“CPSA”), 15 U.S.C. § 2052(a)(5). While the shape, size, and flux of the subject magnets may vary, Zen Magnets in particular are shiny, metallic, spherical magnets that are approximately 5 millimeters in diameter and have a flux index of between 400 and 550 kG²mm². The magnets are often available for purchase by consumers in sets containing a certain number of magnets.

When sold with proper labeling, warnings, and packaging, the subject products are general use products and are not designed, marketed, manufactured, or intended to be used by children under the age of 14.

Due to their inimitable physical characteristics, the subject magnets have a variety of artistic, educational, and therapeutic benefits. In addition to being used as a unique artistic medium,¹ the subject magnets are used in and outside of classrooms to teach principles of mathematics, physics, chemistry, biology, and engineering²

¹ See e.g. The Zen Gallery, *available at* <http://zenmagnets.com/gallery>.

² Edwards, Boyd F., 2016 Expert Report: Educational Value of Neodymium Magnet Spheres in the matter of Zen Magnets, LLC, CPSC Docket No. 12-2, Item 124, Exhibit 4, *available at*

(Edwards EJP 2017).³ Zen Magnets, for instance, are specifically designed to be uniformly magnetized spheres with highly consistent diameters. As such, the force between the magnets is identical to the force between point dipoles (Edwards et al. 2017; Edwards 2017⁴) (demonstrating that point dipole/sphere equivalence for magnetic interactions may be useful in teaching and research and hold pedagogical value, and explaining that the subject magnets provided motivation for the research). The magnets are also of exceptional educational value because they provide students and teachers with an engaging, “hands-on exposure to principles of magnetism” (Edwards EJP 2017), allowing people to learn and experience the energy of interaction between the magnets. While there are other, inferior tools for demonstrating principles of magnetism and lattice structures, the alternatives not only lack the versatility of the subject magnets (Edwards 2017), they also lack the magnets’ intrigue: the subject magnets ultimately inspire people to learn.

<http://cpsc.gov/en/Recalls/Recall-Lawsuits/Adjudicative-Proceedings/>.

³ Edwards, Boyd F., John M. Edwards, Dynamical Interactions Between Two Uniformly Magnetized Spheres. *European Journal of Physics*. Eur. J. Phys. 38 (2017) (hereafter “Edwards EJP 2017”).

⁴ Edwards, Boyd F., John M. Edwards, Periodic Nonlinear Sliding Modes for Two Uniformly Magnetized Spheres. *Chaos: An Interdisciplinary Journal of Nonlinear Science*. 27, 053107 (2017) (hereafter “Edwards 2017”).

THE RISK AND NATURE OF INJURY, REASON FOR INJURY

The subject magnets pose no inherent risk of injury. However, if they are misused in such a way that they are ingested, aspirated, or otherwise inserted into the human body, they can pose a risk of injury. Most notably, if more than one magnet is ingested, it can result in damage to gastrointestinal tissue. Historical injury data show that the risk of injury increases when appropriate warnings are not present.⁵ It is important to note, however, that the intended use of the magnets poses no risk of injury whatsoever. It is with this in mind that Zen asks the Commission to undertake a rulemaking to help ensure that the magnets are used as intended – by adults – in such ways that they pose no risk of harm to consumers.

⁵ Based on information and belief, from 2014 through November 2016, Zen was the only domestic firm selling the subject magnets in the U.S., and during that time, Zen included warnings and age recommendations on its products, its website, and in places of sale. Over the last five years, injuries associated with the subject magnets have decreased from fifty-two, to thirteen, to four, to one, to one, respectively. *See* Commissioner Mohorovic, Commission Meeting: Decisional Matter: Magnet Set Safety Standard – Removal from the Code of Federal Regulations (March 1, 2017). Additionally, magnets sold prior to 2009 did not have to comply with the requirements of F963, which requires that magnets designed, marketed, or manufactured in certain ways must comply with performance standards and warning requirements similar to those outlined in the original magnet safety standard promulgated by the Commission. *Id.* Subsequent to this and the CPSC’s regulatory actions, data show that established injuries associated with the subject magnets have decreased markedly, as Commissioner Mohorovic discussed. *Id.*

COST-BENEFIT ANALYSIS

As a private firm, Zen is not in possession of industry-wide information regarding the sale and importation of the subject magnets. However, there are numerous costs associated with injuries caused by the misuse of the subject magnets. These costs include societal costs, medical costs, and other intangible costs. There are therefore obvious benefits to creating industry rules to mitigate such costs.

CURRENT STANDARDS

There are currently no consumer safety standards in the form of statutes, regulations, or voluntary standards that govern the sale or use of the subject magnets for general use purposes.

RATIONALE FOR THE REQUESTED ACTIONS

Petitioner Zen acknowledges that there is an ingestion risk posed by the subject magnets when they are misused in ways that could lead to ingestion, aspiration, or bodily insertion. Zen does not believe that a rule as broadly tailored to the one removed from the Code of Federal Regulations on March 1, 2017 is necessary to mitigate that risk. Zen does believe, however, that without proper warnings and age recommendations, the products can pose an unreasonable risk of injury.

The current regulatory schemes administered by the Commission do not address the misuse of the subject magnets. Therefore, Zen respectfully requests that the Commission take the following actions to address the ingestion risk.

SUBSTANCE OF THE PROPOSED RULE

I. Safety Standard

Zen proposes a physical safety standard where each magnet in a magnet set, and any individual magnet, that fits completely within the cylinder described in 16 C.F.R. § 1501.4 must have a flux index of 50 kG²mm² or less *if* it is designed, marketed, or manufactured for children under the age of 14. The rationale behind this standard is that magnets with a flux index of less than 50 lack the magnetic strength to attach across internal tissue and cause internal injury, and will comply with current ASTM standards for magnets in toys for children.

For general purpose magnets, *i.e.*, magnets such as those sold by Zen, Zen proposes the following additional regulations:

II. Warnings

Zen Proposes that the Commission promulgate regulations regarding the warnings associated with the subject magnets. These warnings should comply with the hallmark features of proper product warnings, including size, font, and graphical features such as triangles and exclamation marks. The warning (or warnings) should also make clear the ingestion hazard. When sold through online retailers, Zen

proposes that purchasers also be required to acknowledge (1) that they have read the warnings associated with the product and (2) that they assent to the risk should they misuse the products.

A proper warning shall contain, at minimum, the following or equivalent text:



Magnet Poisoning Hazard: These magnets are not toys for children. Swallowed magnets can stick together across intestines causing serious injury or death. Keep away from kids who do not understand the dangers of magnets.

SEAL REMOVAL IMPLIES ASSUMPTION OF RISK

III. Instructions

While the magnets naturally attract to one another, and therefore do not easily get “lost to the environment,”⁶ the magnets may be intentionally, manually separated from one another. To help ensure that intentionally separated magnets do not create an ingestion hazard, Zen sells its products with instructions that allow users to quickly and visually confirm that all magnets are returned to their container after

⁶ “One surprising property of small neodymium magnet spheres is how they generally find a way to attract each other. Placed in a repulsive configuration that might seem to lead to separation of two or more magnets, the magnets tend to twist and move until they attract and are drawn together. In years of informal experience with Zen Magnets (one brand of 5 mm diameter neodymium magnet spheres), we do not recall observing an initial configuration whose magnetic repulsion led eventually to separation of two or more magnets.” (Edwards EJP 2017) (internal citations omitted).

use, without the need for users to count individual magnets.⁷ Therefore, in addition to warnings, the subject magnets should also contain adequate instructions that explain to consumers how to avoid using the magnets in ways that can lead to ingestion, aspiration, or bodily insertion, and how to ensure that magnets are not unreturned to the packaging.

IV. Age Requirements or Recommendations

As discussed above, if the magnets are sold as children's toys, as defined by the CPSA and CPSIA, Zen recommends limiting the physical strength of the magnets to a flux index of less than 50 kG²mm². However, for the magnets to be of use in artistic, hobby, science, and craft applications, their flux index must be considerably higher. It is for this reason that Zen proposes the Commission adopt age requirements to the extent that the Commission has the jurisdiction to do so. Zen's proposed age requirement is 14 years or older (*i.e.*, the subject magnets cannot be sold to children under the age of 14). To the extent possible, Zen also proposes that the Commission restrict sales to children by requiring the purchase of the subject magnets be made by an adult of the age of majority.

Should the Commission deem that it lacks the authority to impose age requirements, Zen proposes, in the alternative, that the Commission impose an age

⁷ Other methods for counting magnets have been enunciated by people who routinely use the magnets, such as Dr. Boyd Edwards, the author of several publications that use and were inspired by Petitioner's magnets.

recommendation for the subject magnets of 14 years and older, to be visibly displayed on the magnet packaging, and in the warnings and instructions.

V. Packaging Requirements

Zen proposes additional packaging requirements to increase the likelihood that consumers view the warnings, and that children cannot access the magnets within a reasonable amount of time. Specifically, Zen proposes that the warnings affixed to the outside of the packaging containing the subject magnets also seal the container in such a way that the user must actively acknowledge the warning, by cutting through or otherwise removing the warning label in order to open the packaging. In addition to packaging warnings that must be actively acknowledged, there must also be conspicuous warnings affixed to the packaging that the user does not have to remove or cut.

Zen further proposes that the packaging be required to be “child resistant,” or “special packaging,” either with packaging that is lockable, or similar to the “special packaging” defined by the Poison Prevention Packaging Act,⁸ so that children would not be able to gain access to the magnets while they are still in the packaging. The packaging can also assist in the visual counting procedure discussed above. For

⁸ The Commission has the authority to regulate such packaging and does so via its PPPA regulations, found at 16 C.F.R. Parts 1700-1702.

instance, geometric shapes could also be built into the packaging itself to help users determine whether all magnets have been returned to the packaging after use.

**A SAFETY STANDARD IS ADEQUATE; AN ALL-AGES MARKET
REMOVAL OF THE MAGNETS IS NOT REQUIRED**

While historical NEISS data have shown that the subject magnets have the potential to cause serious injury, recent NEISS data show that consumers are able to understand the magnet ingestion hazard, and to mitigate the misuse of high-powered magnet sets.

The rule that would be created by this Petition would assist the Commission in creating consistent market standards for SREMs, and would help to promote safety by standardizing many of the voluntary policies that have already been proven by Zen to be effective.

REQUESTS TO INITIATE RULEMAKING AND FOR A HEARING

Petitioner Zen Magnets, LLC respectfully requests that the Commission initiate a rulemaking regarding the subject magnets identified above. Petitioner further requests a hearing before the Commission to consider the issues raised in this Petition.

Respectfully submitted this 16th day of August, 2017.

LEVIN JACOBSON JAPHA, P.C.

/s/David C. Japha

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REFERENCES

Edwards, Boyd F., D.M. Riffe, Jeong-Young Ji, William A. Booth, Interactions Between Uniformly Magnetized Spheres. *American Association of Physics Teachers*. Am. J. Phys. 85 (2), February (2017).

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