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 #: 2603.2.1, 2603.3, 2

Proposing State Agency: Office of State Fire Marshall

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.

Rationale attached, criteria 18930(a)(3) to protect the public interest of fire safety is not met for the proposed amendments.

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.

October 22, 2018

California Building Standards Commission
2525 Natomas Park Drive
Suite 130
Sacramento, CA 95833-2936

Via email: cbsc@dgs.ca.gov

RE: OSFM proposed building standards:
Item 17 - Title 24, Part 2, proposed new section 2603.2.1, proposed modified section 2603.3, and proposed new section 2603.4.1.15
Item 4 - Title 24; Part 2.5, proposed section R316.2.1, and proposed modified section R316.3
Item 1 - Title 24; and Part 12, proposed modified section 12-13-1553

Dear California Building Standards Commission Members:

Atlas EPS appreciates the opportunity to submit these comments regarding the amendments proposed to the California Residential Code (CRC) and the California Building Code (CBC) by the Office of the State Fire Marshall OSFM). Atlas EPS manufactures molded polystyrene (EPS) with flame retardants, and participated directly on the Phase II Working Group conducted by Oklahoma State University (OSU) which was under contract to the OSFM for this project. The resulting OSU test report was submitted as the basis for technical justification of the proposed code changes.

Atlas EPS served as the only foam manufacturer on the advisory group and personally witnessed the storage and application fire testing. As such, we have direct insight into the testing, and urge the Commission to reject these code change proposals. There is a great need for continued research and discussions with all affected parties, including foam manufacturers, contractors, fire test labs and the fire service before adopting these changes.

The Office of the State Fire Marshall sought research into the storage fire safety and application fire safety of non-flame retardant molded polystyrene products when installed in Frost Protected Shallow Foundations (FPSF). Failing to find any commercially available material in North America, they were prepared to seek test material from Norway where it is used under roads (not in construction of buildings). As a solutions provider to the construction industry, Atlas EPS was contacted to make EXPERIMENTAL non-fire retardant expanded polystyrene (non-FR EPS) sheets, and became part of the advisory group for the testing. Note that this is the ONLY time non-FR EPS have been produced for construction, from ingredients not known for consistent physical property or thermal performance as required of building insulation. Additionally, this product was not tested for conformance to the code required ASTM C578, the product standard for polystyrene insulation. Atlas EPS participated in the study in the interest of science, to learn how materials without flame retardants perform, and to find what level of protection current FR- EPS provides in storage and application.

Here are some insights that were learned during the testing:

1. **Non-FR EPS will burn underground, even when covered by a board and soil!**

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P.O Box 530489 | San Diego, CA 92153-0489
Phone: 866-811-9517 | Fax: 619-241-8310

445 Industrial Park Dr | Ridgeway, VA 24148
Phone: 800-277-0967 | Fax: 276-638-1272

This was a shocking revelation, since normal FR-EPS was barely affected by fire in the same application. In hind sight, the reason is obvious. Insulation contains air, burying insulation does not choke a flame from oxygen the same way burying most other materials does. This is why foam plastics have their own chapter in the model building codes: they perform differently in fires than many other combustible products. But as currently formulated and used as permitted in the codes, they have a long history of safe use.

2. **A flame the size of that generated by a match is enough to catch non-FR EPS on fire.**

   This is not true with FR-EPS, which is not lit with a flame, nor a burning 1"x1" piece of wood, but requires a 2"x6"x6" flaming wood source to finally catch on fire.

3. **A test was run to see if a NIST cigarette (which is less ignition than a flame) would catch the non-FR on fire, but it did not.**

   Then the advisory group questioned should the test be run with some wind to simulate a red hot ash at the end of the cigarette, as is seen at night when a careless smoker tosses a butt out of a car window. It was agreed that for a product stored outdoors and transported on open flatbed trailers, this lower non-flame ignition source needed to be assessed under outdoor conditions. But the researchers could not locate a standard test, so it was thought this could be future work. At this time, the low limit of the ignition for non-FR foam is still not confirmed.

4. **Page 61 of the OSU report requires additional explanation in the comparison of all materials when tested for storage fire hazard.**

   The report notes that non-FR EPS and ABS pipe both ignited with a flame (a methenamine pill) but unless you witnessed the test, the following is not clear without deciphering the graph on page 61. The non-FR EPS caught fire in under 90 seconds, and quickly progressed to peak heat by 2-1/2 minutes. The ABS pipe sat there with a little flame for over 8 minutes before slowly building into a larger fire. They are both graded as similar for "ignitability" in the report. In truth, the non-FR EPS is burning before most people have a chance to notice any smoke, and is fully involved before they could fetch an extinguisher. The graph on page 61 should clearly identify that non-FR EPS would easily become the most readily ignitable construction material on the job-site if these proposals are accepted.

5. **When tested in a manner representative of a frost protected shallow foundation, the non-FR EPS burned the full 48" length of the panel, while the FR-EPS burned only 3"**

   The contracted testing lab set up a demonstration of foam plastic in a frost protected shallow foundation (FPSF) application. The non-FR EPS was comprised of 1.5 pounds of polystyrene per cubic foot (the fuel load contribution of the plastic). This test burned the full length of the panel, 48", which is the typical maximum length extending from the home wall horizontally in this FPSF application. If this occurred on a real home, there would be subsequent failure of the foundation (frost heave) under cold conditions with the insulation gone. Smoke obscuration was collected for the installed test, but not indexed to an allowed maximum as is standard for occupant concerns, as the application is outdoors.

   When tested in the same lab set up, the normal FR EPS barely was affected, not igniting but rather melting back from the ignition source in an arc about 3 inches length at the deepest penetration underground.

6. **The OSU report only evaluated the frost protected shallow foundation (FPSF) application, and not all below concrete slab foundations.**

   The OSU researchers suggested extending the scope of the code proposal to include below slab. In order to supply the OSFM with data to support this application, a separate test would need to be run with the following conditions in mind.

a. Below slab foam plastic must hold more weight and ranges from 2.0 to 3.5 pounds of polystyrene per cubic foot (more fuel than was tested in the storage tests or the FPSF test at 1.5 pcf).

b. Below slab applications are much larger in total square footage of foam plastic. Considering that the total 48" length of the non-FR EPS test material was consumed in the FPSF test, there is no way to predict the fire performance of non-FR EPS under the full length of an underslab application.

c. Below slab applications can include different forms of foam insulation, such as EPS with radon ventilation channels, or troughs to accept radiant heating tubes. These uneven or corrugated-like surfaces present opportunity for increased oxygen available for combustion. Radon collection piping, expansion gaskets, thermal breaks in the concrete at foundation slab edge, and flood collection channels / drains create opportunity for ignition sources to reach below the slab, and would need to be part of a test configuration

d. Smoke generated from a fire would likely be exhausted into the building interior, and would need to be measured to find if the smoke exceeded the long standing maximum indexes established in other areas of the model codes for interior smoke and life safety.

7. Taken together, the OSU report shows that non-FR EPS performs poorly in fire tests and does not support the OSFM proposals to the CBC or the CRC for either frost protected shallow foundations (FPSF) or below slab insulation.

For the material testing, the OSU report showed that non-FR EPS ignites more readily than non-FR EPS. The storage demonstrations highlighted the fire hazard presented by non-FR EPS. The application tests of frost protected shallow foundations showed that when even covered by board and soil, the non-FR EPS burned the full 48" length to the foundation wall. The OSU program did not evaluate the below slab application of non-FR EPS at all.

Our products are regulated by third party oversight to conform to current fire safety, work fine in the applications in question, with adequate regulation to assure fitness for use and with room for competitive improvements while protecting consumer safety. An important provision in the current CBC[1] and CRC[2] is a requirement for third party labeling and identification. Since the first regulation of foam plastics by the model codes in the 1970s, this has been accomplished through conformance with the surface burning requirements of the code. So agencies like UL, FM, Intertek and others conduct regular inspection of our plants including quality control records, raw materials, sample selection for fire testing, and authorization of their labels on our products to demonstrate code compliance.

These proposals eliminate the need for non-FR EPS to be fire tested (ASTM E84 or UL 723) as required by the code. This opens the market to foam manufacturers that would expressly not be required to have any oversight, not held to ingredient control, not limited for the combustibility of the product, and is NOT conducive to the health of the market or assurance of consumer safety. The reason statements for the proposals fail to satisfy the requirement (11346.2(b)(1)) that the benefit of the proposed standards be clearly stated, nor demonstrate that the current construction practices fail to provide these benefits.

It is our hope that much has been learned by conducting this testing of stored materials and the counter intuitive results of material burning underground. It is clear that the advisory group's recommendation for further study

[1] **CBC Section 2603.2 Labeling and identification.** Packages and containers of foam plastic insulation and foam plastic insulation components delivered to the job site shall bear the *label* of an *approved agency* showing the manufacturer's name, product listing, product identification and information sufficient to determine that the end use will comply with the code requirements.

[2] **CRC Section R316.2 Labeling and identification.** Packages and containers of foam plastic insulation and foam plastic insulation components delivered to the job site shall bear the *label* of an *approved agency* showing the manufacturer's name, the product listing, product identification and information sufficient to determine that the end use will comply with the requirements.

should be heeded to assure that any hazards presented by non-FR polystyrene insulation are well understood by decision makers.

Respectfully, we urge the Commission to reject these proposals until the scientists have finished work in understanding the full impact of these products and their potential applications, and their findings vetted through an open, transparent process with all stakeholders present.

Sincerely,

Ted Grant
Technical Services Director, EPS Division