

OVERVIEW OF FLAMMABILITY STANDARDS AND TESTING PROCEDURES

Companies whose products need to comply with flammability standards and testing procedures have long been challenged with the complex and ever changing local, state/provincial, country, regional and sometimes global regulatory landscape.

This discussion is meant only to provide the reader with basic insight as to how Sandel Fire Barrier Fabric has intersected with these flammability standards and testing procedures during the time period when the products were designed and launched for specific market applications. It is not a substitute for rigorous research needed to determine which standards and tests are relevant to a particular product in a particular jurisdiction today.

There are two primary categories of standards and tests that need to be considered. One category involves standards and tests that apply to a completely finished end use product. Examples include upholstered chairs, sofas, public seating, mattresses, pillows and protective panels. When these standards and test procedures are called out by a jurisdiction, the manufacturer of the product needs to run tests on a completely assembled end product or a prototype or representative mockup of their product incorporating the key layers of materials.

The second category are standards and tests that apply to a single material that comprises one of the critical layers in a finished end use product. Examples include foam cushions, fire barrier material, and cover material. Some of these tests will isolate the particular material being tested by including known “standard” samples of all other materials in constructing test rigs. Either the end product manufacturer or specific material manufacturer may run these types of tests depending upon the situation.

Original Key Standards and Tests

All five Sandel fire barrier fabrics currently available for purchase were designed to meet three critical standards and testing procedures that were in place at the time. These were NFPA 701 Small Scale for testing hanging fabrics, NFPA 258 for testing levels of smoke generation, and the University of Pittsburgh Smoke Toxicity Test. Sandel fabrics passed all of these tests, and received an “A” rating on the Smoke Toxicity Test. NFPA have since withdrawn their two test procedures, and new Smoke Toxicity Tests have been developed.

Since each of the five Sandel fabrics were designed to target specific and different product applications, different combinations of additional standards and testing procedures were relevant to each one.

Upholstered Furniture

Sandel 14502 and Sandel 60502 are both designed for use as fire barrier layers in “upholstered furniture”, which can include private consumer or public seating such as chairs and sofas, public transportation seating such as subway and other mass transit seating, and seating for commercial vehicles including various size trucks and off-road vehicles. A hallmark standard was California TB133 which defined standards and testing of upholstered furniture tested as a completed product and not each individual layer of material. Other standards similar to TB133 included Boston BFD IX-10 and British Standard 5852/4. TB117 is another California standard that is designed to test an individual fabric in a structure that includes an outer fabric, a fire barrier or “interliner”, and a cushion material (usually foam).

The testing of complete upholstered seating products has been controversial over the years. California TB117-2013 was adopted in the US as a national standard for upholstered furniture beginning in 2021. Two years prior, in 2019, TB133 was repealed.

Both Sandel 14502 and Sandel 60502 passed TB117-2013 recently in testing performed by an independent materials testing lab.



Mattresses

Sandel 20503 is designed for use as a fire barrier in mattresses. Standards for mattress flammability focus on testing a complete finished mattress. These include TB129, TB603 (Mattress sets), Boston BFDIX-11, and British Standard 6807/2 Crib 5. Compliance with relevant standards for mattresses resides with the designer and manufacturer of the mattress.

Pillows

Sandel 10503 is designed for use as a fire barrier for ticking and covers for pillows. It appears that there are no significant, widely used standards for this application.

Fire Curtains, Smoke Curtains, Fire Blankets

Sandel 24504 is a special purpose version of fire barrier fabric designed primarily for applications serving as fire curtains, smoke curtains, and fire blankets used heavily by military organizations. It meets two specific Military specifications: Mil Spec C24756 and Mil Spec C24757. This material also has passed British Standard 476- Part 6 and 7 addressing fire propagation and fire spread across the surface of a fabric.

Sandel Fire Barrier Fabrics have been designed to meet various flammability standards and testing procedures. In fact, over the years, customers have met with solid success by using Sandel fabrics in their product design and manufacture. Our staff at Sandel International can provide information and guidance that could be helpful as you research the regulatory requirements for your particular products.