



Standard Performance Requirements for Plastic Chairs for Outdoor Use¹

This standard is issued under the fixed designation F 1561; 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 requirements establish nationally recognized performance requirements for Class A (residential) and Class B (nonresidential) 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 requirements are not applicable to chaises, multipositional chairs, upholstered chairs, or other types of furniture.

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

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. Terminology

2.1 Definition:

2.1.1 *plastic chair, n*—for the purposes of these 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 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).

2.1.1.1 *Discussion*—Class A (residential) plastic chairs are intended for use by the customer in and around the home.

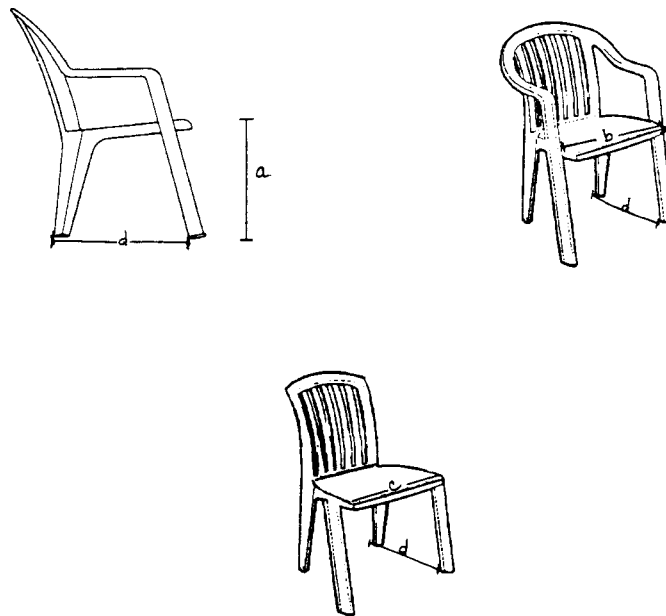
2.1.1.2 *Discussion*—Class B (nonresidential) plastic chairs are intended for use by the customer in all other areas, including those defined as Class A.

3. Significance and Use

3.1 Tests and criteria as outlined determine the overall

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

FIG. 1 Measurements of a Chair

usability and stability of chairs in an environment simulating the conditions of use.

3.2 Tests simulate two types of surfaces:

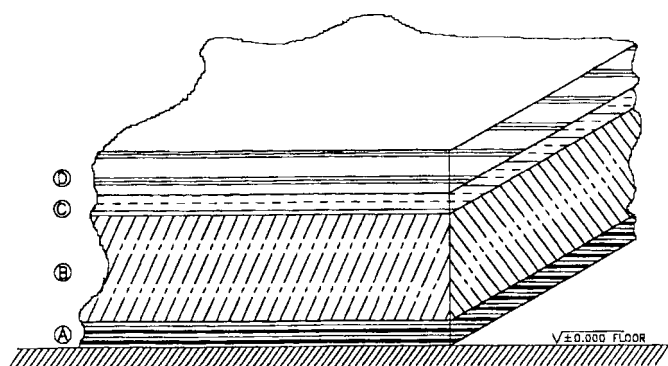
3.2.1 Smooth surfaces such as linoleum, wet pool decks, etc. The glass testing base (Fig. 2) is used to simulate this surface.

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

4. Apparatus

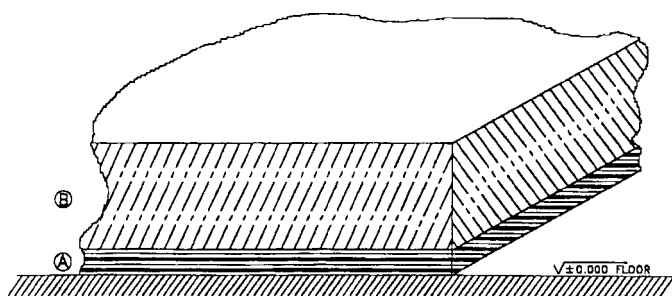
4.1 *Plastic Chairs*, which have been inspected and met a manufacturer's internal quality standards.

4.2 *One Heavy-Weight Canvas or Leather Bag*, 16 ± 0.2 in. (406 ± 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 to 0.12 in. (2.3 to 3.0 mm) in diameter) to a total weight of 150 ± 1.5 lb (68 ± 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 (see standard specifications); B = AC exterior glue fir plywood (see standard specifications); C = polypropylene microfoam sheet (see standard specifications); D = glass/tempered (see standard specifications).

FIG. 2 Glass Testing Base



NOTE 1—A = poly(methyl methacrylate) sheet (see standard specifications); B = AC exterior glue fir plywood (see standard specifications).

FIG. 3 Plywood Testing Base

4.3 *One Heavy-Weight Canvas or Leather Bag*, identical to the bag in 4.2; however, the weight is increased by addition to the bag of 150 ± 1.5 lb (68 ± 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 ± 3 lb (136 ± 1.4 kg).

4.4 *One Heavy-Weight Canvas or Leather Bag*, identical to the bag in 4.2; however, the weight is increased by addition to the bag of 250 ± 2.5 lb (114 ± 1.1 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 400 ± 4 lb (182 ± 1.8 kg).

4.5 *Tempered Sheet Glass (as Base)*, one piece 36 ± 0.4 -in. (914 ± 10 -mm) square and clean, 0.38 ± 0.04 -in. (10 ± 0.1 -mm) thickness.

4.6 *AC Exterior Glue Fir Plywood (as Base)*, one piece 36 ± 0.4 -in. (914 ± 10 -mm) square sheet, 1.0 ± 0.1 -in. (25 ± 0.3 -mm) thickness.

4.7 *Poly(Methyl Methacrylate)*, one piece 36 ± 0.4 -in. (914 ± 10 -mm) square sheet, 0.25 ± 0.03 -in. (6 ± 0.1 -mm) thickness.

4.8 *Polypropylene Microfoam*, one piece 36 ± 0.4 -in. (914 ± 10 -mm) square sheet, 0.7 ± 0.01 -lb/ft³ density and 0.13 ± 0.01 -in. (3 ± 0.03 -mm) thickness.

5. Conditioning

5.1 Precondition all chairs for a minimum of 48 h at 65 to

75°F (18 to 24°C) and a relative humidity of 50 ± 5 % and test subsequently under the same conditions.

6. Test Procedure—Class A (Residential)

6.1 *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.

6.2 Test each chair in the sequence listed in 6.3, 6.4, and 6.5 and is to comply with 9.1 and 9.2.

6.3 Static Load Test:

6.3.1 Position the chair on the glass testing base (Fig. 2) as near as possible to the center of the glass.

6.3.2 Apply the 300 ± 3 -lb (136 ± 1.4 -kg) bag at a speed not to exceed 6 in. (152 mm)/s to the geometrical center of the seat.

6.3.3 Withdraw the weight from the seat after 10 ± 1 s.

6.3.4 Allow 10 ± 1 s of recovery time.

6.3.5 Repeat 6.3.2-6.3.4 and eight additional times.

6.3.6 Repeat 6.3.2 one time, allowing the weight to remain on the seat for $30 \text{ min} \pm 10$ s, and then withdraw the weight from the seat.

6.3.7 Observe and report any breaks, cracks, fractures, or other structural damage.

6.3.8 Position the chair on the plywood testing base (Fig. 3) and as near as possible to the center of the plywood.

6.3.9 Repeat 6.3.2-6.3.7.

6.4 Impact Test:

6.4.1 Position the chair on the glass testing base (Fig. 2) as near as possible to the center of the glass.

6.4.2 Position the 150 ± 1.5 -lb (68 ± 0.7 -kg) bag at a height of 6 ± 0.1 in. (152 ± 2.5 mm) above the center of the chair seat, at rest.

6.4.3 Allow the bag to free-fall onto the center of the chair seat.

6.4.4 Repeat 6.4.2 and 6.4.3 nine additional times.

6.4.5 Observe and report any breaks, cracks, fractures, or other structural damage.

6.4.6 Position the chair on the plywood testing base (Fig. 3) as near as possible to the center of the plywood.

6.4.7 Repeat 6.4.2-6.4.5.

6.5 Rear Leg Test:

6.5.1 Place the chair on the glass testing base (Fig. 2) as near as possible to the center of the glass.

6.5.2 Position the chair with the rear legs unrestrained and the front legs resting on wooden blocks of a width suitable to accommodate the chair legs. Height of the wooden blocks is determined by the distance of leg stance (see Fig. 1):

Leg Stance	Block Height
Under 15 in. (381 mm)	3 ± 0.03 in. (76 ± 0.8 mm)
15 to 17 in. (381 to 432 mm)	3.75 ± 0.04 in. (95 ± 0.95 mm)
Over 17 in. (432 mm)	4.5 ± 0.05 in. (114 ± 1.1 mm)

6.5.3 Lower the 300 ± 3 -lb (136 ± 1.4 -kg) bag slowly onto the seat along the centerline. Apply the load directly over the rear legs and at the centerline of the seat.

6.5.4 During the performance of 6.5.3, it is permissible to manually slide the bag to the rear of the seat, to a position touching the back of the chair. It may be necessary to temporarily stabilize the chair, but this is permitted only during