Information Kit on Testing Commercial Furniture Foams

1 Introduction

This document provides background information for people interested in having polyurethane (and similar) foams tested for use in commercial furniture applications.

2 Requirements

Both the Australian/New Zealand Standard for office chairs (AS/NZS 4438 - *Height adjustable swivel chairs)* and the Australian/New Zealand Standard for visitor chairs (AS/NZS 4688 - *Fixed height chairs)* specify requirements for 'filling materials'.

The requirements in both standards are:

2.1 Filling materials

(a) Polyurethane foam used at durability levels 4, 5 and 6 shall comply with AS 2281, Type HR.

(b) Polyurethane foam used as seat cushioning at durability levels 4, 5 and 6 shall have a minimum density of 38 kg/m^3.

(c) Polyurethane foam used as back support cushioning at durability levels 4, 5 and 6 shall have a minimum density of 32 kg/m^3.

(d) Density of the polyurethane foam used in cushioning shall be determined according to AS 2282.3. For moulded foam the density shall be tested on core samples without skin.

Note: Polyurethane foam seat and back cushion hardness and minimum thickness selection should be in accordance with the guidelines set out in AS 2281, Table 1A. It is essential that they do not 'bottom out'.

(e) For multiple layer cushion design all major layers of components shall meet the minimum density requirement of this Standard.

NB. Foams and fillings made of materials other than polyurethane will be subject to the same density and flammability requirements.

2.2 Burning behaviour

Office Seating: Filling materials shall meet the burning behaviour performance requirements as set out in AS/NZS 4088.1.

Published by Furntech-AFRDI, the Australasian Furnishing Research and Development Institute, an independent not-for-profit technical organisation serving furniture buyers and sellers in Australia and New Zealand.
T: (03) 6326 6155 **F**: (03) 6326 3090 **E**: info@furntech.org.au

Public Area Seating: More stringent requirements such as British Standard 5852 Source 5 for filling materials may need to be met in public space seating.

3 Combinations of foams and fabrics

In both *AS/NZS 4088.1.* and *BS 5852* it is recommended that the foam assessed be tested in combination with the interliner (if applicable) and fabric that will form the composite that is intended to be used in the final product assembly i.e. the finished item of furniture. However, in most cases a foam supplier will have little or no control over the outer layers (interliners and fabrics) that will be specified in combination with their foam.

The alternative (available for foam assessed to the requirements of *AS/NZS 4088.1* only) is that testing be performed using a standard non-flame retardant covering fabric that represents a probable worst case combination. This allows – where the composite is successfully tested – for the results to be 'generalised' i.e. it is considered likely that if the foam performs satisfactorily with this fabric it will perform satisfactorily with all other fabrics. This is the most common approach to foam flammability testing and certification.

BS 5852 testing is only ever performed on a particular composite and results cannot be generalised beyond that. Compliance, therefore, can only be claimed with respect to the actual combination of foam/interliner/fabric that was tested.

4 Flammability (Ignitability) test levels

Both AS/NZS 4438 - Height adjustable swivel chairs and AS/NZS 4688 – Fixed height chairs require **as a minimum** that filling materials meet the burning behaviour performance requirements as set out in AS/NZS 4088.1. The ignition source specified in this standard is a smouldering cigarette. The test (AS/NZS 4088.1) is suitable for normal commercial/office applications.

Chair foams intended for use in 'public space' seating may be specified as requiring compliance to more stringent testing eg BS 5852 Source 5. The ignition source specified as 'source 5' in this standard is a 'flaming wooden crib'. Ignition sources 0 to 4 are also available for testing. Ignition source 0 is approximately equal to that used in AS/NZS 4088.1, so is rarely specified in Australia or New Zealand. Ignition sources 1 to 5 are more severe, each approximately twice the energy value of the previous. They are appropriate for environments where the risk of ignition is considered greater than normal commercial/office applications (eg public spaces). The severity of the ignition source chosen depends on the furniture's intended end use environment. It is up to the client or specifier to make this determination. Please note: specifiers and/or regulators may chose to include other, or additional, flammability requirements based, for example, on the Australian Building Code or on specific analysis of the hazards present in a particular environment.

Although Sources 1 to 5 of BS 5852 are flaming ignition sources it cannot be assumed that satisfactory performance against a flaming source will automatically give satisfactory performance against a smouldering ignition

Published by Furntech-AFRDI, the Australasian Furnishing Research and Development Institute, an independent not-for-profit technical organisation serving furniture buyers and sellers in Australia and New Zealand.
T: (03) 6326 6155 **F**: (03) 6326 3090 **E**: info@furntech.org.au

source. It is therefore necessary to submit test specimens to both smouldering and flaming ignition tests to comply with any of the BS 5852 Sources 1 to 5 i.e. both AS/NZS 4088.1 and BS 5852 Source X.

5 Costs

5.1 Foam testing

Please contact Furntech for a quotation.

Prices are subject to 10% GST.

NOTE: + Sources 0 to 4 are also available at the same charge. Source 0 is approximately equivalent to AS/NZS 4088.1. Sources 1 to 5 are progressively more severe.

5.2 AFRDI Blue Tick certification

Furntech-AFRDI charges for **AFRDI Blue Tick certification**, less membership discounts, plus GST, and that entails inclusion on the weblist of endorsed chair components for three years.

The AFRDI Blue Tick Product Certification Program includes foams pre-qualified for use in chairs tested to the office chair or fixed height chair standards.

Foam certification is available in the following test combinations only:

- AS 2282.3 (foam density) and AS/NZS 4088.1 (foam flammability)
- AS 2282.3 (foam density), AS/NZS 4088.1 (foam flammability) and *BS 5852 Source (1 to 5)* (foam flammability)

Further information on the AFRDI Blue Tick program is available from Furntech-AFRDI or from the Institute's website at www.furntech.org.au

6 Samples

6.1 Combination density and flammability (AS 2282.3 and AS/NZS 4088.1)

The minimum size and number of **slab foam** samples:

- density 380 x 380 x 50 slab foam, three off;
- flammability (AS/NZS 4088.1) 450 x 450 x 75 slab foam, one off.

The minimum size and number of **moulded foam** samples:

- for density and flammability 3 seat and 3 back foams (total required to perform both).

6.2 Combination density and flammability (AS 2282.3, AS/NZS 4088.1 and BS 5852 Source X)

The minimum size and number of **slab foam** (and fabric) samples:

- Density 380 x 380 x 50 slab foam, three off;
- Flammability (AS/NZS 4088.1) 450 x 450 x 75 slab foam, one off;
- Flammability (BS 5852 Source 1 to 5) 750 x 450 x 75 slab foam, two off; plus interliner (if applicable) 1500 x 1500 (or full roll width x 1500), two off; plus fabric 1500 x 1500 (or full roll width x 1500), two off.

Published by Furntech-AFRDI, the Australasian Furnishing Research and Development Institute, an independent not-for-profit technical organisation serving furniture buyers and sellers in Australia and New Zealand.
T: (03) 6326 6155 **F**: (03) 6326 3090 **E**: info@furntech.org.au

The minimum size and number of **moulded foam** samples:

- This combination of tests is not available for moulded foam.

6.3 Foam density only (AS 2282.3)

The minimum size and number of **slab foam** samples:

- Density 380 x 380 x 50 slab foam, three off.

The minimum size and number of **moulded foam** samples:

- For Density 2 seat and 2 back foams.

6.4 Foam flammability only (AS/NZS 4088.1)

The minimum size and number of **slab foam** samples:

- Flammability (AS/NZS 4088.1) 450 x 450 x 75 slab foam, one off.

The minimum size and number of **moulded foam** samples:

- For Flammability 1 seat and 1 back foam.

6.5 Foam flammability only (AS/NZS 4088.1 and BS 5852 Source X)

The minimum size and number of **slab foam** (and fabric) samples:

- Flammability (AS/NZS 4088.1) 450 x 450 x 75 slab foam, one off;
- Flammability (BS 5852 Source 1 to 5) 750 x 450 x 75 slab foam, two off; plus interliner (if applicable) 1500 x 1500 (or full roll width x 1500), two off; plus fabric 1500 x 1500 (or full roll width x 1500), two off.

The minimum size and number of **moulded foam** samples:

- This combination of tests is not available for moulded foam.

7 AFRDI Blue Tick Certification Renewal

Original testing and AFRDI Blue Tick certification renewal have same sample requirements (see section 6 above).

8 Timing

Assuming there are no problems and that staff and equipment are available, foam testing usually takes around five working days (including conditioning).

When the sample, the Testing Request form and payment are all received, the item will be placed on the testing schedule.

9 Freight

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

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.

Published by Furntech-AFRDI, the Australasian Furnishing Research and Development Institute, an independent not-for-profit technical organisation serving furniture buyers and sellers in Australia and New Zealand.
T: (03) 6326 6155 **F**: (03) 6326 3090 **E**: info@furntech.org.au

10 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.

11 The Next Step

If you wish to proceed with testing, please follow these steps:

1 copy the Testing Request form and complete it for each sample foam, fax one copy to Furntech-AFRDI and attach a copy to the sample;

2 mark the name of the company and the model name/number on each sample; and

3 calculate payment required from the price list at the front of this paper and send your payment to Furntech-AFRDI (we also take Visa, Bankcard and MasterCard). Please phone 03 6326 6155 to request an invoice if this will help to facilitate payment

12 Confidentiality

Testing conducted at Furntech-AFRDI is absolutely 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 written permission.

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

13 Queries

If you have any problems with any of this please phone Furntech-AFRDI on 03 6326 6155.

Published by Furntech-AFRDI, the Australasian Furnishing Research and Development Institute, an independent not-for-profit technical organisation serving furniture buyers and sellers in Australia and New Zealand.
T: (03) 6326 6155 **F**: (03) 6326 3090 **E**: info@furntech.org.au

Testing Request – Foams

Please complete for **each model** to be tested and **fax (03 6326 3090)** or **email** (info@furntech.org.au) one copy and attach another to the sample before dispatch.
All fields must be completed.

ORGANISATION: ……

PRIMARY CONTACT: *(Who do we contact during testing?)* ……

STREET ADDRESS: ……

……P/CODE:……

TEL: ……FAX:……

WEB:……

EMAIL:……ABN:……

FACTORY NAME:……

FACTORY ADDRESS: ……

……COUNTRY:……P/CODE:……

Product Description

MODEL NAME/NUMBER: *(**PRINT** the name you wish to appear on the certificate)*

……

TESTS REQUIRED:

- DENSITY AS 2282.3 ❑
- FLAMMABILITY AS/NZS 4088.1 ❑
- FLAMMABILITY BS 5852 Source ❑

Authorisations and Declaration

I warrant and declare that the information provided is accurate in every detail.
I authorise Furntech-AFRDI or its agents to carry out tests at the quoted price.

Signature of authorised officer: ……

Name***(PRINT)*** ……

Position in company: …… Date:

Test sample(s) will not normally be returned. If you do want them returned, please indicate here (note extra freight charges will apply):

YES ❑

Any significant issues pending/impending with product (e.g. field failures, claims, recalls)?

YES ❑ (if yes, please attach summary) NO ❑

OPTIONAL: Should the product(s) described above be certified by Furntech-AFRDI, I authorise Furntech-AFRDI to list the compliance certificate on its website.

YES ❑ NO ❑

Published by Furntech-AFRDI, the Australasian Furnishing Research and Development Institute, an independent not-for-profit technical organisation serving furniture buyers and sellers in Australia and New Zealand.
T: (03) 6326 6155 **F**: (03) 6326 3090 **E**: info@furntech.org.au