



Information Kit on Plastic Monobloc Chairs

1 Introduction

AFRDI Blue Tick Certification (see section 6) is based on *AS/NZS 3813:2016 Plastic monobloc chairs (or a modified version of it for people up to 110 kg only)*. *AS/NZS 3813* is a standard which focuses on the testing requirements of fully moulded plastic (i.e. synthetic polymer) chairs.

2 Certification options

Some environments and users will be far harder on chairs than others.

It's therefore appropriate that there be different certification options for different applications.

All certified chairs will need to be approved—**at minimum**—for strength and durability, and stability.

The full range of testing options are:

- Strength (2) *
- Durability (2) *
- Stability (1) *
- UV and weathering (3), and
- Ignitability (2)

(x) indicates the number of severity levels available within each option.

* indicates required for certification.

Over and above the minimum certification position, all testing options are discretionary, however some guidance is offered in the examples following.

A chair intended for indoor use only would not normally need to be assessed for resistance to UV and weathering because it's not intended to be used outdoors. It may be considered necessary to assess it for resistance to ignitability, depending on the application. Regardless, to be certified it would still need to pass strength and durability and stability requirements.

In contrast, a chair intended for outdoor use would normally be expected to be assessed for both resistance to UV and weathering and ignitability.

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In this case it would be appropriate to cover the full range of testing options e.g. strength and durability and stability and UV and weathering and ignitability.

The severity levels chosen should be based on anticipated usage and are discussed in more detail below.

Please note: it is not possible to foresee—prior to proof by actual testing—what options or severity levels a chair may be able to achieve. Consequently you will need to nominate your desired testing options and levels based on your own experience, the chair's construction, and its intended use. As previously stated, at a minimum, all certified chairs will need to be satisfactorily evaluated for strength, durability, and stability (see sections 2.1 and 2.2 below).

2.1 Strength and durability

Chairs are certified for strength as either suitable for users up to 110 kg or 135 kg. There are two durability levels—normal duty and heavy duty—available at each of these user mass limits.

In relative terms heavy duty indicates double the proven durability of normal duty.

Both normal and heavy duty demonstrate an equivalent level of proven strength.

Certifying at the 135 kg level is recommended for public space use.

Neither strength or durability level addresses the detrimental effects of the outdoor environment (for discussion of this consideration see resistance to UV and weathering, sections 3.4 and 11.2).

Possible uses for which each level might be appropriate:

Normal duty Intended for light to medium intensity use in either a domestic or contract/commercial environment. For indoor or covered outdoor use only (unless also certified for resistance to UV and weathering).

Heavy duty Intended for medium to heavy intensity use in either a domestic or contract/commercial environment. For indoor or covered outdoor use only (unless also certified for resistance to UV and weathering).

2.2 Stability

There is only one level of certification—a chair is either sufficiently stable or it is not. All certified chairs will have been tested and assessed as satisfactorily stable.

2.3 Resistance to UV and weathering

There are three certification options:

1. **Not certified** (this will mean the product has either not been assessed, or it has been but has failed to achieve a satisfactory level of performance i.e. it is not suitable for outdoor use).
2. **Level 1:** intended for intermittent outdoor use.
3. **Level 2:** intended for regular outdoor use.

It should be noted that whatever the level of certification, a plastic chair will eventually degrade as a result of outdoor exposure and opportunities to minimize prolonged exposure should be taken.

2.4 Ignitability

There are two certification options:

1. **Not certified** (this will mean the product has either not been assessed, or it has been but has failed to achieve compliance i.e. it is not ignition resistant).
2. **Certified resistant to ignition.** This means the chair has been proven *resistant* to both cigarette and match flame ignition sources. (**NB** this does not guarantee that more aggressive ignition sources, or persistent and deliberate attempts with cigarettes or matches, will not lead to ignition. If this type of environment is anticipated more aggressive ignition sources should be specified in *addition* to the cigarette and match flame tests).

3 Design variation

What can sometimes be considered to be 'the same' chair is often produced in a range of different colours, or with and without flame retardancy or UV protection additives.

The 'same' chair is sometimes produced with and without armrests, or with different seat heights i.e. different length legs, or as a family of 'scaled siblings' e.g. a small, medium and large version of a chair with similar proportions and overall look.

Where it can be demonstrated that a design variation (such as those described in this section) is unlikely to have a significant effect on the outcome of testing, the variation will not need to be subjected to all tests in the standard and will therefore be able to be tested at a reduced cost.

The sections that follow aim to give an indication of what can and what can't be regarded as effectively '**the same**' and consequently give an indication of which tests need to be done (and which, by implication, may be avoided).

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To be as clear as possible we require tight definitions of what we mean by design variation. These are outlined in section 3.1 below. The sections that immediately follow 3.1 (3.2 to 3.5) describe the application of these principles.

3.1 Definitions

3.1.1 MOULD VARIATION

Design variation, in this context, refers to chairs with different **physical shapes and features** e.g. chairs made from different moulds (this includes chairs made from similar moulds but with or without armrests, or with longer or shorter legs, or as 'scaled replicas' or with any other variations in shape or form).

3.1.2 INGREDIENTS AND PROCESS VARIATION

Here, design variation means changes in the **ingredients and/or processes** used in making a chair e.g. proportions of regrind versus virgin polymer, polymer type, additives i.e. colouring agents, flame retardants, UV stabilisers etc.

3.2 Strength and durability (required)

All chairs with **mould variation** (section 3.1.1) will be subject to all strength and durability tests.

All chairs with **Ingredients and process variation** (section 3.1.2) will be subject to all strength and durability tests unless:

- it can be demonstrated that the various polymers or additives **do not have** a significant detrimental effect on the strength, stiffness and toughness of the chair.

This will normally be proven by:

1. thorough initial testing e.g. a range of chairs may be produced from the same mould using the same base polymer/regrind mix but with differing colouring, UV or flame retardancy additives. When each combination has been fully tested those additives that do not have a significant detrimental effect on the strength and durability performance of the chair may then be accepted as effectively 'the same'. This information may be then used in subsequent testing (on other chairs).
2. materials testing data e.g. tensile, stiffness and toughness tests from an appropriately accredited testing laboratory.

Chairs that satisfy the above requirements (1 and/or 2) will be subject to the strength tests of the standard only (i.e. will not also be subject to the durability tests).

3.3 Stability (required)

All chairs with **mould variation** (section 3.1.1) will be subject to all stability tests.

All chairs with **Ingredients and process variation** (section 3.1.2) will be subject to all stability tests unless:

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- it can be demonstrated that the various polymers or additives **do not have** a significant detrimental effect on the stiffness of the chair.

This will normally be proven by:

1. materials testing data e.g. stiffness tests from an appropriately accredited testing laboratory.

Chairs that satisfy the above requirement will not normally be required to be subject to the stability tests of the standard.

NB given there are no specific tests covering a chair's stiffness in the standard it is possible that chairs with **ingredients and process variation** may pass all the strength and durability sections of the standard but be made from materials with widely varying stiffnesses. Flexible chairs are more susceptible to stability failure than rigid ones. This precludes taking a similar approach here for stability, to that outlined under option 1 in section 3.2 for strength and durability above.

3.4 Resistance to UV and weathering (optional)

Chairs with **mould variation** (section 3.1.1) will not normally be subject to additional UV and weathering assessment (see example below and section 11.2).

All chairs with **Ingredients and process variation** (section 3.1.2) will be subject to UV and weathering assessment.

Example

Any chair with different ingredients, or proportions of ingredients, will need to have that combination tested against the requirements of the standard if it is to have a UV and weathering assessment. Once tested satisfactorily, that combination of ingredients will normally be assumed to be compliant when used on any other chair design (see section 11.2.6 for a possible exception to this rule). This is because although the shape of the chair may have an effect on its susceptibility to UV and weathering, whole chairs will rarely if ever be tested in a weatherometer. Rather, samples will be tested and therefore the shape of the chair (and any effect this may have on testing performance) will not generally be evaluated (beyond the effect the contour of the samples cut from the chair may have).

3.5 Ignitability (optional)

All chairs with **mould variation** (section 3.1.1) will be subject to ignitability assessment (see example below).

All chairs with **Ingredients and process variation** (section 3.1.2) will be subject to ignitability assessment.

For example, any chair with different ingredients, or combination of ingredients, will need to have that combination tested against the requirements of the standard. Once tested satisfactorily, that combination of ingredients will not be assumed to be compliant when used on any other chair design. This is because the shape of the chair may have a significant effect on its propensity to ignite.

3.6 Certification

Certification is only applicable to the design variations validated. The approved colour/s, UV and weathering, and ignitability options will be indicated on the product certificate. No variations, other than those specified on the certificate, should be assumed to have been tested and certified.

4 Costs

Please contact Furntech-AFRDI for a quotation. Our quotation will include:

- freight (for the number of chairs required for evaluation) from your nearest AFRDI freight forwarding depot to Furntech-AFRDI (see section 9).
- AFRDI Blue Tick Product Certification for three years.

4.1 Adjustments

In the event that this product fails the assessment or the assessment is terminated at the owner's request, a credit towards future charges, available for a period of 3 years from the date of engagement, will be issued for the unused portion of the assessment fee. If tests have to be repeated further charges are also normally applicable.

4.2 Discounts

Furntech-AFRDI members receive discounts on testing and research fees. Information on membership is available from the Institute or our website. A quantity discount is also available when three or more chairs are forwarded for full testing to the standard at one time (33% discount on the third and all subsequent chairs).

5 The Next Step

If you are interested in considering product testing, please:

- 1 Read the rest of this information kit. Call or e-mail if there is anything further you would like to discuss (03 6326 6155 or admin@furntech.org.au); or
- 2 Contact Furntech-AFRDI for a quotation. Include details of the product for which you are seeking certification.

If you wish to proceed with testing on the basis of our quotation, please follow these steps:

- 3 Copy the Testing Request form (at the end of this document) and complete for each design variation (see Section 3) for which certification is being sought. E-mail a copy of each to Furntech-AFRDI.
- 4 Ensure the chairs are appropriately marked, or that you are making preparations (see section 10).
- 5 Ensure you send the appropriate samples for evaluation (see section 11).

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- 6 Deliver the chairs to our Freight Forwarders or make alternative freight arrangements (see section 9).
- 7 Send your payment to Furntech-AFRDI (we accept cheque, EFT, Visa and MasterCard). Please phone 03 6326 6155 or e-mail admin@furntech.org.au to request an invoice if this will help to facilitate payment (see section 8).

6 AFRDI Blue Tick Certification

AFRDI Blue Tick certification is granted to suppliers whose products and organisations meet the required standard. It is available at two strength levels; 135 kg and 110 kg. At each strength level there are two durability options; normal duty and heavy duty. Stability requirements are the same at all test levels. All certified chairs will need to be approved—**at minimum**—for strength and durability, and stability. Certification to UV and weathering and Ignitability requirements are optional extras.

The concept is that for Furntech-AFRDI to endorse a product, the Institute needs to have an on-going contractual relationship with the supplier that ensures purchasers can rely on certificates of endorsement. Certification involves periodic audits and the investigation of complaints arising from the sale of endorsed products.

Under the AFRDI Blue Tick product certification program, suppliers agree to:

- maintain quality of production to at least that of the samples tested;
- advise of changes in the product including changes in materials, components and means and place of manufacture **prior** to these changes taking place;
- not use (nor permit its agents to use) the logo to promote goods which are not covered by the agreement or to misrepresent the nature of Furntech-AFRDI's endorsement;
- keep and make available a register of complaints arising from the sale of goods covered by the agreement;
- agree to random checks of the quality of products covered by the agreement;
- maintain an adequate product liability insurance cover; and
- pay a certification fee – three years' fee is included in the testing charge.

In return, Furntech-AFRDI agrees to:

- permit the use of the Furntech-AFRDI logo to promote goods covered by the agreement; and
- commend to specifiers and purchasers the goods covered by the agreement in lists on the Institute's website.

A copy of the agreement and any further information is also available on request.

7 What You Get

Assuming that the product complies and that you sign an AFRDI Blue Tick product certification agreement, at the end of the process Furntech-AFRDI will:

- enter into a product certification agreement with the supplier of the chair, or add the chair to an existing agreement. Three years' certification fee is included in the testing charge.
- issue a Test Report and a product certificate.
- add the product to the Furntech-AFRDI list of endorsed products under the AFRDI Blue Tick Product Certification Scheme.

8 Payment

Furntech-AFRDI policy is that **PAYMENT MUST BE MADE BEFORE TESTING COMMENCES**. Please phone 03 6326 6155 to request an invoice if this will help to facilitate payment. Facilities are available for payment by Visa and MasterCard.

9 Freight

Refer to the Institute's [Information Kit on Freight to Furntech-AFRDI](#). Distribution of this kit in hardcopy form will include the freight-related information as a supplementary sheet.

9.1 Timing

Freight normally takes between 7 and 14 days. The strength, durability and stability testing process for Normal Duty takes approximately three weeks, Heavy Duty one week longer.

When the chair, the Testing Request form and payment are all received, the item will be placed on the testing schedule and testing will commence shortly thereafter.

10 Required Markings

The Standard requires that each chair be clearly and durably marked with the following:

- The manufacturer's or importer's name and address.
- Date of manufacture.
- That the chair is not suitable for shower or bathroom use.
- An industry-accepted recyclability and materials identification code.
- The Sections of this Standard (AS/NZS 3813) to which it is claimed to be compliant and, if appropriate, at what level.
- Whether the chair is stackable or non-stackable.

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If it is intended that any or all of this information will be printed on a label, an example of the label must be provided.

Labels may be produced in advance and affixed to the chair samples sent to us for evaluation (it's necessary to assess their accuracy and durability prior to granting certification).

In practice, it is sometimes necessary to modify a label based on the actual performance of the tested product and therefore it may be better to wait until a likely testing outcome is clear before finalising label design and manufacture. In this case labels may be sent separately. We will affix them to the chair samples as directed.

In either case, to avoid delays at the end of the testing process, labelling requirements should be considered well in advance as chairs will not be certified prior to their labels being assessed.

11 Test samples

11.1 For strength and durability and stability testing

Evaluation for strength, durability and stability is the minimum requirement that must be met for certification.

Contact us with details of the item or range (including all design variations) that you would like assessed and we will give you a list of the samples we require.

The following examples are offered to give an indication of what to expect by way of sample requirements. They don't cover every permutation and are indicative only (**NB** less samples may be appropriate if sufficient information is available, as outlined in Section 3). The examples identify typical features of a chair (such as colour, shape (mould), flame retardancy (FR) additives, or ultra-violet (UV) stabilising additives).

Clearly, if many variables are present the number of test samples required will become large and testing charges will increase commensurately. In cases like this it will probably be advantageous to gather test information on the mechanical properties of the various polymer recipes. In most cases this information could then be used to reduce the amount of chair testing required.

UV = with UV modification; **no UV** = without UV modification

FR = with FR modification; **no FR** = without FR modification

Examples of sample requirements

11.1.1 SINGLE COLOUR, SINGLE MOULD, NO FR, NO UV

- Send **three (3)** chairs.

11.1.2 MULTIPLE COLOURS, SINGLE MOULD, NO FR, NO UV

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- Send **three (3)** chairs of each colour.

11.1.3 SINGLE COLOUR, SINGLE MOULD, FR OR NO FR, NO UV

- Send **three (3)** chairs with FR and **three (3)** chairs without FR.

11.1.4 SINGLE COLOUR, SINGLE MOULD, UV OR NO UV, NO FR

- Send **three (3)** chairs with UV and **three (3)** chairs without UV.

11.1.5 TWO COLOURS, SINGLE MOULD, ONE COLOUR FR OR UV; THE OTHER COLOUR NO FR, NO UV

- Send **three (3)** chairs with FR (in one colour) and **three (3)** chairs with UV (in the same colour); and
- Send **three (3)** chairs without FR and UV (in the other colour).

11.1.6 MULTIPLE MOULDS, SINGLE COLOUR, NO FR, NO UV

- Send **three (3)** chairs of each mould type.

11.1.7 MULTIPLE MOULDS, MULTIPLE COLOURS, NO FR, NO UV

- Send **three (3)** chairs from each mould for each colour.

11.2 For UV and weathering testing

Evaluation for UV and weathering is a certification option over and above the minimum requirement of strength, durability and stability (see 11.1 above).

To undertake this option first you will need to make contact with a suitable testing laboratory i.e. one that is accredited by NATA for any of the following standards:

- ISO 4892-2 (cycle number 1 or 2)
- SAE J1960:2004
- SAE J2527
- ASTM G155-13 (cycle number 1 or 2)

Each of these standards is an acceptable pathway to compliance. **We are not accredited for any of these tests.**

You will then need to provide appropriate material samples so the laboratory can produce the necessary reports required to meet one or other of the two levels of UV and weathering certification available (see 11.2.1 to 11.2.7 below).

The laboratory will tell you how many and what size samples they require.

The samples should be cut from chairs that are representative of production. The surface of the samples that would normally be exposed to the sun (e.g. the top surface of a sample cut from the seating area) should be clearly indicated to ensure they are properly oriented in the testing machine. If a chair has exposed surfaces with significantly different surface finishes, samples of each finish should be included as directed by your chosen test laboratory.

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The testing laboratory will also need to periodically check the samples for signs of degradation and to evaluate these signs in accordance with the requirements of AS/NZS 3813 *Plastic monobloc chairs*. To do this they'll need to have a copy of AS/NZS 3813. It's important to ensure the laboratory understands that although they will use the test methods of either the ISO, SAE or ASTM standards, they are to evaluate the results according to the requirements of AS/NZS 3813.

Examples of sample requirements

11.2.1 SINGLE COLOUR, SINGLE MOULD, UV, NO FR

- Send one set of samples

11.2.2 SINGLE COLOUR, SINGLE MOULD, UV OR NO UV, NO FR

- Send one set of samples for the UV model

11.2.3 SINGLE COLOUR, SINGLE MOULD, UV OR NO UV, FR OR NO FR

- Send one set of samples for the UV model

11.2.4 SINGLE COLOUR, SINGLE MOULD, UV AND FR, UV AND NO FR

- Send one set of samples for the UV and FR model; and
- Send one set of samples for the UV and no FR model

11.2.5 MULTIPLE COLOURS, SINGLE MOULD, UV OR NO UV, FR OR NO FR

- Send one set of samples for each colour with UV

11.2.6 MULTIPLE MOULDS, SINGLE COLOUR, UV OR NO UV, FR OR NO FR

- If the surface finish of the chairs from each of the moulds is very similar send one set of samples for the UV model from any of the moulds
- If the surface finish of the chairs from each of the moulds is different send one set of samples for the UV model from each of the moulds or a combination sample set (or as advised by your chosen test laboratory).

11.2.7 MULTIPLE MOULDS, MULTIPLE COLOURS, UV OR NO UV, NO FR

- As above but for each colour/UV combination.

11.3 For ignitability

Evaluation for ignitability is a certification option over and above the minimum requirement of strength, durability and stability (see 11.1 above).

To undertake this option first you will need to make contact with a suitable testing laboratory i.e. one that is accredited by NATA for the following standard:

- BS 5852:2006 for sources 0 and 1 (assessed using the method described in part 12)

We are not accredited for part 12 of BS 5852.

You will then need to provide appropriate test samples so the laboratory can produce the necessary reports. Whole chairs will be required.

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All combinations of mould variation (see section 3.1.1) and ingredients and process variation (see section 3.1.2) will need to be assessed if you wish them to be certified as ignition resistant.

Examples of sample requirements

11.3.1 SINGLE COLOUR, SINGLE MOULD, FR, NO UV

- Send one set of samples

11.3.2 SINGLE COLOUR, SINGLE MOULD, FR OR NO FR, NO UV

- Send one set of samples for the FR model

11.3.3 SINGLE COLOUR, SINGLE MOULD, UV OR NO UV, FR OR NO FR

- Send one set of samples for the FR model

11.3.4 SINGLE COLOUR, SINGLE MOULD, FR AND UV, FR AND NO UV

- Send one set of samples for the FR and UV model; and
- Send one set of samples for the FR and no UV model

11.3.5 MULTIPLE COLOURS, SINGLE MOULD, UV OR NO UV, FR OR NO FR

- Send one set of samples for each colour with FR

11.3.6 MULTIPLE MOULDS, SINGLE COLOUR, UV OR NO UV, FR OR NO FR

- Send one set of samples for the FR models from each of the moulds

11.3.7 MULTIPLE MOULDS, MULTIPLE COLOURS, UV OR NO UV, NO FR

- As above but additional samples for each colour/FR combination.

12 Certification renewal

Follow the sample requirements of section 11 if you are seeking to renew certification. FR and UV and weathering requirements will need to be repeated.

13 General

PLEASE LABEL THE MODEL NAME/NUMBER ON EACH SET OF CHAIRS BEFORE DISPATCH. The name should match that used on the Testing Request form. To assist with matching chairs with Request forms, please attach a copy of the Testing Request form to each set of chairs.

14 Confidentiality

Testing conducted at Furntech is confidential. The Institute's procedures prohibit the disclosure of the fact that an item is being tested and the results of any such testing without the express permission (generally required to be in writing) of a representative of the party commissioning the testing.

To assist us to preserve the confidentiality of other customers, we require three working days notice of an intended visit to the Institute's laboratory.

