

IN•T O U C H[®]

INFORMATION ON FLEXIBLE POLYURETHANE FOAM

IN•TOUCH[®] is a regular publication of the Polyurethane Foam Association (PFA). It covers topics of interest to users of flexible polyurethane foam and is designed as a quick reference for background information on key issues. To get more detailed information about a particular topic, consult a PFA member.

Understanding the U.S. Mattress Flammability Standard

The U.S. Consumer Product Safety Commission (CPSC) approved 16 CFR Part 1633, the new Federal Open-Flame Mattress Standard, on February 16, 2006. Few business people are ever happy to embrace a new layer of regulation, but in the case of the new open-flame mattress standard, many industry members see it as the best possible result that could potentially have emerged from the standard development process. This outcome is due to the active participation and support of many members of the U.S. mattress industry, barrier suppliers, and the flexible polyurethane foam (FPF) industry, who had a hand in helping to shape the new standard.

The new standard addresses stringent manufacturing, testing and document retention requirements. It also preempts states from setting different mattress flammability rules. The standard becomes effective on July 1, 2007 and applies to residential mattresses and foundations (boxsprings) manufactured, imported or renovated on or after that date.

Flexibility is the Key

A key advantage of the new mattress standard is that it requires composite performance. Wisely, it was drafted not to be a test of individual components, but rather to leave it up to the manufacturer to find the best way to comply. In fact, fire-retardant (FR) additives are not required in the FPF or any other component.

This flexibility leaves the door open for continuous innovation and product improvements. Mattresses often include a high-performance FPF component to meet consumer comfort, support and appearance retention demands of eight-hour-a-night use in conditions of elevated temperatures and humidity. Most mattress manufacturers are expected to comply initially with the new flammability standard by adding an ignition-resistant barrier material between the outside cover, or ticking fabric, and the interior, built-up component materials. Using this approach, manufacturers can continue to use better quality foam cushioning materials, which offer all the comfort, support and lasting physical performance required of a good mattress product.

Industry Influenced the New Standard

The new national standard is based on California's TB603, a mattress flammability standard adopted in 2005, which was developed with substantial input from the bedding industry and its suppliers. The standard was based, in part, on research performed by the National Institute of Standards and Technology (NIST). Throughout the TB603 standard development process, stakeholders voiced the belief that, to be effective, any mattress flammability standard must be based on good science and research representing the entire composite mattress product. Synergistic interaction during combustion affects all components used in mattress construction.



A dual propane burner is used in the CPSC test rig to simulate how burning bedclothes (heat flux and duration) may affect a mattress and box spring or a mattress alone.

Photo courtesy National Institute of Standards and Technology

The full text of the new
Federal Open-Flame
Mattress Standard
is available at:

www.pfa.org/1633

Proactive industry groups such as the International Sleep Products Association (ISPA) and the Sleep Products Safety Council (SPSC) "got in at the ground floor" to work with the CPSC on developing the new standard. The American Textile Manufacturers Association provided materials for some aspects of the research. The PFA provided information to the CPSC on the ignition and combustion performance of FPF materials when used in mattress construction. The new standard incorporates a number of important elements that were part of the public comments filed on behalf of the mattress industry by the ISPA and the SPSC on the draft standard proposed in January 2005. In response to the industry's concerns, the CPSC staff adopted several important changes to the proposed standard, including:

1. Imported Mattresses:

ISPA and SPSC were concerned that importers might misinterpret the proposed standard's general statement that "an importer would be considered a manufacturer" for purposes of Part 1633, and were also concerned about how the CPSC would be able to verify a foreign manufacturer's compliance, including access to necessary records, review of those records in English, and accurate identification of the foreign manufacturer.

Response: CPSC staff clarified that mattress importers have clear, significant compliance obligations, and are required to maintain, in the U.S., test records and other documentation (in English) that foreign manufacturers must prepare that show compliance with the new standard. The importer, given its legal status as a "manufacturer" for purposes of Part 1633, would also be responsible for conducting "corrective actions," such as product recalls, if necessary.

2. Renovated Mattresses:

The industry was concerned that the proposed standard's policy statement dealing with renovated mattresses was somewhat vague and might not have the same legal significance as an express provision of the standard.

Response: CPSC staff clarified that mattresses subject to this standard also include renovated mattresses. This means that renovators must comply with the same prototype testing, quality assurance and other requirements as a manufacturer of new mattresses.

3. Retention of Physical Samples:

In the proposed standard, the CPSC stated that mattress manufacturers would be required to maintain physical samples of materials used to make mattress prototypes for the production duration of the prototype plus three years. The industry was concerned that storing such samples would be cumbersome; the samples might be prone to loss, damage or deterioration and that objective documentation of the physical characteristics of the materials would be preferable to storage of physical samples.

Response: CPSC staff agreed that manufacturers would not be required to maintain physical samples, which should substantially simplify their records maintenance obligations.

4. Sample Conditioning:

To promote test result consistency, the industry asked that the CPSC specify narrower sample conditioning requirements prior to conducting test burns.

Response: CPSC staff agreed.

5. Part 1633 Preempts Different State Mattress Flammability Rules:

Given that the mattress manufacturing and retailing market is national in scope, the industry requested the CPSC to make clear that Part 1633 is a national standard that should be applied uniformly throughout the country.

Response: In issuing its new federal standard, the CPSC stated that once it issues a flammability standard for a product, federal law provides that a state may not maintain a different flammability standard for the same product.

6. Miscellaneous Definitional Issues:

To reduce possible confusion in application of Part 1633, the industry requested clarifications of certain existing Part 1633 definitions and several additional definitions.

Response: CPSC staff clarified and added several definitions in Part 1633, including:

- *Prototype developer: Added to recognize that parties other than mattress manufacturers may develop prototypes.*
- *Prototype pooling: Clarified to define the responsibilities of manufacturers that rely on a prototype developed by another party to conduct confirmation tests.*
- *Mattress sets: Added to provide a convenient definition for an intended mattress/foundation combination.*
- *Subordinate and Confirmed prototypes: Added to provide clearer distinctions between products for which prototype testing is required and products based on qualified prototypes developed under a pooling arrangement.*

"A Standard You Can Live With"

Despite the potentially burdensome requirements of compliance, the new standard offers advantages to industry members affected by mattress sales.

According to the IEEE Standards Association, "Standards make good business sense. Successful businesses benefit from standards both by actively participating in the standardization process and by using standards as strategic market instruments."

Get with the Program

Compliance is not optional. All stakeholders in the mattress industry must work diligently to comply with the national standard. While the national mattress flammability standard may restrict some traditional product constructions, it also creates opportunities for product innovation at all levels of supply and product design.

The industry groups involved in developing the new federal mattress flammability standard are available to assist retailers, vendors, consumers, environmental regulators and others with questions regarding compliance with the standard. In 2005, the California Dept. of Consumer Affairs produced an overview of compliance requirements for California's TB603, which are not substantially different from those of 16 CFR Part 1633. Information on compliance can be found under "Flammability FAQs" on the ISPA website at www.sleepproducts.org.

Mattresses and FPF Fillings Flammability

The Role of Flexible Polyurethane Foam

Flexible polyurethane foam (FPF) is often used in manufacturing mattresses to provide lasting comfort and support. While a room fire usually involves many combustible home furnishing items, the foam component inside a mattress is almost never the first thing to ignite.

While having a national flammability standard may add a measure of fire safety, we know that, despite having a standard in place, there will still be fires involving mattresses. Even combustion-modified cushioning components, including fabric, fiberfill, down and foam, have the potential to burn if exposed to sufficient heat or source of ignition.

For more than 25 years, PFA has provided up-to-date information about FPF flammability to members and consumers. Flexible polyurethane foam is an organic material and, like all organic materials, will burn. Organic materials include a variety of common substances including wood, paper, cotton, wool, nylon, polyester, polyethylene, and polystyrene and other plastic materials. It is the responsibility of the foam buyer to select the proper FPF to meet specific end-use requirements. It is the end-user's responsibility to comply with any applicable building code, occupancy requirements and flammability standards and to take reasonable precautions to protect FPF products from ignition.

One potential danger of flammability standards is that consumers could develop a false sense of security when they see labels on mattresses and foundations indicating that the components in the bedding are fire retardant or resistant. In fact, the best protection and first line of defense against fire is to practice responsible fire prevention in the home. Families can help prevent household fires by keeping burning cigarettes away from sofas, chairs, mattresses and foundations. People should keep matches, lighters and candles away from children. Every household should install smoke detectors and test them often. Family emergency evacuation drills and other educational activities help children learn how to escape a fire situation.

Comparison of CPSC Open Flame Standard with California TB 603

	CPSC Standard	California TB 603
Duration of Test	30 minutes	30 minutes
Peak Heat Release	200 kW	200 kW
Total Heat Release for 1st 10 Minutes	15 mega joules	25 mega joules
Recordkeeping Requirement	Yes. Manufacturers must maintain records concerning prototype testing, pooling and confirmation testing, and quality assurance procedures and any associated testing for as long as mattresses/sets based on the prototype are in production and must be retained for three years thereafter.	No
Test Method	Same as TB 603, except: Sample room conditioning standards narrower than TB 603. Test parameters narrower than TB 603.	Flame Source: Two 30.48 cm wide T-shaped propane burners intending to simulate the effect of burning bed clothing. Burner Exposure Time: 50 seconds vertical, 70 seconds horizontal. Test Duration: Monitored for 30 minutes, but if self extinguishment occurs any time less than 30 minutes without the peak heat release and total heat release criteria being exceeded the test is completed and considered a pass.

Summary

- ▶ *The U.S. Consumer Product Safety Commission (CPSC) approved 16 CFR Part 1633, the new Federal Open-Flame Mattress Standard, on February 16, 2006. It was developed with the active participation and support of many members of the U.S. mattress industry. In response to the industry's concerns, the CPSC staff adopted several important changes to the proposed standard, which applies to mattresses and foundations (boxsprings).*
- ▶ *Proactive industry groups such as the International Sleep Products Association (ISPA) and the Sleep Products Safety Council (SPSC) "got in at the ground floor" to work with the CPSC on developing the new standard. The PFA provided information on the ignition and combustion performance of FPF mattress materials.*
- ▶ *The regulation is largely modeled on TB603, a standard adopted in California in 2005. Compliance with the federal 16 CFR Part 1633 is similar to the requirements of TB603, with some differences regarding testing conditions. A key advantage of the new mattress standard is its flexibility. It requires composite performance and leaves it up to the manufacturer to find the best way to comply.*
- ▶ *Despite the potentially burdensome requirements of compliance, the new standard offers marketing and business advantages to industry members affected by mattress sales.*
- ▶ *Compliance is not optional.*
- ▶ *The best protection and first line of defense against fire is to practice responsible fire prevention in the home.*
- ▶ *A federal flammability standard for upholstered furniture remains in the developmental phase.*

This information is provided as a service from the Polyurethane Foam Association to improve the understanding of key issues that affect flexible polyurethane foam cushioning. To learn more about how combustion-modifying additives function within flexible polyurethane foam cushioning, contact a member of the Polyurethane Foam Association.

This bulletin is intended to serve as a reference regarding the general properties and uses of polyurethane foam and has been developed as a service for the Polyurethane Foam Association's (PFA) members and their customers. The information contained in this bulletin is offered in good faith, developed from sources deemed to be reliable, and believed to be accurate when prepared, but is offered without warranty, express or implied, as to merchantability, fitness for a particular purpose, or any other matter. The PFA and its members disclaim all responsibility for any loss or damage arising from reliance on such information by any party. This bulletin is not intended to be all-inclusive on any subject matter. The PFA makes no endorsements, assurances, warranties, or guarantees concerning the quality, uses, or applications of polyurethane foam or specific products produced from polyurethane foam. PFA does not endorse the proprietary products or processes of any manufacturer. PFA and its members do not assume any responsibility for compliance with applicable laws and regulations. The PFA makes no representations regarding the combustibility of polyurethane foam under different applications or in different formulations. It is the responsibility of readers and purchasers or users of polyurethane foam to acquaint themselves with its combustibility characteristics both as to usage and storage, and any questions concerning applications and the combustibility of polyurethane foam must be directed to individual foam manufacturers or suppliers.

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