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Standard Consumer Safety Specification for Commercial Electric-Powered Scooters for Adults¹

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INTRODUCTION

CPSC staff is aware of 68 e-scooter related fatalities from 2017 to 2021. CPSC staff estimates a total of 117 600 e-scooter related emergency department (ED) visits from 2017 through 2021. Estimated ED visits increased from 7700 in 2017 to 42 200 in 2021. CPSC staff conducted 48 in-depth investigations related to e-scooters. The investigations described brake problems, fire hazards, unexpected power loss, users losing control, and environmental conditions.²

1. Scope

1.1 This consumer safety specification covers the establishment of performance requirements and corresponding test methods used to minimize the hazards to users of electric-powered scooters for rent or lease by multiple users but not individually owned units. For example, electric-powered scooters provided by a rideshare service.

1.2 This consumer safety specification does not apply to units regulated by the National Highway Traffic Safety Administration (NHTSA), meaning units capable of achieving speeds greater than 32 km/h (20 mph).

1.3 This consumer safety specification is not intended for recreational powered scooters (Consumer Safety Specification F2641), non-powered scooters (Consumer Safety Specification F2264), battery powered ride-on toys (Consumer Safety Specification F963), skateboards, motorcycles, all-terrain vehicles, go-karts (Practice F2007), fun-karts (Specification F2011), snowmobiles, motorized trail bikes, lawnmowers, or motorized wheelchairs including mobility scooters.

1.4 No product covered by this consumer safety specification produced after the approval date of this consumer safety specification shall, by label, marking, or other means, indicate compliance with this consumer safety specification unless it conforms to all requirements herein.

1.5 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

¹ This consumer safety specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.58 on Powered Scooters & Skateboards.

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² See https://www.cpsc.gov/s3fs-public/Micromobility-Products-Related-Deaths-Injuries-and-Hazard-Patterns-2017-2021.pdf?VersionId=Zw1brSm70AOuwb4de8hVrn63Jx_SB.e.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:³

- D3359 Test Methods for Rating Adhesion by Tape Test
- F963 Consumer Safety Specification for Toy Safety
- F2007 Practice for Design, Manufacture, and Operation of Concession Go-Karts and Facilities
- F2011 Specification for Safety and Performance of Fun-Karts
- F2264 Consumer Safety Specification for Non-Powered Scooters
- F2641 Consumer Safety Specification for Recreational Powered Scooters and Pocket Bikes

2.2 ANSI Standards:⁴

- ANSI/IEC 60529 Degrees of Protection Provided by Enclosures (IP Code)
- ANSI/OPEI B71.1 American National Standard for Consumer Turf Care Equipment — Pedestrian-Controlled Mowers and Ride-On Mowers — Safety Specifications

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ Available from American National Standards Institute (ANSI), 1180 Avenue of the Americas, 10th Floor, New York, NY 10036, <http://www.ansi.org>.

ANSI Z535.1 American National Standard for Safety Colors
ANSI Z535.4 American National Standard for Product Safety Signs and Labels
ANSI Z535.6 American National Standard for Product Safety Information in Product Manuals, Instructions and Other Collateral Materials

2.3 SAE Standards:⁵

SAE J3194_201911 Taxonomy and Classification of Powered Micromobility Vehicles
SAE J3230_202102 Kinematic Performance Metrics for Powered Standing Scooters

2.4 Federal Standards:⁶

16 CFR 1303 Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint
16 CFR 1500.48 Technical requirements for determining a sharp point in toys and other articles intended for use by children under 8 years of age
16 CFR 1500.49 Technical requirements for determining a sharp metal or glass edge in toys and other articles intended for use by children under 8 years of age
16 CFR 1500 – 1513 Federal Hazardous Substance Act (FHSA) and regulations promulgated under this act

2.5 UL Standards:⁷

UL 2271 Standard for Batteries for Use in Light Electric Vehicle (LEV) Applications
UL 2272 Standard for Electrical Systems for Personal E-Mobility Devices

2.6 IEC Standards:⁸

IEC 50604-1 Secondary lithium batteries for light EV (electric vehicle) applications - Part 1: General safety requirements and test methods
IEC 62133-2 Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems

2.7 ISO Standards:⁹

ISO 6742-1 Cycles — Lighting and retro-reflective devices. Part 1: Lighting and light signalling devices
ISO 6742-2 Cycles — Lighting and retro-reflective devices. Part 2: Retro-reflective devices
ISO 14878 Cycles — Audible warning devices — Technical specification and test methods

3. Terminology

3.1 Definitions of Terms Specific to this Standard:

3.1.1 *commercial scooter, adj*—electric-powered scooters for rent or lease by multiple users but not individually owned units.

3.1.2 *conspicuous, adj*—visible by the operator when the product is being used in the manufacturer’s recommended use position.

3.1.3 *controllers, n*—electrical components that coordinate an electric-powered scooter’s overall function and operation.

3.1.4 *controls, n*—the electro-mechanical devices used to operate scooter settings, modes, lights, and other accessories.

3.1.5 *deck, n*—generally, a low horizontal platform upon which the user places one or both feet.

3.1.6 *deck plate, n*—form of guarding through the use of relatively flat barriers to cover rotating components.

3.1.7 *display, n*—a mechanism for displaying information to the operator.

3.1.8 *dual-motor, n*—two motors that provide positive torque power to both front and rear wheels simultaneously.

3.1.9 *dual stem, n*—parallel vertical shafts connected to the front wheel for the purpose of controlling steering.

3.1.10 *dynamic load, n*—force applied to an item by means of motion or impact.

3.1.11 *edges, hazardous, n*—an accessible edge that presents an unreasonable risk of injury during the normal use and reasonably foreseeable abuses of the product.

3.1.11.1 *Discussion*—Defined as potentially hazardous if they fail the sharp edge test described in 16 CFR 1500.49.

3.1.12 *folding stem, n*—a mechanism for permitting the collapse of a steering stem to aid transportation or storage.

3.1.13 *highest regulated speed, n*—the highest speed permitted for a powered standing scooter in a specified regulatory region(s).

3.1.14 *locking fastener, n*—includes prevailing torque locknuts, cotter pins, serrated surface lock nuts, pal nuts, safety wire, and similar hardware intended to prevent unintended loosening when properly used.

3.1.15 *manufacturer’s recommended use position, n*—any position that is presented as a normal, allowable, or acceptable configuration for use of the product by the manufacturer in any descriptive or instructional literature; this specifically excludes conditions such as when the unit is unassembled (completely or partially) or folded and positions that the manufacturer shows or explains as being unacceptable, unsafe, or not recommended.

3.1.16 *points, hazardous, n*—an accessible point that presents an unreasonable risk of injury during normal use or reasonably foreseeable abuse of the product.

3.1.16.1 *Discussion*—Defined as potentially hazardous if they fail the sharp point test described in 16 CFR 1500.48.

3.1.17 *protective components, n*—specific items added to a product with the primary purpose of reducing a hazard such as sharp edges, entrapment holes, protrusions, and so forth; normally, these components cover or shield the area of the hazard.

⁵ Available from SAE International (SAE), 400 Commonwealth Dr., Warrendale, PA 15096, <http://www.sae.org>.

⁶ Available from U.S. Government Publishing Office (GPO), 732 N. Capitol St., NW, Washington, DC 20401, <http://www.gpo.gov>.

⁷ Available from Underwriters Laboratories (UL), UL Headquarters, 333 Pfingsten Road, Northbrook, IL, 60062, <http://www.ul.com>.

⁸ Available from International Electrotechnical Commission (IEC), 3 rue de Varembe, 1st floor, P.O. Box 131, CH-1211, Geneva 20, Switzerland, <https://www.iec.ch>.

⁹ Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.