



# FIRE RETARDANCY

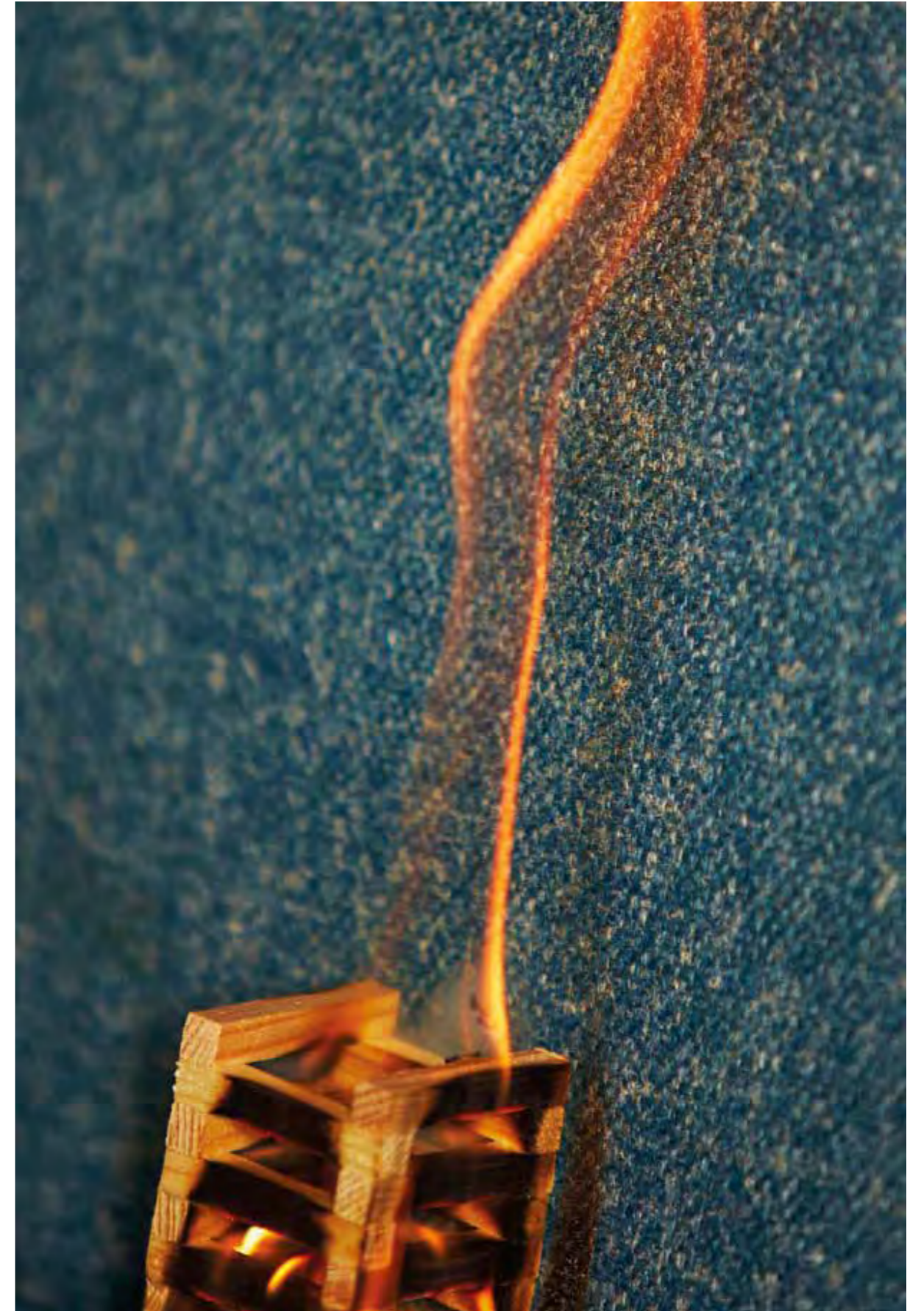
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information pack

## INTRODUCTION

All of Inside Out Contracts' upholstered furniture meets the Fire-Retardant legal requirements for contract use in the United Kingdom and adhere to the standards: EN 1021 Part 1 and 2 and BS 5852 (Crib 5), with BS 7176 also available on request (excluding prisons, oil rigs & cruise ships).

- The UK Fire Retardant (FR) requirements are among the most stringent in the world.
- In order to meet the standards, flame-retardant treatments are available to enhance the flammability performance.
- UK Regulations also include a water soak of the fabric to ensure that any fire retardant treatment is permanent.
- Dust and dirt wear down the textile and also reduce its fire-retardant properties.



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## REGULATION IN THE UK

It goes without saying that flammability testing has crucial safety implications in a contract environment. There are various requirements with regards to the flame-retardance of furnishing fabrics and each country has its own standards. If supplying to the United Kingdom, then your contract furniture will need to comply with British Standards (BS).

There are also European Standards (EN) and International Standards (ISO) which may be enforced depending on where your contract furniture is being used.

The legal requirements for contract use in the United Kingdom (applicable to the furniture supplied by Inside Out Contracts) are the following standards: EN 1021 Part 1 and 2 and BS 5852, with BS 7176 also a consideration depending on the type of venue being supplied.

## BS 7176: (1995)

This standard is based on BS 5852 and specifies the resistance to ignition of upholstered furniture for non-domestic seating by testing composites (each composite shall be tested every 2500 units produced). The additional parameter of this test is based on defining "Hazard" categories linked directly to the combination of different ignition sources used in the flammability test (Table 1.).

## HAZARD CATEGORIES VS TESTS

**BS 7176:2007 Low Hazard:** EN 1021-1:2006 and EN 1021-2:2006 'cigarette and match test'

**BS 7176:2007 Medium:** EN 1021-1:2006, EN 1021-2:2006 and BS 5852:2006 Section 11 - flame ignition source 5 test 'crib 5'

**BS 7176:2007 High Hazard:** EN 1021-1:2006, EN 1021-2:2006 and BS 5852:2006 Section 11 - flame ignition source 7 test

**BS 7176:2007 Very High Hazard:** EN 1021-1:2006, EN 1021-2:2006 and BS 5852:2006 Section 11 or Section 12 at the discretion of the specifier. In practice, this might consist of several ignition source 7 cribs used together.

TABLE 1: HAZARD CATEGORIES VS VENUE TYPE

Hazard categories as specified in BS 7176:2007	Low Hazard	Medium Hazard	High Hazard	Very High Hazard
Casinos		X		
Colleges	X			
Day centres	X			
Exhibitions	X			
Hospitals		X		
Hostels		X		
Hotel bedrooms		X		
Museums	X			
Offices	X			
Off-shore installations			X	
Places of public entertainment		X		
Prison cells				X
Public buildings		X		
Public halls		X		
Public houses and bars		X		
Restaurants		X		
Schools	X			
Services' messes				
Sleeping accommodation in certain hospital wards and in certain hostels.			X	
Universities	X			

Table 1: This table defines the Hazard Categories applicable for end-use areas.

Adapted from "Upholstered contract furniture flammability," by SATRA Technology, 2017. Copyright 2017 by SATRA Technology Centre. Adapted with permission.

## EN 1021 – 1 & 2 (2006)

This test involves a standard test rig constructed from fabric and foam to form a simulated chair.

**Part 1 (Cigarette):** a lighted cigarette is placed in the angle of the test rig and left to smoulder along its entire length. After an hour no smouldering or flaming of the fabric should be observed.

**Part 2 (Match):** a butane flame (35mm in height) is used to represent a burning match. It is applied for 15 seconds and after the flame is removed, there should be no flaming of the fabric after two minutes.

## BS 5852:2006 - IGNITION SOURCE 5

In BS 5852 there are eight ignition sources, among them are Ignition Source 0 (cigarette), Ignition Source 1 (match) and Ignition Source 5 (crib 5). The heat produced from the wooden crib 5 structure is 16 times more intense than a match. In order to pass the test, all flaming should cease within 10 minutes. Also, any charring should be within 100mm either side of the crib and the foam cannot be burnt through its full thickness.

Please check the original document of the 1988 Furniture & Furnishing (Fire) (Safety) Regulations [\[link\]](#).

The latter apply to all persons in the business supply chain from the supply of materials for use in furniture and furnishings through the supply of the finished article. Those regulations identify 13 separate fire tests which are applicable to various furniture and furnishings.

## GENERAL NOTES

Many textiles pass the flame-retardant tests without any modification as some fabrics have inherent properties that make them flame retardant. Some fabrics are more combustible than others, moreover the weight and weave as well as the surface texture will also affect how easily the material will ignite.

- Wool is naturally flame resistant as a material, difficult to ignite and low flame spread and heat release properties, anti-static properties.
- Trevira CS (type of polyester) is permanently flame-retardant.

The weight and weave of the fabric will affect how easily the material will ignite and burn. Recommended fabrics are materials with a tight weave. Heavy, tight weave fabrics will burn more slowly than loose weave, light fabrics of the same material. The surface texture of the fabric also affects flammability. Fabrics with long, loose, fluffy pile or "brushed" nap will ignite more readily than fabrics with a hard, tight surface, and in some cases will result in flames flashing across the fabric surface.

Most synthetic fabrics, such as nylon, acrylic or polyester resist ignition. However, once ignited, the fabrics melt. This can cause localized and extremely severe burns. When natural and synthetic fibres are blended, the hazard may increase because the combination of high rate of burning and fabric melting usually will result in serious burns. In some cases, the hazard may be greater than that of either fabric individually.

- Cotton and linen also have a high burning rate but this can be alleviated by the application of flame-retardant chemical additives.
- Acetate and triacetate are as flammable as or slightly less flammable than cotton. However, they can be made flame-retardant with chemical treatment.
- Nylon, polyester and acrylic tend to be slow to ignite but once ignited, severe melting and dripping occurs.
- Wool is comparatively flame-retardant. If ignited, it usually has a low burning rate and may self-extinguish.
- Glass fibres and moacrylic are almost flame-resistant. These synthetic fibres are designed and manufactured to possess flame-retardant properties.



Inside Out Contracts are contract furniture specialists for the hotel, leisure & restaurant industry.

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