PUBLIC COMMENT on PROPOSED BUILDING STANDARDS

For Publication in Title 24, California Code of Regulations

See instructions for completing this form on Page 2.

Commenter Contact Information

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Proposed Building Standard

Title 24 Part #: (*select one*) Part 2 Section #: Item 17; 2603.xxx

Proposing State Agency: California State Fire Marshal

This comment is intended for review during: (*select one*)

- ○ Code Advisory Committee
- ◉ 45-Day Comment Period
- ○ 15-Day Comment Period
- ○ Commission Meeting

Your recommendation based on the criteria of Health and Safety Code Section 18930(a) printed on the back of this form is: (*select one*)

- ○ Approve
- ◉ Disapprove
- ○ Further Study Required
- ○ Approve as Amended

In support of your recommendation above, provide the rationale based on the criteria of Health and Safety Code Section 18930(a) printed on the back of this form. If you recommend anything other than approve, cite the criteria in your comment. If you oppose a proposed building standard, offer a solution or alternative for the state agency to consider. Please use separate pages if your comment does not fit in this space.

The code revision will result in lower fire safety. Detailed comments are included in one attached document that is 4 pages long.

Attachments?

■ Check if you have attached additional pages. The number of pages attached is: 4

For CBSC Office Use Only Date Received: _____ Rulemaking Item #: _____

Instructions for completing this form

1. Use of this form is optional. It helps CBSC and other state proposing agencies to correctly administer your comments.
2. For matters to be considered at a public CBSC Code Advisory Committee (CAC) meeting, written comments should be received at least seven days before the scheduled meeting.
3. For matters subject to a 45-Day or 15-Day public comment period announced by a Notice of Proposed Action (NOPA), written comments **must be received** on or before the close of the comment period identified in the NOPA.
4. Separate comment forms are necessary for CAC and public comment periods.
5. Separate comment forms are necessary for each state agency proposal.
6. This form is available in fill-and-print format at the CBSC website, www.bsc.ca.gov, for you to complete and submit electronically. Or print a blank form and type or complete by hand. You may attach additional pages if necessary.
7. Submit comments to CBSC, 2525 Natomas Park Drive, Suite 130, Sacramento, CA 95833-2936, or by email to cbsc@dgs.ca.gov. Please do not fax comments.
8. Written and oral comments may also be provided at CBSC public meetings to consider the proposed building standards.

For assistance, call CBSC at (916) 263-0916 or email cbsc@dgs.ca.gov.

Building Standards Nine-Point Criteria. Health and Safety Code Section 18930(a) reads:

(a) Any building standard adopted or proposed by state agencies shall be submitted to, and approved or adopted by, the California Building Standards Commission prior to codification. Prior to submission to the commission, building standards shall be adopted in compliance with the procedures specified in Article 5 (commencing with Section 11346) of Chapter 3.5 of Part 1 of Division 3 of Title 2 of the Government Code. Building standards adopted by state agencies and submitted to the commission for approval shall be accompanied by an analysis written by the adopting agency or state agency that proposes the building standards which shall, to the satisfaction of the commission, justify the approval thereof in terms of the following criteria:

(1) The proposed building standards do not conflict with, overlap, or duplicate other building standards.

(2) The proposed building standard is within the parameters established by enabling legislation and is not expressly within the exclusive jurisdiction of another agency.

(3) The public interest requires the adoption of the building standards. The public interest includes, but is not limited to, health and safety, resource efficiency, fire safety, seismic safety, building and building system performance, and consistency with environmental, public health, and accessibility statutes and regulations.

(4) The proposed building standard is not unreasonable, arbitrary, unfair, or capricious, in whole or in part.

(5) The cost to the public is reasonable, based on the overall benefit to be derived from the building standards.

(6) The proposed building standard is not unnecessarily ambiguous or vague, in whole or in part.

(7) The applicable national specifications, published standards, and model codes have been incorporated therein as provided in this part, where appropriate.

(A) If a national specification, published standard, or model code does not adequately address the goals of the state agency, a statement defining the inadequacy shall accompany the proposed building standard when submitted to the commission.

(B) If there is no national specification, published standard, or model code that is relevant to the proposed building standard, the state agency shall prepare a statement informing the commission and submit that statement with the proposed building standard.

(8) The format of the proposed building standards is consistent with that adopted by the commission.

(9) The proposed building standard, if it promotes fire and panic safety, as determined by the State Fire Marshal, has the written approval of the State Fire Marshal.

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Rationale for Requesting Disapproval of Item 17 of Title 24, Part 2
Proposed by California State Fire Marshal

The basic reason that I, Marcelo M. Hirschler, request disapproval of item # 17 (sections 2603.2.1, 2603.3 and 2603.4.15) is that the proposed change will decrease fire safety. The following details are based on the flawed Oklahoma State University (OSU) report commissioned by the California State Fire Marshal.

1. The OSU project demonstrated that fire retarded EPS (expanded polystyrene) foam was much less easily ignited than non-fire retarded expanded polystyrene (Non-FR EPS) foam.
2. The difference in ignition performance found by the OSU project was not minimal but very substantial. In detail, the ignition source in ASTM D2859 (which ignited the Non-FR EPS foam) is a methenamine pill that weighs 150 mg and has the approximate size of a shirt button (meaning that about 200 pills weigh an ounce) while the Class B ignition source from ASTM E108 (which was needed to ignite the FR EPS) is solid wood that weights 500 g (over a pound). There is no realistic comparison between the ease of ignition of the FR EPS foam and the Non-FR EPS foam. See photographs below.

Methenamine Pill

Class B Brand ASTM E108

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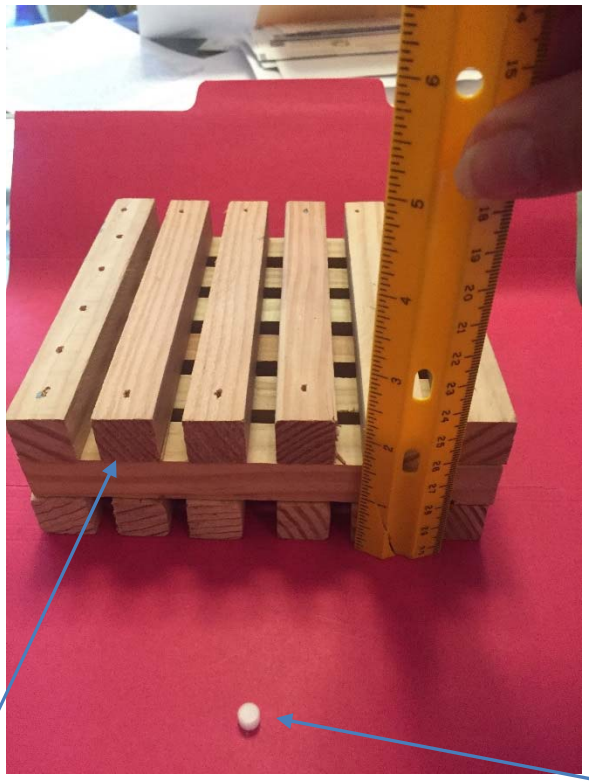

Class B brand

Methenamine Pill

3. The ASTM D2859 test (also known as 16 CFR 1630) is the minimal fire test that any carpets and rugs sold in the US are required to meet, as mandated by the federal government and regulated by CPSC. It is an irrelevant test for anything else and it is amazing that a product that fails that test is proposed for use.

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4. The photograph below shows, taken by OSU, the results of applying the methenamine pill to FR EPS foam (on the left) and Non-FR EPS foam (on the right): the difference is astounding.

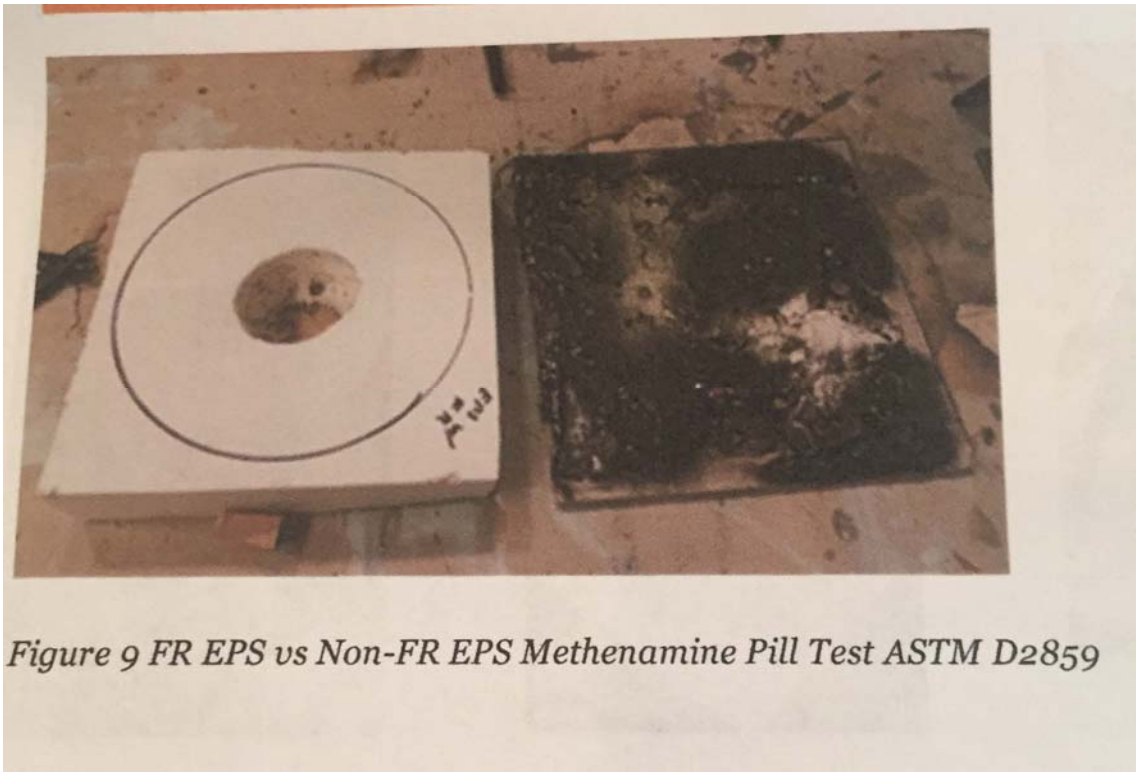

Figure 9 FR EPS vs Non-FR EPS Methenamine Pill Test ASTM D2859

5. The OSU project did not develop any flammability standards for building insulation materials but conducted some ad-hoc tests. The results were that, in every case, the Non-FR foam performed worse than the FR foam.
6. The OSU project developed a very arbitrary classification of fire risk that is not in compliance with any standard definition of fire risk (which is defined in ASTM E176 (Standard Terminology of Fire Standards) as "an estimation of expected fire loss that combines the potential for harm in various fire scenarios that can occur with the probabilities of occurrence of those scenarios"). Fire risk assessment must follow the guidance of ASTM E1776 (Standard Guide for Development of Fire-Risk-Assessment Standards) but no such analysis was made by OSU.
7. Assuming that the OSU fire risk classification is acceptable, one aspect of the classification is that it shows that Non-FR EPS has a higher fire risk than FR EPS.
8. A further result of the OSU classification is, interestingly, that Non-FR EPS also has a higher fire risk than both FR polyethylene sheet and Non-FR polyethylene sheet. That means that Non-FR EPS has a higher fire risk than a product that the CA Fire Chiefs believe is unsafe and that they have required to be deleted from the International Fire Code (IFC). The IFC accepted a proposal that all tarpaulins used in construction must meet ASTM E84 Class A or exhibit a very low heat release, both fire properties that polyethylene sheets will not meet (independently of whether they are or not FR treated). If the CA code change is approved it introduces a product less fire safe than other products not permitted in construction.

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9. The OSU project (and other commenters) have criticized the fire tests known as the oxygen index (or LOI, ASTM D2863) and the Steiner tunnel (or ASTM E84) but conducted no tests with either standard. However, the results from those maligned tests indicate the same as the OSU project results, and others: FR foam plastic exhibits better fire performance than Non-FR foam plastic (as evidenced by a higher oxygen index in ASTM D2863, a lower flame spread index in ASTM E84 and a lower heat release in heat release tests), and thus results in lower fire risk, something implicitly admitted in the report.
10. The OSU report did not measure heats of combustion and used book data, assuming that adding fire retardants does nothing to heat of combustion: that is incorrect. In fact, adding fire retardants will decrease the heat of combustion (and the heat release) as shown in a paper by Hirschler referenced by the report, but ignored ("Flame Retardants and Heat Release: Review of Traditional Studies on Products and on Groups of Polymers", M.M. Hirschler, Fire and Materials (Article published online, Fire and Materials, 03/11/2014, DOI: 10.1002/fam.2243), 2014).
11. The same paper by Hirschler, on heat release of plastic materials with and without flame retardants, says that heat release is a key property in fires, and says that it should be measured using ASTM E1354 (cone calorimeter) or NFPA 286 (room corner test). The OSU report mentions that fact but then does not use either test for their work.
12. CA AB 127 required that new flammability standards be developed and the proposal simply deletes existing flammability standards requirements without proposing any new ones.
13. CA AB 127 required that the changes "maintain overall building fire safety", and, as demonstrated above, the proposals would lower fire safety.
14. This analysis does not delve into some of the procedural flaws associated with the proposal.

Finally, I need to point out that I was a member of the Phase I Working Group on CA AB 127 but was not allowed to participate in the Phase II Working Group.

Signed:

Marcelo M. Hirschler

Date: October 19, 2018