

**State of California
Department of Consumer Affairs**



TECHNICAL BULLETIN 117-2013

Requirements, Test Procedure and Apparatus for Testing
the Smolder Resistance of Materials Used in Upholstered
Furniture

**February 2014
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TABLE OF CONTENTS

Topic	Page No.
Adoption and Implementation.....	1
General Compliance.....	1
TB117-2013 in Other States.....	2
Testing Requirements	
 Laundering.....	2
 Standard Test Materials.....	3
 Testing.....	3
 Test Enclosure.....	6
 Insulating Fiberglass Board.....	7
 Decking Materials.....	7
 Char Length Measurement.....	7
 Interior Fabrics.....	8
 Conditioning.....	8
Testing, Record Keeping and Certification.....	8
 COM Fabrics.....	9
Labeling.....	9
 Exempt Products.....	10
FR Treatments and FR Chemicals.....	10
TB117-2013 vs. TB116.....	11

Adoption and Implementation

1. Q: When was Technical Bulletin 117-2013 implemented?

A: Flammability standard Technical Bulletin 117-2013 become effective as of January 1, 2014 and was fully Implementation: January 1, 2015,

General Compliance

2. Q: Who is responsible for compliance with TB117-2013?

A: Under California law, it is ultimately the responsibility of the furniture manufacturers to ensure products meet TB117-2013 and the labeling requirements. However, wholesalers, importers and retailers are also required to ensure products that they sell meet all the applicable requirements. California Business and Professions Code Section 19072 states: "Responsibility for compliance with this chapter rests not only with the manufacturer but also with the importer, wholesaler, retailer, or any person having in his or her possession with the intent to sell."

3. Q: Can I manufacture products without flame retardants now that TB117-2013 standard has been adopted?

A: The Bureau does not regulate the use of flame retardant chemicals. The Bureau's flammability standards are performance standards and do not prescribe or prohibit the use of any specific materials or manufacturing methods to meet the flammability standards. However, under the new regulations, manufacturers are no longer compelled to make their products open-flame resistant (as it was under the current TB117) and they must only meet the cigarette smoldering resistance tests.

4. Q: Do my polyurethane foam toppers/pads that have no cover have to meet TB117-2013?

A: Yes, polyurethane foam toppers/pads that have no cover must comply with TB117-2013.

Reminder: Mattress toppers are also required to carry a law label in addition to the flammability label.

5. Q: Does the new standard apply to bedding products?

A: No. The new TB117-2013 flammability standard applies to upholstered furniture sold in California. Bedding products such as mattresses, comforters, mattress pads, bed pillows as well as decorative pillows are not subject to TB117-2013. They must, however, carry a law label.

TB117-2013 in Other States

6. Q: Will TB117-2013 be adopted in any other states?

A: The Bureau has no jurisdictional authority in other states and to date we are not aware of adoption of the new standard elsewhere. You may contact the appropriate authorities in other states to find out their furniture flammability requirements, if any.

Testing Requirements

Laundering

7. Q: Do I need to wash my upholstery cover fabric samples before testing?

A: No. Only the standard fabric Type I and the standard sheeting that are used in the tests (sections 1, 3 and 4) must be washed prior to use in the tests.

8. Q: Which test method should be followed for laundering and drying Standard Type I cover fabric and the cotton sheeting?

A: Wash the Standard Type I cover fabric and the standard sheeting in accordance with sections 8.2.2 and 8.2.3 of AATCC Test Method 124-2011.

Dry the Standard Type I cover fabric and the standard sheeting in accordance with section 8.3.1(A) of AATCC Test Method 124-2011.

9. Q: What type of detergent is used for washing the standard sheeting material and the Standard Type I cover fabric?

A: The detergent is the AATCC Reference Detergent specified as:
1993 WOB, Standard Detergent without Optical Brightener, Without Phosphate

10. Q: How much detergent is used for each load for washing the standard sheeting and Standard Type I cover fabric?

A: According to AATCC Test Method 124-2011 add 66 ±0.1 g of 1993 AATCC Standard Reference Detergent or 100±0.1 gram of 2003 AATCC Standard Reference Liquid Detergent.

11. Q: What is the wash load size?

A: According to AATCC Test method 124-2011 paragraph 8.2.4 one wash load should weigh approximately 4 pounds.

Example: Three pieces of Standard Type I mattress ticking; 57 inches in length by 60 inches in width of the fabric from the bolt will make up one wash load of approximately 4 pounds.

12. Q: What is the water temperature setting?

A: AATCC Test Method 124-2011 paragraph 8.1 recommends using the washer's Normal or Cotton Sturdy cycle. When using Normal or Cotton Sturdy cycle the wash temperatures are usually in the range of 49±3°C (120±5°F).

Standard Test Materials

13. Q: Why is the standard polyurethane foam used in Sections 1 and 2 of technical Bulletin 117-2013 different than that used in the ASTM 1353-08ae1Standard?

A: This foam was specified through direct consultation with the foam industry experts to represent a standard non-FR foam that is most suitable for smoldering tests of fabrics and barriers such that the variations from test to test and from laboratory to laboratory are minimized.

14. Q: Are Standard Type I and Standard Type II cover fabrics the same as ASTM E1353 or UFAC standard fabrics?

A: The standard Type I cover fabric specified in TB117-2013 is the same as ASTM E1353 or UFAC standard type I cover fabric but Standard Type II cover fabric specified in TB117-2013 is different from the standard type II cover fabric specified in ASTM E1353 or UFAC standards.

Standard Type I Cover Fabric: The Standard Type I cover fabric shall be 100 % cotton mattress ticking conforming to Fed. Spec. CCC-C-436-E. It shall be laundered and tumble-dried once before using.

Standard Type II Cover Fabric: The Standard Type II cover fabric shall have the following specifications:

FABRIC : Pattern 8500, COLOR : Beige, FIBER CONTENT : 100% Cotton Velvet, WEIGHT/LINEAL YD.: 14.5 oz., (54 inches), BACKCOATING: None

Testing

15. Q: Is TB117-2013 standard a component test or a composite test?

A: The TB117-2013 standard incorporates smoldering tests for several components of upholstered furniture. However, none of the components are tested by themselves as it was under TB117. TB117-2013 is considered a “semi-composite” test; components are combined with standard test materials to construct a test specimen.

16. Q: Why does TB117-2013 refer to test “samples” in some areas and test “specimens” in others?

A: The Bureau laboratory distinguishes between “sample” and “specimen” in this way: Let’s say the laboratory receives a fabric for testing for Section 1 of TB117-2013 compliance. The submitted material constitutes a test “sample”. Then three test “specimens” are prepared and tested. If all three “specimens” pass the test, the “sample” passes the test. While a test “specimen” may fail the test, the test sample may ultimately pass the test (as described in the standard).

17. Q: If a manufacturer passes the cover fabric test, does it also need to pass the barrier test? In other words, would a manufacturer only have to pass the fabric test to comply with the law?

A: In addition to the cover fabric, the filling materials must also meet the test requirements of Section 3 of this test method. If the cover fabric or filling materials fails section 3, then a

barrier material that passes section 2 must be used. Barrier material must fully encase the filling material.

18. Q: Do all layers of filling materials under the cover fabric need to meet the standard?

A: Yes. TB117-2013 requires all resilient filling materials to meet the TB117-2013 Section 3 of the standard. If the resilient filling materials do not meet the standard, a barrier that passes Section 2 must be used. Barrier material must fully encase the filling material.

19. Q: The bulletin states that if the cover fabric fails, then a barrier material must be used and the barrier material must cover all sides and top of the seating cushion, except for tight seats and backs. Does the barrier material need to be used on the arms, outside backs, etc., or only on the seating cushions?

A: Barriers that meet TB117-2013 Section 2 must be used when non-compliant cover fabrics (i.e. fabrics that do not meet Section 1) OR non-compliant filling materials (i.e. material that do not meet Section 3) are used anywhere in furniture. Dust covers that are usually used under the chair are not subject to Section 1 test. But wherever the non-compliant upholstery cover fabric is used a barrier must be used under it.

20. Q: Is the polyester fiber batting directly beneath the cover fabric a barrier or a fill?

A: This depends on the intended use of the batting material. If the polyester batting lies between the cover fabric and the filling components and both the cover fabric and the fills meet the corresponding sections of TB117-2013, then the batting will not have to pass section 2. It will be considered as another filling component.

21. Q: Can you specify how thick the barrier of polyester fiber would have to be to cover the foam?

A: There is no specific or pre-assigned thickness for the batting barrier. The batting barriers must pass the Section 2 test. Depending on their makeup (thickness, physical characteristics, porosity, homogeneity,...) different battings may need different thicknesses to pass the test. Whatever thickness that passes the Section 2 test can be used.

22. Q: Do you expect that UFAC Class 2 fabrics will completely burn away and leave the filling materials with the barrier underneath the fabric unaffected?

A: Barriers are used to prevent the smoldering front from advancing into the filling under the barriers and become involved in smoldering combustion. Whether the entire fabric will burn away or not all depends on the fiber content of the fabric, any treatment or backcoating and even dyes and patterns that the fabrics may have. Some fabrics may burn (smolder) more than the others. What matters is that the composite (fabric/barrier/filling combination) must pass the applicable TB117-2013 standard.

23. Q: Does leather fabric have to be tested per TB117-2013, Section 1?

A: Yes, generally speaking, leather is resistant to smoldering and will most likely pass any smoldering test, however that does not exempt leather cover fabrics from meeting the TB117-2013, Section 1 test requirements. Note that while compliance with TB117-2013 is mandatory, testing is at the discretion of the manufacturers/suppliers as long as they can assure the material meets the standard.

24. Q: When a non-compliant fabric is used do all surfaces and edges of the foam (filling) need to be covered completely with the barrier material?

A: Yes. The filling materials (such as foams) must be fully encased in the barrier, except for the underside of attached cushions.

25. Q: How do you test multiple barrier (layered) materials? Are they tested together if they are different materials?

A: If multiple layers of barriers are present, only the upper most layer that lies directly underneath the cover fabric will have to pass Section 2. If the multiple layers represent a combination of fibers but are one batting or pad, that batting/pad must meet Section 2 in its entirety.

26. Q: If a filling material is constructed of many components, what layer must pass?

A: All inside resilient filling materials must pass the TB117-2013 section 3 requirements.

27. Q: For loose filling materials, how is the cover fabric handled in the test procedure?

A: The cover fabric of a product containing loose fills must pass Section 1 of TB117-2013. If the cover fabric fails Section 1 or the filling material failed section 3, a compliant barrier must be used.

28. Q: Are materials that enclose the loose fill for structural purposes, part of the testing or are they considered barrier materials?

A: Loose fills are often encased in a ticking material. As specified in ASTM E1353-08a^{e1} subsection 16.2 loose fills or particulate materials are filled in bags sewn from the same ticking that they are encased in, therefore, ticking is part of the testing.

The ticking encasing the loose fill must pass TB117-2013 Section 2 only if the cover fabric fails Section 1 and the ticking is located directly under the cover fabric. In this case the ticking material may act as a barrier.

29. Q: For filling materials, is there a specific sample preparation for loose fills such as feather and down, shredded foam, polystyrene beads and others?

A: The TB117-2013 states that the ASTM Section 16, step 16.2 is to be followed which specifies the procedure for preparation of the loose fill materials which include shredded foam, feather and down and other loose fills.

30. Q: On feather/down backs and pillows with no foam, is the interior down-proof ticking the only barrier necessary if it passes the barrier test?

A: Correct. If the ticking complies with Section 2 of TB117-2013 it can be considered the barrier if the outside cover fabric and/or the loose fill does not meet the standard.

31. Q: Do existing fabrics need to be re-tested for compliance with TB117-2013?

A: No. All existing fabrics that have been tested under a similar test method (ASTM, UFAC, or NFPA 260) and have passed those tests can be used in upholstered furniture, and are not subject to additional testing. Manufacturers can demonstrate this by using the results from historical data and comparable testing.

All new fabrics that are produced on or after January 1, 2015 must comply with the new TB117-2013 test requirements. For non-compliant cover fabrics a barrier must be used.

On or after January 1, 2015 new fabrics that are marketed as compliant with TB117-2013 must have been tested per TB117-2013 standard.

32. Q: Do upholstered furniture slipcovers have to meet the TB117-2013 test requirements?

A: Slip covers that are sold together with the furniture and are intended to be put on the furniture for use must meet section 1 or a barrier must be used. This barrier can be the fabric underneath the slip cover (e.g. Muslin) if it passes TB117-2013 Section 2 test.

If the furniture is sold without the slip cover, then the outside fabric will act as a cover fabric. The cover fabric must pass TB117-2013 Section 1 or a barrier must be used.

Slip covers that are sold separate from the upholstered furniture and contain no inside filling material (i.e. not quilted) are not regulated by our Bureau, meaning not subject to licensing, labeling or flammability requirements.

33. Q: How will failing fabrics be identified?

A: If the test results of a fabric are unknown or if they fail TB117-2013 Section 1, they will require a barrier that meets TB117-2013 Section 2. The Bureau does not classify fabrics. The fabric mills or suppliers should provide information regarding TB117-2013 compliance status of their fabrics to their customers.

34. Q: Where can I purchase the standard reference materials, i.e., cigarettes, foam, fabrics, sheeting materials?

A: The Bureau has compiled a list of suppliers that sell the standard reference materials. Contact the Bureau for the listing.

35. Q: Can fabrics be tested by construction, i.e. can they be grouped together with similar fiber types?

A: While compliance with a standard (such as TB117-2013) is mandatory, testing – what and how many to test, testing program and frequency, etc. – is at the discretion of the manufacturers. Manufacturers are ultimately responsible to assure compliance with TB117-2013. It is common to group (or classify) fabrics that have much in common, e.g., the fiber contents, weight, treatments, backcoating, patterns and so on and test what is considered “the worst case scenario” that is the one that is most smolder prone. If that fabric passes the test, others in that group may be considered as passing the test as well. What matters is that one has to be certain that the fabric meets the standard if it is marked as such.

Test Enclosure

36. Q: What test enclosure must be used for TB117-2013 smoldering tests?

A: Any test enclosure that meet the requirements outlined in Annex A can be used.

To prevent extreme changes in surface ventilation rate, the bureau recommends that tests be performed inside an enclosure measuring 48 inches long, 21 inches deep and 18 inches

high, with an integral bottom, but without top. The enclosure is designed such that three individual test mockups may be positioned simultaneously inside it. Individual test stands should be at least six (6) inches apart. The enclosure construction material may be wood, transite, sheet metal, PMMA or other similar materials. If the enclosure is not made of transparent materials, it is desirable that the enclosure contain an observation window so that tests may be visually monitored.

37. Q: Can you give more details on the Plexiglas enclosure?

A: The recommended test enclosure is made of ¼ inch thick Plexiglas (Polymethyl methacrylate) (PMMA) or any transparent thermoplastic material).

38. Q: What is the flow rate of our canopy hoods and enclosed exhaust hoods?

A: The airflow rates are specified in Annex A of TB117-2013. As stated, the air flow rates must be such that enough supply of oxygen is provided while the smoldering combustion of the test specimen is undisturbed.

Insulating Fiberglass Board:

39. Q: What type of fiberglass board is used in the test enclosure during testing?

A: The mock up test specimens are placed on a 1” thick fiberglass board. The fiberglass board acts as an inert insulation substrate that prevents heat transfer from the test specimen (if any) to the surface of the test area. Commercially available fiberglass boards can be used. We follow the CPSC’s 16 CFR 1632 specs for the fiberglass boards. As stated in 16 CFR 1632.4(a)(ii): “The glass fiberboard shall be approximately 1 inch (2.5 cm) thick and have a thermal conductivity of 0.30 ± 0.05 cal (g)/hr cm^2 °C/cm (0.24 ± 0.04 Btu/hr ft^2 °F/in) at 23.9 °C (75 °F). However, the use of CPSC’s 16 CFR 1632 specifications for fiberglass board is not mandated by TB117-2013.

Decking Materials:

40. Q: When do I conduct the decking material test and do I test the decking fabric or the padding material directly beneath the decking fabric?

A: The Decking Material Test (Section 4) is conducted for furniture that has loose (detached) seat cushions. The decking area usually consists of a decking fabric (that is visible) and under the decking fabric there may be some padding material. The padding material (not the decking fabric) is subject to the decking material test in Section 4 of TB117-2013. Furniture that does not have loose cushions and has only attached cushions are not subject to the decking material test.

All test sections are done in triplicates. In Section 4 the triplicate tests are done on one test sample simultaneously.

Char length Measurement – charred, degraded, discolored areas:

41. Q: How do you define “Char”? How do I determine where and what to measure as the char length?

A: TB117-2013 follows the ASTM 1353-08-a^{e1} provisions in regard to char length measurements. Test operators must exercise caution in char length measurements for accuracy.

Consultation with a supervisor in uncertain cases is highly recommended.

The highest point of destroyed or degraded fabric is defined as the highest point at which any of the fabric is charred from front to back.

42. Q: How can you tell if the specimen is still smoldering?

A: Carefully, closely and thoroughly inspect the test specimen and if no traces of any smoldering is evident the test can be terminated. However, if you are not certain whether the smoldering has fully ceased, wait until the 45 minute test duration has elapsed. Then remove the cover fabric; if the specimen still is smoldering underneath the cover fabric or between the seat and back substrates the sample fails based on the greater than 45 minute fail criteria.

Interior Fabrics:

43. Q: Do my interior fabrics have to meet TB117-2013, Section 1?

A: Under TB117-2013 only the upholstery cover fabrics must pass the Section 1 test. If the interior fabric is not intended as a barrier material, then it will not have to pass the barrier test. Also, dust cover fabrics are not required to meet TB117-2013.

Conditioning:

44. Q: What are the conditioning requirements?

A: All test specimens and the standard test materials (cigarettes, standard fabrics) must be conditioned prior to the test for a minimum of 24 hours at $21^{\circ} \pm 3^{\circ} \text{C}$ ($70^{\circ} \pm 5^{\circ} \text{F}$) and less than 55% relative humidity. If conditions in the test area are not the same as in the conditioning area, tests should begin within 10 minutes of removal of samples from conditioning area.

Testing, Record Keeping and Certification

45. Q: What should be the standard frequency for testing fabrics and inside filling materials?

A: The Bureau does not have a record keeping requirement; however, it is recommended that suppliers and/or manufacturers have a QAP (quality assurance program) in place. The QAP can incorporate frequency in testing, i.e. every 2 years.

46. Q: What test documentation is the furniture manufacturers required to retain?

A: The Bureau has no mandatory requirements for recordkeeping or record retention, however, we recommend retaining test reports for as long as the product is used in upholstered furniture.

47. Q: What information and/or data should be included in the test reports?

A: It is recommended that the test report should include the information that is specified in the ASTM standard (page 3, item 9 – 9.1.1 through 9.1.6). The format of the report is up to the user. Additional data (if any), photographs and other related information will be useful. It is always best that all pertinent information be fully documented in the test reports.

48. Q: What test labs are qualified to conduct the TB117-2013 flammability standard

A: The Bureau does not certify laboratories for testing. Opt for a laboratory that is familiar with all test requirements regarding the TB117-2013. The Bureau is formulating a list of laboratories that are available to conduct the TB117-2013 test. Contact the Bureau for the most up to date listing.

49. Q: Does the furniture manufacturer have to do all the testing?

A: No, the furniture manufacturers must keep in mind that they are responsible for their furniture's compliance with TB117-2013. Although manufacturers can perform tests if they choose to do so, ordinarily the material suppliers provide appropriate certifications or proof of compliance for the materials that they supply to the furniture manufacturers. The material suppliers, such as foam or batting fabricators and fabric suppliers can request proof of compliance from the material manufacturers such as the foam plants or the fabric mills.

If non-compliant cover fabrics and filling materials are used in furniture, a barrier must be used.

50. Q: What if the Bureau finds that a fabric "fails" during enforcement testing?

A: If the Bureau finds that a fabric "fails" during enforcement testing the manufacturer will be given the opportunity to provide the Bureau relevant testing documentation. A fabric that has been found to be "failing" and has verification of similar testing (ASTM 1353, UFAC or NFPA 260) performed would be taken into consideration. The Bureau may request or conduct follow up testing to assure compliance with TB117-2013. However, if the cover fabric fails and no similar testing records are provided it would be subject to further enforcement action.

COM Fabrics (Customer Owned Materials)

51. Q: How will we assure compliance for COM fabrics?

A: Customer owned materials (COM) that are provided to a furniture manufacturer (such as a custom upholsterer) can be treated in two ways:

1. If the customer provides certification of compliance for their materials, the furniture manufacturer or upholsterer can use them accordingly.
2. If no certifications or proof of compliance are provided by the customer and the manufacturer or upholsterer does not know whether the COM fabrics meet the standard or not, the use of a barrier that meets Section 2 of TB117-2013 will ensure compliance of the furniture with TB117-2013.

Labeling

52. Q: What changes have been made to the labeling requirements for upholstered furniture sold in California?

A: All upholstered furniture, including exempted upholstered furniture, and bedding products that are subject to our laws and regulations must have a law label attached (this is status quo, no change).

The law label required for bulk filling material has been updated to incorporate our bureau name in its entirety (BHGS) and to include the TB117-2013/flan compliance statement.

All upholstered furniture sold in the State of California (except those that are exempt from the flammability requirements) must have a flammability label attached.

Furniture manufactured after January 1, 2015 must have a TB117-2013 flammability label attached.

Flammability label verbiage for upholstered furniture compliant with TB117-2013:

NOTICE

THIS ARTICLE MEETS THE FLAMMABILITY REQUIREMENTS OF CALIFORNIA BUREAU OF HOUSEHOLD GOODS AND SERVICES TECHNICAL BULLETIN 117-2013. CARE SHOULD BE EXERCISED NEAR OPEN FLAME OR WITH BURNING CIGARETTES.

Flammability label for upholstered furniture compliant with both the TB116 and TB117-2013 (Note: TB116 is a voluntary standard, however if labeled as such, it must now comply):

NOTICE

THIS ARTICLE MEETS ALL FLAMMABILITY REQUIREMENTS OF CALIFORNIA BUREAU OF HOUSEHOLD GOODS AND SERVICES TECHNICAL BULLETINS 116 AND 117-2013. CARE SHOULD BE EXERCISED NEAR OPEN FLAME OR WITH BURNING CIGARETTES

Title 4, CCR, Section 1374.1 of Article 13 has been repealed as indicated in our regulatory language. Products exempt from the TB117-2013 flammability standard will no longer require an exempt flammability label (disclosure label indicating non-compliance with TB117-2013). However, a law label must be attached to the product (as required by title 4, CCR, division 3, article 2).

Exempt Products

53. Q: Does any exempt item need a non-compliant TB117-2013 label?

A: No exemption label would be required the products that are exempted from Technical Bulletin 117-2013 flammability requirements.

FR Chemicals and Treatments /California Prop 65

54. Q: Do I have to label my product as containing FR chemicals or treatments?

A: No. The Bureau does not regulate the use of flame retardant chemicals. The Bureau's flammability standards are performance standards and do not prescribe nor prohibit the use of any specific materials or manufacturing methods to meet the flammability standards.

There may be labeling and/or notice requirements under CA Prop 65. For questions and issues related to fire retardant chemicals and hazardous materials labeling contact the California Environmental Protection Agency (Cal EPA) – Office of Environmental Health Hazard Assessment (OEHHA), the State agency responsible for overseeing provisions of Prop 65.

TB117-2013 vs. TB116

55. Q: My chair meets the TB116 smoldering standard. Do I still have to meet TB117-2013?

A: Yes. TB116 is a voluntary standard while TB117-2013 is a mandatory standard. By law, all upholstered furniture sold in California must meet TB117-2013. However, when a furniture meets TB116 this means that either the cover fabric, the barrier, the fill or a combination of them has made it possible to pass TB116. Therefore, such furniture will likely pass TB117-2013 in one way or the other.