

Australian/New Zealand Standard™

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



## **AS/NZS 3813:2016**

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  
Furniture Association of New Zealand  
Furntech—AFRDI  
Human Factors and Ergonomics Society of Australia  
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*This Standard was issued in draft form for comment as DR AS/NZS 3813:2015.*

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of strength and durability, stability, UV  
and weathering, and ignitability**

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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.

## STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

**Australian/New Zealand Standard****Plastic monobloc chairs—Determination of strength and durability, stability, UV and weathering, and ignitability**

## 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: Colourfastness 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 |