Australian Standard®

TEXTILE FABRICS—DETERMINATION OF BURNING BEHAVIOUR—DETERMINATION OF SURFACE BURNING TIME

This Australian Standard was prepared by Committee TX/13, Burning Behaviour of Textiles and Textile Products. It was approved on behalf of the Council of the Standards Association of Australia on 2 May 1988 and published on 8 August 1988.

The following interests are represented on Committee TX/13:

Attorney-General's Department
Australian Assembly of Fire Authorities
Australian Confederation of Apparel Manufacturers
Australian Consumers Association
Australian Council of Furniture Manufacturers
Australian Federation of Consumer Organizations
Australian Knitting Industries Council
Australian Retailers' Association
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PREFACE

This Standard was prepared by the Association's Committee on Burning Behaviour of Textiles and Textile Products under the direction of the Textile Standards Board. It describes the method for determining the surface burning time of textile fabrics.

This Standard was taken from the ISO document ISO/TC 38/SC 19/WG2 N 132 together with amendments from documents ISO/TC 38/SC 19/WG2 N 148 and ISO/TC 38/SC 19/WG2 N156.

The format of the Standard has been changed slightly to comply with AS 2744, *Preparation, application and format of fire tests*.

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
TEXTILE FABRICS—DETERMINATION OF BURNING BEHAVIOUR—DETERMINATION OF SURFACE BURNING TYPE

1 SCOPE AND APPLICATION. This Standard specifies a method for the measurement of surface burning time of textile fabrics which have a raised fibre surface, i.e. napped, pile, tufted, flocked, or similar surface. This test simulates the surface burning properties of textiles from a small heat source or where the ignition source is likely to be of a fleeting nature.

NOTE: This Standard complies with AS 2744.

2 REFERENCED DOCUMENTS. The documents below are referred to in this Standard:

AS
2744 Preparation, application and format of fire tests

ISO
1101 Technical drawings—Geometrical tolerancing of form orientation, location and run-out—Generalities, definitions, symbols, indications on drawings

ASTM
D 1230 Test method for flammability of clothing textiles

3 PRINCIPLE. A dry specimen of the fabric is supported on a vertical plate and its raised surface is ignited near the top in a standard manner. The spread of flame downwards on the surface of the fabric to a reference line is timed.

NOTE: The flame of a pile surface travels more readily downwards or sideways than upwards. It is considered that the blanketing effect of the combustion products may not allow the surface pile above the flame front to burn, whereas the surface pile below the flame front is not affected in this way.

4 APPLICATION TO FIRE HAZARD ASSESSMENT. These test results on their own do not indicate the fire hazard of the textile fabric under actual fire conditions and consequently, should not be applied to the assessment of fire hazard without taking into account additional supportive information.

5 DEFINITIONS. For the purpose of this Standard, the definitions below apply.

5.1 Surface burn—spread of flame over the surface of a material without ignition of its basic structure.

5.2 Surface burning—time the time required for the pile or nap of a fabric to burn a defined distance when tested by the method described in this Standard.

HEALTH AND SAFETY OF TEST OPERATORS. Burning of textiles may produce smoke and toxic gases which can affect the health of operators. The testing area should be cleared of smoke and fumes by suitable means of forced ventilation after each test, then restored to the required testing conditions (see Clauses 7.2 and 9(a)).

7 APPARATUS.

7.1 Construction of testing equipment. The equipment shall be constructed of material which will not be adversely affected by the gas fumes.

NOTE: Some products of combustion are corrosive and the equipment should be made of materials which will facilitate cleaning.

7.2 Location of test. A location is to be selected in which the air movement is less than 0.2 m/s at the commencement of the test and is not further influenced by mechanical devices during the test. The volume of air surrounding the test location shall be such that the test is not affected by any reduction of oxygen concentration.

7.3 Specimen holder. The specimen holder shall be a stainless steel plate approximately 150 mm long, 75 mm wide and 3 mm thick (see Figure 1). The specimen shall be framed by stainless steel 3 mm thick so that an area of 125 mm × 50 mm of fabric surface is exposed for testing. The frame shall have a reference mark which shall be 75 mm below the ignition point of the test specimen.

7.4 Gas burner. A gas burner as described in Appendix A or any other burner may be used provided it gives the same test results as the burner described in Appendix A.

NOTE: It may be convenient to control the gas to the burner through a solenoid valve. In such circumstances, it is permissible to leave a small pilot light 5 mm long on the burner.

7.5 Gas. Commercial grade propane or butane gas, or a mixture thereof is suitable.

7.6 Timing device for burner (optional). A timing device to control and measure the application time of the flame for a period of 1.0 ±0.1 s. This should be used for specimens which burn down 75 mm in less than one second.

7.7 Brushing device. A brushing device as described in Appendix B should be used.

7.8 Washing and drying apparatus. Washing and drying apparatus as described in Appendix C should be used.

7.9 Circulating air oven. A circulating air oven capable of drying the test specimens at 105 ±2°C should be used.

7.10 Dry airtight container. A dry airtight container capable of holding dried test specimens should be used.

7.11 Stopwatch. A stopwatch or other timing device readable to 0.2 s should be used.

8 TEST SPECIMENS.

8.1 Size. The size of each specimen shall be 150 mm × 75 mm, except fabrics narrower than 75 mm shall be cut and tested at their full width.