



Toilet seats and fittings



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 - Australian Chamber of Commerce and Industry
 - CSIRO
 - Department of Agriculture and Water Resources (Australian Government)
 - Plastics New Zealand
 - Plumbing Distributors Association of New Zealand
 - Plumbing Products Industry Group
 - Testing interests (Australia)
-

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Australian Standard[®]

Toilet seats and fittings

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee WS-003, Sanitary Plumbing Fixtures, to supersede AS 1371—1973, *Toilet seats of moulded plastics*.

The objective of this Standard is to provide designers, manufacturers and test laboratories with requirements and tests for toilet seats for use with toilet pans complying with AS 1172.1, *Water closets (WCs)*, Part 1: *Pans*.

This Standard has been revised to—

- (a) simplify the structure of the document; and
- (b) comply with the current product design requirements.

The term ‘normative’ has been used in this Standard to define the application of the appendices to which it applies. A ‘normative’ appendix is an integral part of a Standard.

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STANDARDS AUSTRALIA

Australian Standard
Toilet seats and fittings

1 SCOPE

This Standard applies to toilet seats and flaps, where fitted, for sanitary water closet pans complying with AS 1172.1.

Special requirements for persons with disabilities including bariatric applications are included.

NOTE: In the future, requirements for bidets, bidettes and toilet seat douches will be included in this Standard.

2 REFERENCED DOCUMENTS

AS

- 1172 Water closets (WCs)
1172.1 Part 1: Pans

AS/NZS

- 1680 Interior and workplace lighting
1680.1 Part 1: General principles and recommendations

ISO

- 105 Textiles—Tests for colour fastness
105-A01 Part A01: General principles of testing

IEC

- 60335 Household and similar electrical appliances—Safety
60335-2-84 Part 2.84: Particular requirements for toilets

3 MATERIALS**3.1 Plastics materials**

Plastics materials used in the manufacture of seats and flaps shall be such that under normal conditions of use the seats and flaps shall be—

- (a) resistant to abnormal deterioration of properties, and appearance by ageing;
- (b) not adversely affected by chemical and colourfastness tests from Appendices D and E; and
- (c) capable of meeting the load test requirements detailed in Table 1.

3.2 Other materials

Other materials may be used and shall comply with the performance requirements of this Standard or of the relevant Standard.

3.3 Buffer materials

Any buffers for use with seats and flaps shall be non-moisture absorbent.

3.4 Metallic component

Stainless steel shall be of a minimum Grade 304.

4 DESIGN

4.1 Dimensions

Dimensions of the toilet seat and/or flap shall be in accordance with the manufacturer's specification and shall be suitable for use with the nominated toilet pan(s).

TABLE 1
TEST REQUIREMENTS FOR SEATS AND FOR FLAPS

1	2	3	4
Characteristic	Unit or description	Maximum load	Method of test
Ultimate structural strength	Fracture	1.5 kN	Appendix A
Ultimate structural strength for persons with disabilities applications	Fracture	2.5 kN	Appendix A
Ultimate structural strength for bariatric applications	Fracture	4.0 kN	Appendix A
Hinge performance Non soft-close hinges	No structural or other failure of hinges or mountings after the completion of 10 000 cycles	Nil failure	Appendix B
Hinge performance Soft-close hinges	No structural or other failure of hinges or mountings after the completion of 10 000 cycles and the soft close mechanism shall still provide damping	Nil failure, damping to be discernible	Appendix B

4.2 Fastening system

A means to fasten the toilet seat and flap to the nominated toilet pan(s) shall be provided.

4.3 Hinging system and device

A hinging system shall be provided so that the toilet seat and flap shall cover/uncover the toilet pan.

The hinging device can be provided with an adjusting system so that the aperture of the seat can be correctly and permanently positioned in relation to the rim of the pan.

The flap shall be positioned such that it covers the aperture of the seat.

4.4 Seat buffers

Seat buffers, when provided, shall be securely fixed to the underside of the seat and located so that the seat is properly supported by the top surface of the pan.

4.5 Seats for persons with disabilities

Seats intended for people with disabilities shall incorporate a means of supporting the seat in position during sideways movement of a person onto or off the seat and shall comply with the side force seat fitting test in Clause 6.4.

4.6 Seat for bariatric applications

Seats intended for bariatric applications shall comply to load test requirements specified in Table 1 and shall incorporate a means of supporting the seat in position during sideways movement of a person onto or off the seat and shall comply with the side force seat fitting test in Clause 6.4.

4.7 Seats incorporating heating

If the toilet seat incorporates electrical heating equipment, the seat shall comply with the appropriate requirements of IEC 60335-2-84.

4.8 Automatic seat covering devices

If the unit includes an electrically operated automatic seat covering device, that device shall comply with the relevant requirements of IEC 60335-2-84.

5 WORKMANSHIP

The surfaces of seats, flaps and other components shall be smooth, free from blisters, splinters, burrs and delamination.

6 PERFORMANCE TEST REQUIREMENTS

6.1 Ultimate structural strength test

When tested in accordance with Appendix A to the criteria in Table 1, there shall be no failure or dislodgement of seat, flap, buffers or hinge assembly. Criteria for failure include fracture, cracking, permanent distortion and dislodgement of the seat assembly components.

6.2 Hinge performance

6.2.1 *Soft-close hinges*

When tested in accordance with Appendix A to the criteria in Table 1, there shall be no failure of the mechanism to provide a smooth transition of the seat and flap from the open to the closed position, as designed by the manufacturer.

6.2.2 *Non soft-close hinges*

When tested in accordance with Appendix A to the criteria in Table 1, there shall be no failure of the mechanism to prevent the seat and flap from opening and closing, as designed by the manufacturer.

6.3 Plastic material tests

Test methods shall be in accordance with Appendices C, D, E and F.

When tested in accordance with Appendix C, the material shall have an absorbency rate not greater than 0.5%.

When a test specimen is tested in accordance with Appendices D and F, the material shall be unaffected by the reagents except for removable stains as defined in Appendix D.

When test specimens are tested in accordance with Appendix E, the material shall not craze, crack or exhibit signs of any defects and any change in colour shall not register less than Grade 4 on the grey scale of Section A02 of ISO 105/A01.

6.4 Side force seat fitting test

Toilet seats designed for persons with disabilities and bariatric applications shall comply with the side force seat fittings test in accordance with Appendix G.

7 INSTRUCTIONS

Installation instructions shall be provided in English for the installation of the toilet seat.

Recommended cleaning procedures for the toilet seats shall be provided.

After sales service contact details shall be provided.

APPENDIX A
METHOD FOR DETERMINATION OF ULTIMATE STRUCTURAL STRENGTH
OF SEAT AND FLAP
(Normative)

A1 SCOPE

This Appendix sets out the method for determining the ultimate structural strength of a toilet seat and flap.

A2 PRINCIPLE

A load pad arrangement, approximating human anatomy, is utilized to apply a vertical load to the seat and flap.

A3 APPARATUS

The following apparatus shall be required:

- (a) Testing machine capable of applying a vertical compressive load to the pan and seat assembly at a rate of 5 mm/min up to a maximum load of 4 kN.
- (b) A suitable rigid support for the pan and seat.
- (c) Protective shield between the specimen and operator.
- (d) Load pad arrangement prepared in accordance with the following:
 - (i) *A load pad arrangement* This is fabricated by producing a solid base to dimensions shown in Figure A1. Aluminium filled epoxy resin may be used to produce the solid base shape. The padding and protective rubber skin is glued to the solid base as shown in Figure A2.
 - (ii) *Padding material* Flexible cellular rubber sponge, closed cell, skin on the one side (skin facing out), compression deflection (at 25% deflection) 250 ± 0.5 kPa.
 - (iii) *Skin material* Rubber sheet thickness 2 ± 0.5 mm, hardness 60 ± 10 Shore A.

Load pad arrangement requires suitable mounting provisions to securely attach to the cross head of the compression testing machine. A backing plate may be used to ensure the buttock arrangement is attached to a rigid surface. Centrelines of the buttock arrangement shall coincide with the centrelines of the crosshead.