



Designation: F1838 – 19 (Reapproved 2025)

Standard Performance Requirements for Adult and Children’s Plastic Chairs for Outdoor Use¹

This standard is issued under the fixed designation F1838; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 These standard performance requirements establish nationally recognized performance requirements for Class A (residential) and Class B (nonresidential) adult and children’s plastic chairs intended for outdoor use.

1.2 These requirements do not address conditions that affect the performance of the chair beyond the manufacturing site.

1.3 These standard performance requirements are not applicable to chaises, multi-positional chairs, upholstered chairs, or other types of furniture.

1.4 These standard performance requirements cover the performance of product regarding aspects of outdoor weathering, impact, static load, and rear leg testing.

1.5 Products Manufactured from Recycled Plastics:

1.5.1 Products may be manufactured from recycled plastics as long as the performance requirements are met.

1.6 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.7 *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.*

1.8 *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.*

¹ These standard performance requirements are under the jurisdiction of ASTM Committee F15 on Consumer Products and are the direct responsibility of Subcommittee F15.33 on Outdoor Plastic Lawn Furniture.

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2. Referenced Documents

2.1 ASTM Standards:²

D638 Test Method for Tensile Properties of Plastics

D2565 Practice for Xenon-Arc Exposure of Plastics Intended for Outdoor Applications

D4329 Practice for Fluorescent Ultraviolet (UV) Lamp Apparatus Exposure of Plastics

G23 Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials (Withdrawn 2000)³

3. Terminology

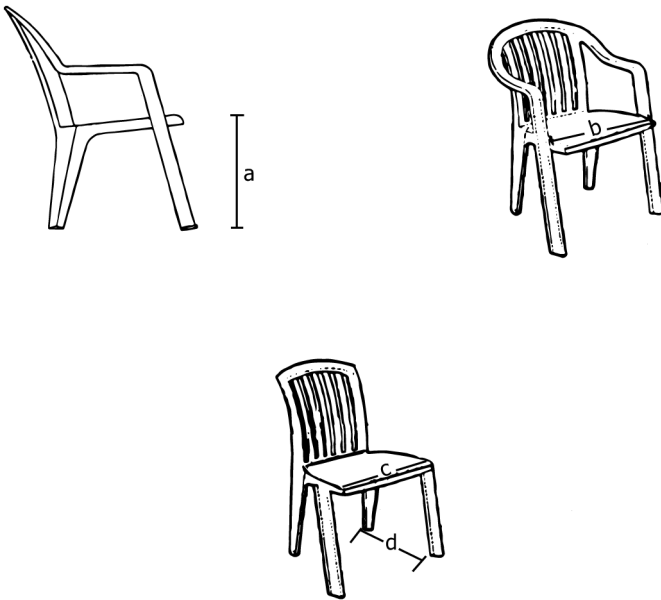
3.1 Definitions:

3.1.1 *adult plastic chair, n*—for the purposes of these performance requirements, an adult plastic chair is a molded, upright piece of furniture with or without arms, having a back in a fixed position with no moving parts, intended for seating one person, and having a seat height not less than 15 in. (381 mm) and not greater than 19 in. (483 mm); for a chair with arms, having a seat width not less than 16 in. (406 mm) and not greater than 30 in. (762 mm); and for a chair without arms, having a seat width not less than 14 in. (356 mm) and not greater than 30 in. (as shown in Fig. 1).

3.1.2 *children’s plastic chair, n*—for the purposes of these performance requirements, a children’s plastic chair is a molded, upright piece of furniture with or without arms, having a back in a fixed position with no moving parts, intended for seating one child, and having a seat height not less than 9 in. (228 mm) and not greater than 15 in. (381 mm); for a chair with arms, having a seat width not less than 10 in. (254 mm) and not greater than 16 in. (406 mm), and for a chair without arms, having a seat width not less than 10 in. (254 mm) and not greater than 16 in. (406 mm) (as shown in Fig. 1).

² 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.

³ The last approved version of this historical standard is referenced on www.astm.org.



NOTE 1—(a) Seat height, chair with or without arms; (b) seat width, chair with arms; and (c) seat width, chair without arms; (d) leg stance, measured from back of front leg to back of rear leg.

FIG. 1 Measurements of a Chair

3.1.3 *Class A (residential) adult and children's plastic chairs, n*—plastic chairs intended for outdoor use by the customer around the home.

3.1.4 *Class B (nonresidential) adult and children's plastic chairs, n*—plastic chairs intended for outdoor use by the customer in all other areas, including those defined as Class A.

4. Significance and Use

4.1 Tests and criteria as outlined determine the overall usability and stability of chairs in an environment simulating the conditions of use.

4.2 Tests simulate two types of surfaces:

4.2.1 Smooth surfaces such as linoleum, wet pool decks, etc. The glass testing base (see Fig. 2) is used to simulate this surface.

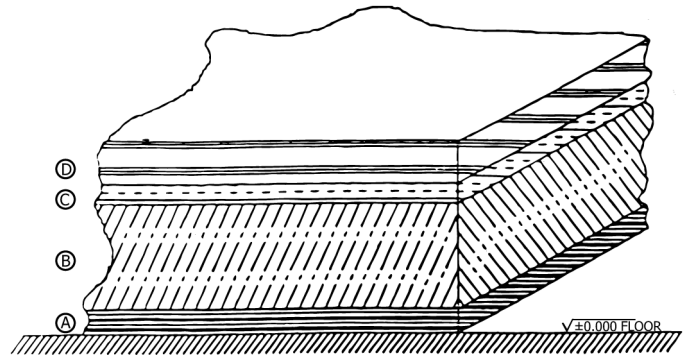
4.2.2 Rough surfaces such as wooden decks, outdoor natural surfaces, etc. The plywood testing base (see Fig. 3) is used to simulate this surface.

5. Apparatus

5.1 *Adult and Children's Plastic Chairs*, which have been inspected and have met a manufacturer's internal quality standards.

5.2 *Adult Plastic Chair Weight Bags*:

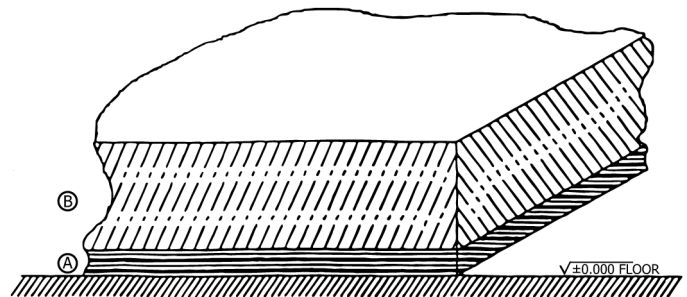
5.2.1 *One Heavy-Weight Canvas or Leather Bag*, 16 in. $\pm$ 0.2 in. (406 mm $\pm$ 4 mm) in diameter, which shall be measured prior to testing to determine stretching, having a total measurement not to exceed 17.5 in. (445 mm) and filled with steel or lead shot (0.09 in. to 0.12 in. (2.3 mm to 3.0 mm) in diameter) to a total weight of 150 lb $\pm$ 1.5 lb (68 kg $\pm$ 0.7 kg). The bag shall be fitted with a safety cable to prevent it from hitting the glass testing base but should not interfere with the test.



NOTE 1—(A) Poly(methyl methacrylate) sheet, 0.25-in. $\pm$ 0.03-in. (6-mm $\pm$ 0.1-mm) thickness; (B) AC exterior glue fir plywood sheet, 0.75 in. $\pm$ 0.08 in. (19 mm $\pm$ 0.2 mm) or greater in thickness; (C) polypropylene microfoam sheet; 0.7-lb/ft³ $\pm$ 0.01-lb/ft³ (11-kg/m³ $\pm$ 0.2-kg/m³) density and 0.13-in. $\pm$ 0.01-in. (3-mm $\pm$ 0.03-mm) thickness; and (D) glass/tempered sheet, 0.38-in. $\pm$ 0.04-in. (10-mm $\pm$ 0.1-mm) thickness.

NOTE 2—(A), (B), (C), and (D) shall be roughly the same dimensions, 48 in. (1219 mm) or greater.

FIG. 2 Glass Testing Base



NOTE 1—(A) Poly(methyl methacrylate) sheet, 0.25-in. $\pm$ 0.03-in. (6-mm $\pm$ 0.1-mm) thickness; and (B) AC exterior glue fir plywood sheet, 0.75 in. $\pm$ 0.08 in. (19 mm $\pm$ 0.2 mm) or greater in thickness.

NOTE 2—(A) and (B) shall be roughly the same dimensions, 48 in. (1219 mm) or greater.

FIG. 3 Plywood Testing Base

5.2.2 *One Heavy-Weight Canvas or Leather Bag*, identical to the bag in 5.2.1; however, the weight is increased by addition to the bag of 150 lb $\pm$ 1.5 lb (68 kg $\pm$ 0.7 kg) of either (1) additional steel or lead shot, or (2) barbell weights distributed evenly on top of the steel or lead shot, for a total weight of 300 lb $\pm$ 3 lb (136 kg $\pm$ 1.4 kg).

5.2.3 *One Heavy-Weight Canvas or Leather Bag*, identical to the bag in 5.2.1; however, the weight is increased by addition to the bag of 250 lb $\pm$ 2.5 lb (114 kg $\pm$ 1.1 kg) of either (1) additional steel or load shot or (2) barbell weights distributed evenly on top of the steel or lead shot, for a total weight of 400 lb $\pm$ 4 lb (182 kg $\pm$ 1.8 kg).

5.3 *Children's Plastic Chair Weight Bags*:

5.3.1 *One Heavy-Weight Canvas or Leather Bag*, 9 in. $\pm$ 0.1 in. (228 mm $\pm$ 2 mm) in diameter, which shall be measured prior to testing to determine stretching, having a total measurement not to exceed 10 in. (254 mm), and filled with steel or lead shot (0.09 in. to 0.12 in. (2.3 mm to 3.0 mm) in diameter), to a total weight of 60 lb $\pm$ 0.6 lb (27 kg $\pm$ 0.3 kg). The bag