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3/26/04

# UPHOLSTERED FURNITURE MEETING LOG

**Meeting Between:** CPSC staff and members of a stakeholder group, the Upholstered Furniture Test Method Advisory Committee

**Date of Meeting:** March 1, 2004

**Meeting Location:** CPSC Headquarters, Bethesda, MD

**Log Entry:** Dale Ray, Project Manager, EC *DR*

**Meeting Participants:**

**Stakeholders:**

- Andy Counts, American Furniture Manufacturers Ass'n.
- Russ Batson, American Furniture Manufacturers Ass'n.
- David Pettey, Quaker Fabric (representing the Fabric Coalition)
- David Bell, Culp Fabric (representing the Fabric Coalition)
- Roger Berkley, Weave (representing the Fabric Coalition)
- Robert Backstrom, Underwriters Laboratories, Inc.
- John Dean, National Association of State Fire Marshals
- Jim McIntyre, Polyurethane Foam Ass'n.
- Bobby Bush, Hickory Springs (representing the Polyurethane Foam Ass'n.)
- and 20 others (see attached attendance list)

**CPSC:**

- Chairman Hal Stratton
- Commissioner Mary Sheila Gall
- James Fuller, Ofc. of Chairman Stratton
- Jeffery Troutt, Ofc. of Chairman Stratton
- Dennis Wilson, Ofc. of Commissioner Gall
- Barbara Parisi, Ofc. of Commissioner Gall
- Michael Gougisha, Ofc. of Commissioner Moore
- Pam Weller, Ofc. of Commissioner Moore
- John G. Mullan, General Counsel
- Patsy Semple, Executive Director
- Jacquie Elder, Assistant Executive Director for Hazard ID & Reduction
- Dale Ray, Project Manager, Directorate for Economic Analysis
- and 18 other technical managers and professional staff members

**Summary:**

Mr. Counts requested this meeting in AFMA's December 19, 2003 letter to CPSC Chairman Stratton. The request was in response to the Commission's October 23, 2003 advance notice of proposed rulemaking (ANPR) expanding the scope of the agency's



upholstered furniture proceeding to cover both cigarette and small open flame ignition fire risks. The purpose of the meeting was for members of a stakeholder group known as the Upholstered Furniture Test Method Advisory Committee (i.e., AFMA, the Fabric Coalition, UL and NASFM) to present to the CPSC staff a) information generally supporting the Fabric Coalition's recommended regulatory approach, and b) a plan to identify remaining technical issues and conduct additional research to resolve those issues and support the group's eventual recommendations. It was stated that this additional proposed research included a possible full scale correlation study to support small scale component tests. The group also discussed a possible interlaboratory study to evaluate the validity of any new tests that may be proposed.

Chairman Stratton made some opening remarks, voicing his personal support for the group's efforts. He stated his desire to move forward on a possible proposed national flammability standard during a favorable "window of opportunity." He also expressed concern that state or local authorities or the Congress may regulate upholstered furniture if the group and the CPSC staff cannot reach consensus on a proposed standard in a timely fashion.

Mr. Counts made some remarks on behalf of the group, stating their desire to work with CPSC in the spirit of cooperation, and pledging to resolve the remaining technical issues as quickly as possible. Mr. Dean expressed NASFM's support for the proposed research plan, noting in particular the group's unanimity on one of the identified technical issues, i.e., the need for flammability performance requirements for foam filling materials.

Mr. Pettey presented the overall outline of the Fabric Coalition's proposed regulatory approach, which calls for:

- a) cigarette resistance requirements for all furniture components, including fabrics and fillings, based on the existing UFAC / ASTM voluntary test methods;
- b) small open flame requirements for "cushion core" filling materials (primarily polyurethane foam, but excluding fiber batting materials) based on the California Bureau of Home Furnishings' 2002 revised draft of Technical Bulletin 117 (referred to as "TB-117-plus");
- c) open flame barrier / interliner requirements based on the alternate seating barrier test in the CPSC staff's draft standard, except with a less stringent, more reproducible ignition source than the wood crib #5 in the current UK regulations; and
- d) small open flame fabric performance requirements based on the current TB-117 test (i.e., from Department of Commerce standard CS-191-53, and also embodied in CPSC's clothing textile flammability regulations, 16 CFR 1610), but using a 5 second flame impingement time instead of the 1 second flame time in the existing standards.

Mr. Pettey recommended that component manufacturers be encouraged to consider an international standard for quality control procedures, ISO-9001-2001, to establish compliance, in lieu of the production sample testing requirements of the current CPSC staff draft standard. He asserted that the Fabric Coalition approach would be

significantly less burdensome than the CPSC staff's draft standard, and that risk reduction benefits would accrue more quickly. He presented information suggesting that flame retardant (FR) fabrics would still be required for over 90% of Quaker's upholstery fabrics to meet the proposed 5 second test, but that FR loadings would be greatly reduced (thereby reducing costs and adverse aesthetic effects associated with FR treatments), and that complying fabrics would still perform well in composite mockup tests. A copy of Mr. Pettey's presentation is attached (and also available electronically through CPSC's Office of the Secretary).

Mr. Berkley added his view that a costly standard could result in delayed benefits to lower income consumers, and that the Fabric Coalition's approach would reduce the effect of any such delay. He also proposed an interlaboratory study of the Fabric Coalition's small open flame test method to provide additional supporting data. He said the group was aware of a number of laboratories that would be willing to participate in such a study, and asked that CPSC consider participation as well.

Mr. Bell made a brief presentation in support of Mr. Pettey's conclusions. He estimated that his firm, Culp, would probably use FR treatments on 85% of its upholstery fabrics under the Fabric Coalition proposal, and that Culp may opt to treat all its fabrics to minimize the need for relatively higher-cost barriers in the price-competitive residential upholstered furniture market. A copy of Mr. Bell's comments is attached.

Mr. Ray and the other CPSC staff asked Mr. Pettey a number of questions about the Fabric Coalition's data and conclusions. Topics included:

- a) the applicability of the various UFAC program tests to different furniture components, such as cushion cores, fiber batting and interior fabrics as well as cover fabrics;
- b) the relationship between components meeting the Fabric Coalition's proposed tests and composite or full scale test results, especially in light of concerns raised about this issue in the California BHF's ANPR comment;
- c) the suitability of different ignition sources in the seating barrier test; and
- d) production testing needed to demonstrate or confirm compliance with a standard.

Mr. Pettey agreed that additional data relevant to component and composite performance would be useful and was available from the testing that Quaker conducted.

Mr. McIntyre and Mr. Bush commented on the issue of component test applicability, suggesting specifically that any flammability requirements for polyurethane foam also be applied to other interior filling materials, especially the polyester fiber or other fiber batting used in most upholstered furniture currently on the market. Mr. McIntyre recommended that each provision of a standard be appropriate to the related risk. Mr. Bush added his belief that fiber producers were generally working on developing FR polyester batting products, to meet California's TB-603 regulation for mattresses. In response, Mr. Counts reiterated that the Coalition's approach included

only cushion core materials, which constituted a substantial portion of the fuel load in a finished chair.

Mr. Backstrom presented UL's plan to participate in the group's effort with a research project to characterize the correlation between component performance, especially cover fabrics meeting the Coalition's proposed 5 second test, and full scale performance of actual finished upholstered chairs constructed with the tested fabrics and other materials subject to a standard. He proposed a set of 20 full scale chair tests (i.e., 10 cigarette ignition and 10 small open flame ignition) and an accompanying analysis upon which the group and the CPSC staff could base some conclusions about the component tests. A copy of Mr. Backstrom's presentation is attached (and available electronically from CPSC's Office of the Secretary).

Mr. Ray and other CPSC staff asked Mr. Backstrom some questions about the ability of UL to secure test samples of component materials and custom-made chairs sufficient to complete UL's proposed study by the group's April 15, 2004 target date. The staff encouraged the group to sponsor this or similar testing, however, in order to provide evidence to support the Fabric Coalition's (or any other) proposal.

Mr. Counts and Mr. Batson stated that they were not convinced of the need for full scale testing in this case, and that small scale to full scale correlations were extremely difficult to achieve in fire testing. The group discussed the possibility of some component vs. composite testing, but did not agree upon a specific plan.

Mr. Ray adjourned the meeting by stating the CPSC staff's willingness to consider the Fabric Coalition approach, and by reiterating the staff's request for additional test data to support that approach. The group representatives agreed to provide existing data (through Mr. Pettey) and to consider what testing might be achievable by the April 15 target for recommendations to CPSC.

A copy of the attendance list from this meeting is also attached.

**UPHOLSTERED FURNITURE**  
**March 1, 2004 Meeting**  
**Attendance List**

<u>Name</u>	<u>Affiliation</u>	<u>Phone / e-mail</u>
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**UPHOLSTERED FURNITURE**  
**March 1, 2004 Meeting**  
**Attendance List - Continued**

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**UPHOLSTERED FURNITURE****March 1, 2004 Meeting  
Attendance List - Continued**

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**National Furniture Flammability Proposal**

*National Furniture Flammability Standard*  
**Fabric Coalition Proposal**

Consumer Product Safety Commission

Bethesda, MD  
 March 1, 2004

**National Furniture Flammability Proposal**

*"A Balanced Approach"*

**National Furniture Flammability Proposal**

The Objectives:

Applicable

1. Is effective in reducing the frequency and severity of upholstered furniture fires;
2. Complements the results currently being achieved with the UFAC program;
3. Avoids the kinds of unintended safety consequences that can sometimes follow initiatives like these;

Practical

- Allocates the burden of compliance, in an equitable way, among all stakeholders in the supply chain;

**National Furniture Flammability Proposal**

The Objectives:

Practical (cont.)

2. Does not involve costly, overly burdensome administrative and compliance systems;
3. Has minimal impact on the price the consumer ultimately pays for compliant furniture;
4. Meets consumer expectations with respect to: the look, the feel, and the variety of upholstered furniture products;
5. Provides a level playing field among domestic and foreign fabric and furniture manufacturers;

**National Furniture Flammability Proposal**

The Objectives:

Technically Achievable

- Employs technologies that are currently available to every stakeholder throughout the furniture supply chain;

**National Furniture Flammability Proposal**

*"The Proposal"*



## National Furniture Flammability Proposal

### The Proposal:

1. **Seat Cushion Core Materials** - All foam must meet the revised TB-117 standard. Seat cushion cores made of other materials must pass an equivalent standard.
- 2a. **Cover fabrics** - would be required to meet either of the following two criteria, after exposure to a 5.0 second SOF - *Class I*.
  - 2.1. Fails to ignite, or self-extinguishes
  - 2.2. Average flame spread is slower than 30.0 seconds.

## National Furniture Flammability Proposal

### The Proposal:

- 2b. **SOF Barrier** - In lieu of a *Class I* cover fabric, an appropriate fire blocking system could be utilized. Foam requirements would remain "TB-117 Plus"
3. **Cigarette Ignition Resistance** - ASTM E-1353. Furniture to be assembled with *Class A* barriers, when constructed with *Class II* cover fabrics.

## National Furniture Flammability Proposal

### "Testing & Compliance Protocol"

## National Furniture Flammability Proposal

### Fabric Testing Procedure:

1. Use standard 45 degree (TB-117) testing apparatus
2. Adjust flame impingement time to 5.0 seconds
3. Test 5 specimens each in warp and filling direction, face-up
4. If 8 of the 10 specimens *self-extinguish* (SE) or *do not ignite* (DNI) - sample is designated *Class I*

## National Furniture Flammability Proposal

### Fabric Testing Procedure:

5. If < 8 specimens SE or DNI then calculate the average flame spread time. That is, the elapsed time in seconds, it required to burn through the stop cord. If the average flame spread time is > 30.0 seconds, then pattern is designated *Class I*.
6. If neither the criteria in 4. nor 5. are met, fabric is designated *Class II*.
7. Invoices, shipping manifests, and related documentation must reflect the *Class III* status of each SKU

## National Furniture Flammability Proposal

### Compliance Testing:

1. Test 2 specimens each in warp and filling direction, face-up.
2. If 3 of the 4 specimens *self-extinguish* (SE) or *do not ignite* (DNI) - classify as *Class I*
3. If < 3 specimens SE or DNI, then average flame spread of specimens must be > 30.0 seconds, to be classified as a *Class I*
4. Install quality systems preventing non-conforming products from inadvertently being shipped. (See ISO 9001:2000)
5. Sampling plans must be established to ensure that products and processes are within a state of statistical process control. (See ANSI/ASQC Z1.4-1993, or ISO 2859 for guidance.)

**National Furniture Flammability Proposal**

Import Compliance Testing:

1. Reasonable quality and process control systems be installed, to prevent non-conforming products from entering the stream of commerce.
2. Compliance documents (test certificates, quality audits, shipping manifests, etc.) maintained within the US, by importer of record.

**National Furniture Flammability Proposal**

*“Why Replicating BS 5852 is not the Ideal Solution”*

**National Furniture Flammability Proposal**

Concerns for CRSC's SQF:

1. It presumes the BS 5852 standard has been working well in the UK, when in fact, the reality is that random compliance checks reflect compliance rates of approx. 50%.

Year / Category	Failure Rate
2009 - ATMVAFMA	~95%
2002 - Quaker	~50%
2003 - Quaker	~50%
Average	~50%

**National Furniture Flammability Proposal**

Concerns for CRSC's SQF:

2. The testing protocol calls for an unrealistically long flame exposure time of twenty seconds.
3. Heavy amounts of FR chemicals are necessary to enable some fabrics to eventually pass, some of the time.

**National Furniture Flammability Proposal**

Concerns for CRSC's SQF:

5. Fabric selection is limited and fabric costs are increased significantly, due to the intense engineering effort necessary to get each of the estimated 500,000 fabric SKUs currently sold in the U.S. market to pass.
6. The cost of furniture at the consumer level increases dramatically due to the significant investment initially required to prepare the industry for compliance, and the annual cost of compliance.

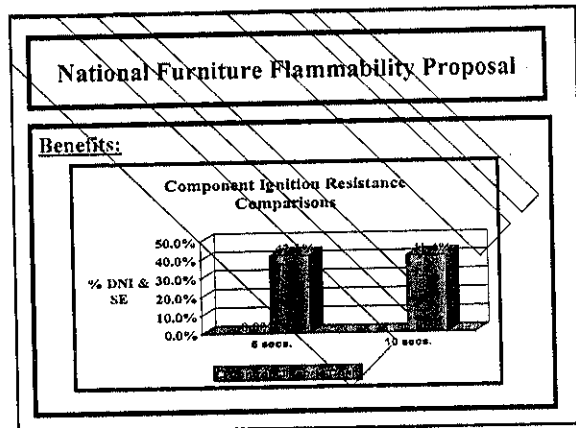
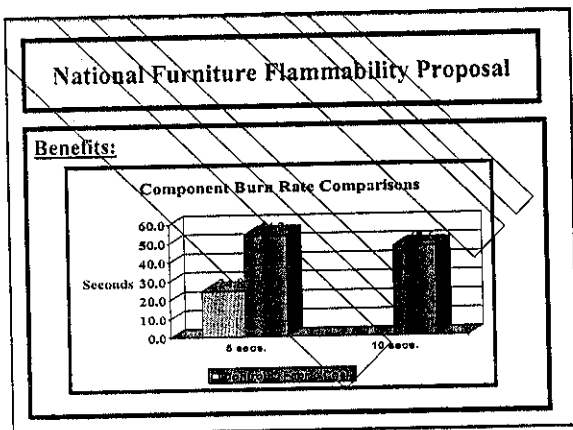
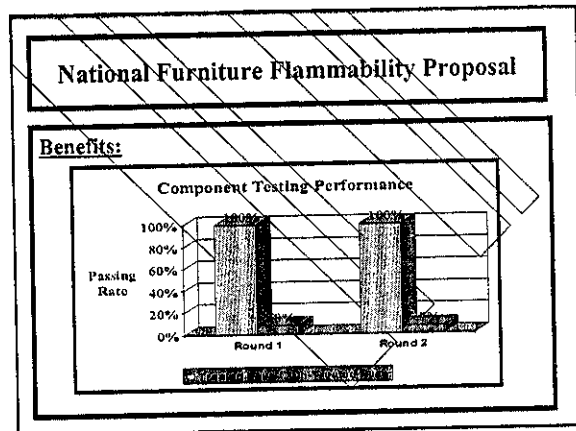
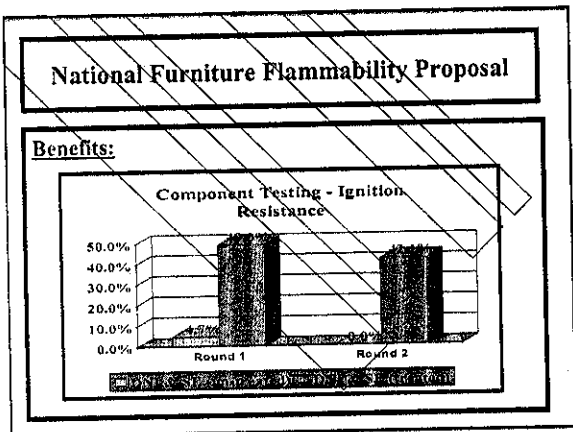
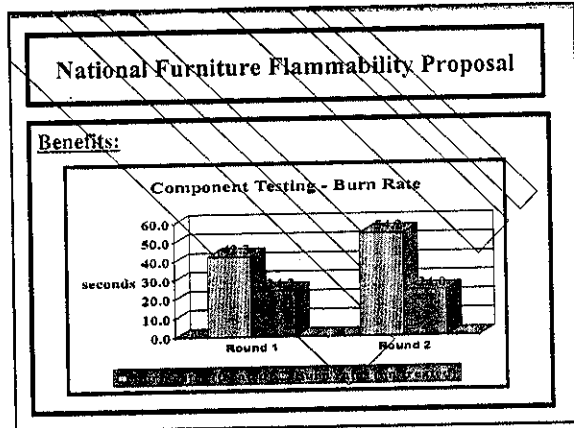
**National Furniture Flammability Proposal**

*“Benefits of the Fabric Coalition's Solution”*

### National Furniture Flammability Proposal

**Benefits:**

1. A national standard that is superior to California's current TB-117, which when implemented will not only replicate, but greatly enhance California's experience on a national level.



### National Furniture Flammability Proposal

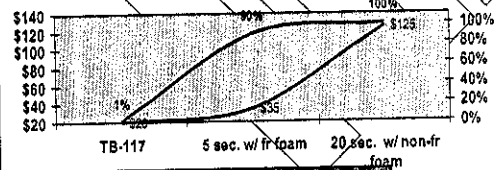
**Benefits:**

2. A national standard that takes advantage of currently available technology and is minimally disruptive to furniture and textile manufacturers.
3. A national standard that shares the burden of compliance equitably among all of the stakeholders in the furniture supply chain.
4. A national standard that will have the least financial impact on the consumer, compared to the other options currently under consideration.

### National Furniture Flammability Proposal

**Benefits:**

Test Alternatives - Impact on Consumer Cost and FR Effectiveness



### National Furniture Flammability Proposal

**Benefits:**

5. A national standard that is both economically responsible and feasible to implement and administer - with minimal risk of further job losses and bankruptcies within the industry.

### National Furniture Flammability Proposal

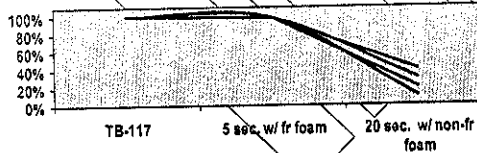
**Benefits:**

6. A national standard that will continue to afford the upholstered furniture industry the opportunity to offer consumers a wide range of fabric choices and furniture that has the look and feel they have come to expect.

### National Furniture Flammability Proposal

**Benefits:**

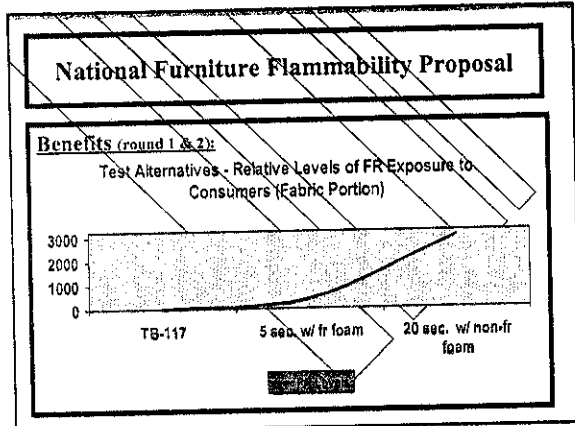
Test Alternatives - Impact on Consumer Choice



### National Furniture Flammability Proposal

**Benefits:**

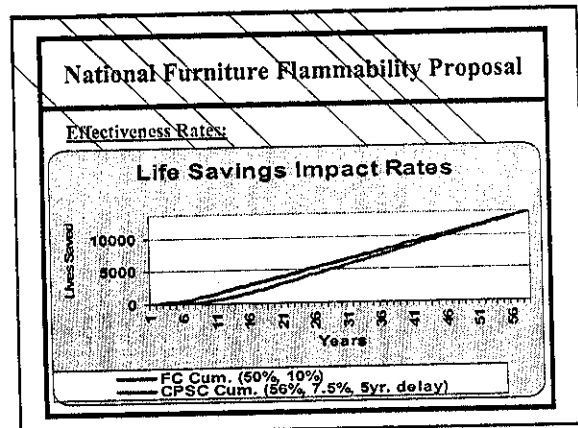
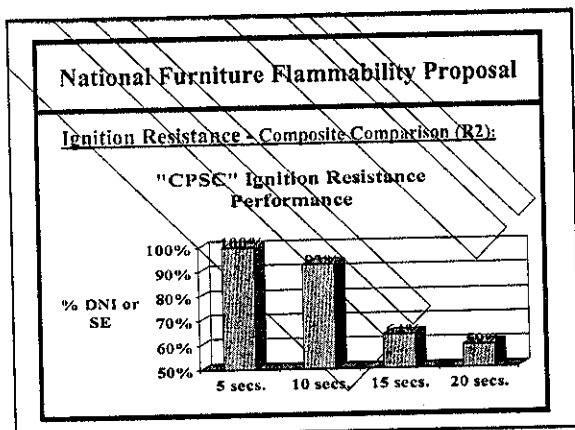
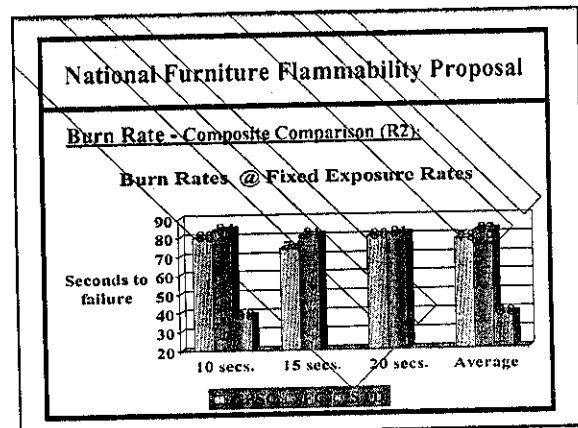
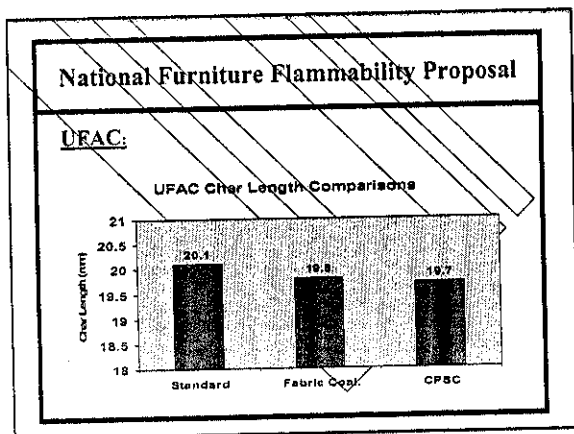
7. A national standard that, in comparison to the other options currently under consideration, reduces >7 fold consumers' exposures to FR chemicals.



### National Furniture Flammability Proposal

**Benefits:**

8. A national standard that complements the success of the UFAC program.



**National Furniture Flammability Proposal**

*Questions & Comments:*

CULP INC.'S COMMENTS ON THE FABRIC  
COALITION PROPOSAL FOR  
UPHOLSTERY FLAMMABILITY

Presented to the C.P.S.C.  
Bethesda, Maryland  
March 1, 2004

March 1 2004

GENERAL COMMENTS

1. Culp, Inc. supports the Fabric Coalition proposal.
2. In general, Culp, Inc. has found the test results presented by the Fabric Coalition confirms our burn results.
3. Culp Inc. sells a wide range of fiber types. The products can be 100% one fiber however, they are generally blends. Our volume is centered around blends of olefin, polyester, acrylic, and to a less degree, cotton
4. We have made the following observations:
  - A. The higher the fabric's cellulosic content the better the test results.
  - B. To meet the Fabric Coalition proposed test method: Culp Inc. would need to treat (with an F.R. process) approximately 85% of our current volume.
  - C. We have seen significant differences in test results between warp and fill specimens.



## CPSC Upholstered Furniture Meeting 1 March 2004

J. Thomas Chapin  
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Underwriters Laboratories Inc.



## Overview

- Key Safety Points
- UL experience in component, finished product and full-scale tests
- UL Offer to Validate Component Protocol
- Recommendations



## UL's Public Safety Mission

*Know by Test & State by Fact*

UL founder William Henry Merrill



## Key Point #1

- Any component-based test protocol must have a direct correlation to finished product flammability behavior.



## Key Point #2

- The component-based test protocol must realistically reflect the real-world hazards of the first article ignited.
  - Cigarette Ignition
  - Small Open Flame



## Key Point #3

- The regulation should reduce deaths, injuries and property loss.
  - Relate the flammability behavior of the finished product to time to flashover and tenability limits in the room of occupancy.



### Key Point #4

- Testing of a single component may not address the response of the finished product to the fire event. Fabric flammability is important, but it does not assess the hazard posed by other major components:
  - Polyurethane foams
  - Filling, fiber and batting materials
  - Structural plastics
  - Assembly features (stitching, bonding, etc.)

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### UL Fire Testing Experience

- Mattresses
  - Ignition, heat release and smoke behavior
  - Mechanisms of failure
  - Interaction of burning components
  - Analytical data on components
- Upholstered Furniture
  - Component characterization
  - Finished product tests
  - Full-scale (room) tests

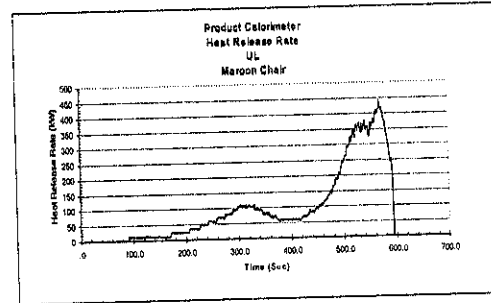
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### Cone Calorimeter Component Data

Sample	Component	Location	Initial Time	Weight	Total Weight Loss	Total Heat of Comb.	Avg HRR	Peak HRR	Total Heat
				gms.	gms.	kJ/g	kW/m <sup>2</sup>	kW/m <sup>2</sup>	kJ/m <sup>2</sup>
Blue	Cover	Back	53	25.83	20.0	2.0	206.8	517.4	66.5
Red	Cover	Back	50	23.28	24.0	16.1	203.4	466.5	20.3
Red	Cover	Back	14	22.81	30.1	36.0	206.6	307.4	78.3
Red	Cover	Back	62	20.65	20.8	25.8	271.6	413.6	76.3
Blue	Fabric	Back	15	6.80	0.8	20.7	61.6	281.8	11.1
Blue	Fabric	Back	23	24.80	2.5	21.7	274.1	355.4	51.1
Blue	Fabric	Bottom	31	6.31	0.2	21.8	100.1	311.7	13.1
Red	Fabric	Bottom	18	4.90	0.1	24.1	65.4	406.5	12.9
Red	Fabric	Bottom	26	4.34	3.0	26.0	52.8	320.9	9.8
Red	Fabric	Back	14	4.37	2.8	25.6	44.1	343.0	9.4
Red	Fabric	Bottom	23	6.12	4.9	24.0	65.6	472.5	12.1
Red	Fabric	Bottom	32	6.15	4.8	24.1	61.9	370.0	11.8
Red	Fabric/Foam	Bottom	22	20.18	21.0	21.0	263.4	368.0	47.3
Red	Fabric/Foam/Fiber/Foam	Back	26	23.69	23.0	20.7	271.3	375.0	52.0
Blue	Foam	Bottom	20	30.00	26.2	24.6	272.1	301.9	84.4
Blue	Foam	Back	3	18.43	18.3	21.8	204.7	276.0	41.1
Blue	Foam	Bottom	2	17.01	17.0	21.0	185.6	260.0	35.8
Blue	Foam	Back	4	13.22	10.7	20.7	178.0	286.0	35.2
Red	Foam	Back	4	23.51	22.1	22.2	250.8	320.1	74.3
Red	Foam	Back	4	20.20	24.3	24.2	289.2	315.4	66.9
Red	Foam	Bottom	4	23.60	24.0	24.5	221.4	282.1	62.4
Red	Foam	Bottom	3	20.81	20.8	24.0	242.2	279.0	70.9
Red	Foam - Top	Back	2	7.39	2.0	23.8	90.4	289.5	4.6
Red	Foam - Top	Bottom	1	1.52	1.1	21.2	16.7	262.2	3.3
Red	Foam - Top	Bottom	1	1.44	1.4	23.1	16.3	231.6	2.2
Red	Foam - Top	Bottom	1	1.20	1.3	10.6	11.9	186.7	2.3
Blue	Structural Plastic	Back	44	80.86	84.6	24.8	200.0	876.1	262.7
Blue	Structural Plastic	Back	58	80.86	76.9	34.3	278.9	878.2	270.9
Red	Structural Plastic	Back	51	27.41	25.2	25.4	257.0	300.6	61.8
Red	Structural Plastic	Back	51	27.22	24.4	27.0	248.8	313.2	62.8

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### Product Calorimeter Data



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### The Hazard



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### UL Offer to Validate Component Protocol

- Conduct 20 full-scale tests using a standard finished product design in 2 scenarios:
  - 10-Cigarette ignition
  - 10-Small open flame ignition
- Standard design will be constructed using components that pass accepted tests.
- Select and arrange components that reflect a range of component behavior (DOE).

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## UL Recommendations



- UL believes finished product upholstered furniture regulation should reflect real world variables:
  - Design
  - Component
  - Manufacturing
- UL supports a component-based test protocol provided that it reflects finished product behavior
- UL believes it is important to evaluate the flammability behavior of all major upholstered furniture components.

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