AS/NZS 3813:2016

Australian/New Zealand Standard™

Plastic monobloc chairs—Determination of strength and durability, stability, UV and weathering, and ignitability

STANDARDS Australia

STANDARDS NEW ZEALAND PAEREWA AOTEAROA

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee CS-088, Furniture—Domestic and Commercial. It was approved on behalf of the Council of Standards Australia on 12 October 2016 and by the New Zealand Standards Approval Board on 5 October 2016.
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The following are represented on Committee CS-088:

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Australian Furniture Association
Australian Industry Group
Business New Zealand
Consumers Federation of Australia
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This Standard was issued in draft form for comment as DR AS/NZS 3813:2015.

Australian/New Zealand Standard™

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CS-088, Furniture—Domestic and Commercial to supersede AS/NZS 3813:1998.

The objective of this Standard is to provide manufacturers of plastic monobloc chairs with test methods to ensure that such chairs are safe, reliable and suitable for adult persons up to 135 kg in mass.

This revision adds what are considered to be important features missing from the previous edition of the Standard (AS/NZS 3813:1998), that is, sections on weathering and ignitability.

Further, from a strength and durability perspective the 'domestic' and 'commercial' test levels used in the previous edition of AS/NZS 3813 have been replaced with 'normal duty' and 'heavy duty'. The magnitude of the applied loads is the same for both levels; the difference is in the number of times the loads are applied, that is, 'heavy duty' indicates a higher proven level of durability, not a higher proven level of strength.

Reference was made to the following documents in the preparation of this Standard:

(a) ISO 7173 *Furniture—Chairs and stools—Determination of strength and durability*.

(b) ISO 7174 *Furniture—Chairs—Determination of stability*, Part 1: *Upright chairs and stools*.

(c) BS 5852 *Methods of test for assessment of ignitability of upholstered seating by smouldering and flaming ignition sources*.

(d) ISO 4892-2 *Plastics—Methods of exposure to laboratory light sources*—Part 2: *Xenon-arc lamps*.

(e) SAE J2527 (formerly SAE J1960) *Performance based standard for accelerated exposure of automotive exterior materials using a controlled irradiance xenon-arc apparatus*.

(f) ASTM G155-13 *Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*.

(g) AS 2001.4.A02 *Methods of test for textiles*, Method 4.A02: *Colourfastness tests—Grey scale for assessing change in colour*.

(h) ISO 105-A02 *Textiles—Tests for colour fastness*, Part A02: *Grey scale for assessing change in colour*.

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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FOREWORD

The strength, durability (mechanical) and stability tests specified are sufficient for chairs intended for use by adults up to 135 kg, but do not ensure that failure will not eventually occur either as a result of habitual misuse or after some years of service. The forces used are sufficient to allow for normal use and reasonable misuse but not extreme or habitual misuse.

The weathering tests specified indicate polymer formulations with resistance to the effects of UV radiation and other elements of outdoor exposure but do not ensure that failure will not occur beyond the stated thresholds.

The ignitability test specified indicates a chair design and polymer formulation with the ability to resist the ignition sources used but does not ensure that ignition will not occur when a chair is subject to more aggressive ignition sources or when subject to arson.

The strength, durability and stability test results are dependent on the loads being correctly applied, that is, they need to be of the specified magnitude, direction, sense, duration and distribution. They should also be able to follow any deformation they have induced in the chair. It is important that any loading device used does not act to also inadvertently support the chair, for example, loads applied using a hydraulic or pneumatic cylinder fixed in a single line of action allow deformation along that line of action only, and are therefore inappropriate.

In the case of chair designs not catered for in the test procedures, tests should be carried out as closely as possible to those described and deviations from the test procedure noted on the test report.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out test methods for determining the strength and durability, stability, resistance to UV radiation and weathering, and ignitability of upright plastic monobloc chairs. The types of monobloc chair covered by this Standard are those designed primarily for single occupant use, for an adult population of users, and configured with four legs, a seat and a backrest.

This Standard is appropriate for chairs with seat heights between 400 mm and 600 mm (as measured at the seat loading point) and for chairs with upright backs [30 degrees or less off vertical as determined using the chair loading position template (see Figure A1)].

Stools, or chairs with pedestal, sled, cantilever, panel or similar base configurations, are not covered by this Standard.

NOTE: ISO 17025 requirements for reporting uncertainty do not apply when determining conformance to this Standard.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
2001	Methods of test for textiles
2001.4.A02	Method 4.A02: Colour fastness tests—Grey scale for assessing change in colour
ISO	
48	Rubber, vulcanized or thermoplastic—Determination of hardness (hardness between 10 IRHD and 100 IRHD)
105	Textiles—Tests for colour fastness
105-A02	Part A02: Grey scale for assessing change in colour
4892	Plastics—Methods of exposure to laboratory light sources
4892-2	Part 2: Xenon-arc lamps
BS	
5852	Methods of test for assessment of the ignitability of upholstered seating by smouldering and flaming ignition sources
BS EN	
1021	Furniture. Assessment of the ignitability of upholstered furniture
1021-1	Part 1: Ignition source smouldering cigarette
SAE J	
1960	Accelerated exposure of automotive exterior materials using a controlled irradiance water-cooled xenon-arc apparatus
2527	Performance based standard for accelerated exposure of automotive exterior materials using a controlled irradiance xenon-arc apparatus