



Designation: F 1838 – 98

Standard Performance Requirements for Child's Plastic Chairs for Outdoor Use¹

This standard is issued under the fixed designation F 1838; 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 approval. 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) child's plastic chairs intended for outdoor use.

1.2 These standard performance requirements are not applicable to chaises, multipositional chairs, upholstered chairs, or other types of furniture.

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

1.4 Products Manufactured from Recycled Plastics:

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

1.5 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 638 Test Method for Tensile Properties of Plastics²

D 2565 Practice for Operating Xenon Arc-Type Light-Exposure Apparatus With and Without Water for Exposure of Plastics³

D 4329 Practice for Operating Light and Water Apparatus (Fluorescent UV Condensation Type) for Exposure of Plastics⁴

D 5033 Guide for the Development of Standards Relating to the Proper Use of Recycled Plastics⁴

G 23 Practice for Operating Light-Exposure Apparatus

¹ These standard performance requirements are under the jurisdiction of ASTM Committee F-15 on Consumer Products and are the direct responsibility of Subcommittee F15.33 on Outdoor Plastic Lawn Furniture.

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² *Annual Book of ASTM Standards*, Vol 08.01.

³ *Annual Book of ASTM Standards*, Vol 08.02.

⁴ *Annual Book of ASTM Standards*, Vol 08.03.

(Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials⁵

3. Terminology

3.1 Definitions:

3.1.1 *child's plastic chair, n*—for the purposes of these provisional performance requirements, 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).

3.1.1.1 *Discussion*—Class A (residential) child's plastic chairs are intended for outdoor use by the customer around the home.

3.1.1.2 *Discussion*—Class B (nonresidential) child's plastic chairs are 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.

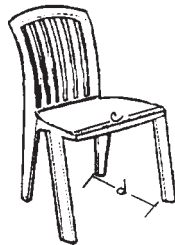
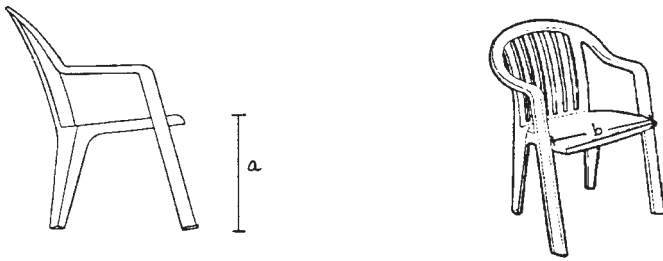
4.2.2 Rough surfaces such as wooden decks, outdoor natural surfaces, etc. The plywood testing base (see Fig. 3) is used to simulate this surface.

5. Apparatus

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

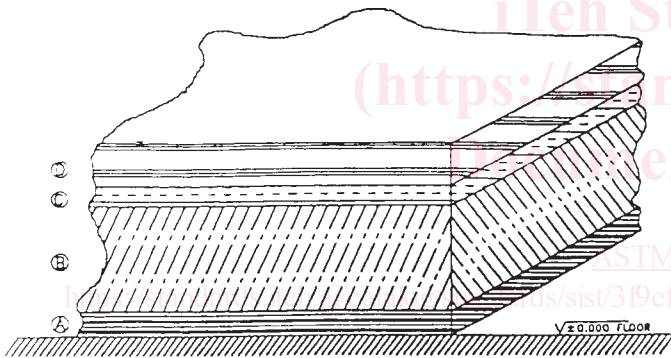
5.2 *One Heavy-Weight Canvas or Leather Bag*, 9 \pm 0.1 in. (228 \pm 2 mm) in diameter, which shall be measured prior to testing to determine stretching, having a total measurement not

⁵ *Annual Book of ASTM Standards*, Vol 14.02.



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



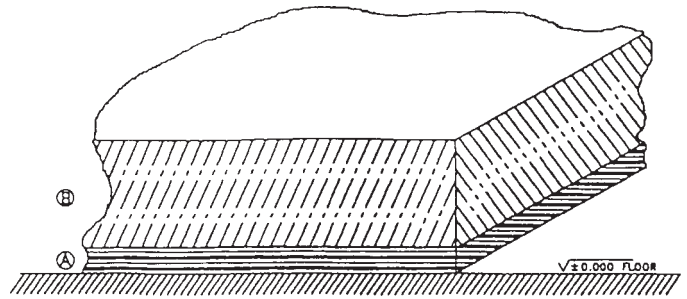
NOTE 1—(A) Poly(methyl methacrylate) sheet, 0.25 ± 0.03 -in. (6 ± 0.1 -mm) thickness; (B) AC exterior glue fir plywood sheet, 0.75 ± 0.08 in. (19 ± 0.2 mm) or greater in thickness; (C) polypropylene microfoam sheet; 0.7 ± 0.01 -lb/ft³ (11 ± 0.2 -kg/m³) density and 0.13 ± 0.01 -in. (3 ± 0.03 -mm) thickness;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

to exceed 10 in. (254 mm), and filled with steel or lead shot (0.09 to 0.12 in. (2.3 to 3.0 mm) in diameter), to a total weight of 60 ± 0.6 lb (27 ± 0.3 kg). The bag shall be fitted with a safety cable or other means to prevent it from hitting the glass testing base but should not interfere with the test.

5.3 *One Heavy-Weight Canvas or Leather Bag*, identical to the bag described in 5.2; however, the weight is increased by addition to the bag of 60 ± 0.6 lb (27 ± 0.3 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 120 ± 1.2 lb (54 ± 0.5 kg).



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

5.4 *One Heavy-Weight Canvas or Leather Bag*, identical to the bag described in 5.2; however, the weight is increased by addition to the bag of 90 ± 0.9 lb (41 ± 0.4 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 150 ± 1.5 lb (68 ± 0.7 kg).

5.5 *Glass Testing Base*, as shown in Fig. 2.

5.6 *Plywood Testing Base*, as shown in Fig. 3.

6. Conditioning

6.1 Precondition all chairs for a minimum of 48 h at 65 to 75°F (18 to 24°C) and a relative humidity of 50 ± 15 %, and test subsequently under the same conditions.

7. General Requirements

7.1 All chairs meeting these standard performance requirements shall be made from polymeric materials that meet the requirements for outdoor weathering given in Section 8 for Class A (residential) or Section 9 for Class B (nonresidential).

8. Test Procedure—Class A (Residential)

8.1 *Initial Inspection*—Inspect each chair thoroughly for breaks, fractures, cracks, or other structural damage prior to testing. Any chairs exhibiting structural damage shall not be tested.

8.2 Separate chairs may be used to conduct the tests listed in 8.4-8.9 to comply with 11.1 and 11.2.

8.3 Weatherability Test:

8.3.1 Polymeric material used outdoors shall be exposed for weatherability using accelerated weathering chambers and shall retain at least 70 % of its original tensile strength.

8.3.2 Specimens to be tested shall be normal 0.125 ± 0.01 -in. (3.2 ± 0.03 -mm) thick Type 1 tensile test bars injection molded from the same material used in finished chairs or tensile bars cut from finished parts, as described in Test Method D 638.

8.3.3 *Tensile Test*—Test exposed and non-exposed (control samples) tensile bars, in accordance with Test Method D 638, at a testing rate of 2 in. (51 mm)/min.

8.3.4 The specimens are to be exposed according to one of the following procedures: (1) 1000 h in accordance with Procedure B of Practice D 2565, using a Type B or BH