

LOG OF MEETING

DIRECTORATE FOR ENGINEERING SCIENCES

SUBJECT: ASTM Subcommittee F15.45 for Candle Products-
Fire Safety Task Group

DATE OF MEETING: August 4-5, 2004

DATE OF LOG ENTRY: March 9, 2005

SOURCE OF LOG ENTRY: Allyson Tenney 
Directorate for Engineering Sciences

LOCATION: Columbus Courtyard by Marriott, Columbus, Ohio

CPSC ATTENDEES: Allyson Tenney, Engineering Sciences

NON-CPSC ATTENDEES: ASTM F 15.45 Fire Safety Task Group members

SUMMARY OF MEETING:

Members of the ASTM F15.45 Fire Safety Task Group (Candle Products) met at the Courtyard by Marriott in Columbus, Ohio and conducted by Chairman Jim Becker. The group continued developing a fire safety standard for candles. Minutes from the meeting are attached.

3-14-05
CPSC (b)(1) CLEARED for PUBLIC 513
— NO MFRS/PRVTLEBS OR PRODUCTS IDENTIFIED
— EXCEPTED BY: PETITION RULEMAKING ADMIN. PRCDG
— WITH PORTIONS REMOVED: _____



AMERICAN SOCIETY FOR TESTING AND MATERIALS

FIRE SAFETY TASK GROUP
OF SUBCOMMITTEE FOR CANDLE PRODUCTS (45)
OF F-15 COMMITTEE ON CONSUMER PRODUCTS
Courtyard by Marriott Hotel Downtown, Columbus, OH
Wednesday-Thursday, August 4-5, 2004

Minutes

Wednesday, August 4, 2004

The Task Group is meeting for the twentieth time since its organization.

Jim Becker welcomed the Group. The minutes from the Group's last meeting in Orlando on April 23, 2004 were reviewed. Bob Moss noted that references to his employer need to be changed to SEA, Ltd. With that amendment, the minutes were approved on a motion duly made and seconded.

As more attendees with interests in gel candles and accessories will be joining the Group tomorrow, work today will be limited to the Candle Fire Safety standard and ballot comments.

Since no negative votes were received on ballot, we have a standard! It will receive designation ASTM F 2417-04. Comments still need to be dealt with, and any actions resulting in non-editorial changes will need to be addressed by the Subcommittee and rebaloted. Jim congratulated the Group and thanked them for their hard work to date. Most importantly, the standard should result in higher quality candles, fewer fire incidents with related injuries and deaths, and provide CPSC with a tool for enforcement.

Affirmative votes with comments were received on five ballots. Brian Lee commented on candles with inclusions, and asked if it would be a failure if the inclusions caught fire and/or were ejected from the candle and caused ignition. Jim was unable to reach Brian directly, but sent an e-mail that the secondary ignition requirements covered his concerns. He was satisfied and withdrew the comment.

Monona Rossol of Arts, Crafts and Theater Safety commented that the scope needs to define the "certain candles" covered and clarify that filled candles and tealights are included. Jim Becker expressed concern that it may not be possible to define all types of candles, and is concerned that an effort to put all the covered types into the scope might be limiting. Jim Hoebel is inclined to make the scope less specific and take out the word "certain", but feels that the standard reasonably deals with most candles. Rich Signorelli believes that Monona may want to know what candles are covered so the user does not have to read the whole standard, and Rich feels that the user should read the whole standard. Allyson Tenney believes that all candles are reasonably either covered or exempted. Dave Buri agrees with Jim Becker's concern about limitations. George

Pappas feels that "certain" is probably a holdover from previous versions. The consensus of the Group is to remove "certain" as long as the change is editorial, and to take care of it in a later revision if it is not.

Monona also commented that tealights should be tested while burning at a 10 degree incline to test containers for potential breakage. In Jim Becker's conversation with Monona, she commented that it might be difficult to find living quarters with level floors in some urban areas. She also commented that artisans may be producing fixtures that are not safe, and the test might help weed out some of those products. Jim Becker pointed out that "artisans" are probably not going to follow a standard anyway, and that the Group was trying only to deal with foreseeable misuse. He also commented that some of these issues would be dealt with in the accessories standard, but she is unwilling to defer to an accessories standard and wants the test here. Allyson commented that this would constitute more stringent testing. Dave commented that this would require a redesign of these types of candles. Rich commented that this borders on testing for consumer misuse, and it would be impossible to test for all types. The consensus of the Group is that it doesn't feel this test modification is a good idea. Jim Becker intends to bring the issue before the Subcommittee, and try to get a consensus vote there.

Linda Allison of S.C. Johnson commented that previously referenced sampling plans should be reinserted into the Appendix, and feels their inclusion would remind a producer of the importance of sample size. The Task Group has debated this issue greatly. Bob Moss is conflicted, as statistically significant sampling is important. Rich asked if it would be editorial to include a statement that the tested sample should be statistically significant, but it would not be editorial. Linda's concern is noted, but because candle producers often deal in very small lot sizes, statistical sampling is difficult. George feels it is important to actually get producers to do some testing during development, and the standard, if followed, would accomplish this. Some CPSC standards have differing requirements for prototype testing and production testing. Jim Becker senses the differing opinions that exist in the Group, and will bring the issue to the Subcommittee for its sense on action needed.

Linda comments that, in section 4.3.2.2, the word "impinge" is not the correct one to use, and believes that some use of the word "contact" would be more appropriate. Bill Comber is satisfied with the current usage. Jim Becker believes his dictionary provided a definition that supported the use of impinge as appropriate. Online dictionaries were checked, and our usage appears to be within acceptable definitions. Jim Hoebel expressed a concern that inspecting for damage after the fact is not sufficient and wants to test for the potential of a problem. He sees both sides of the argument, but is satisfied with the current wording. George feels Linda is going after a more definitive requirement for constitution of a failure.

Linda commented that there were several points in the standard where it might be appropriate to use "performance requirements" in place of "safety requirements". In section 5.1, it might be appropriate to move the words "safety requirements" to earlier in the sentence (before flame height) – this change could be editorial. Jim Hoebel believes

it could be more appropriate to remove the words "safety requirements" from that section entirely. The Group agrees with this removal, again believing it would be editorial – Jim Becker will check. Allyson points out that, for consistency with other parts of section 4, "safety" needs to be added prior to "requirement" in section 4.3. Also, the word "section" should be added before "4.3" in note 1 and in section 5.2.5.3. Removal of "measuring" and "safety requirements for" from section 5.2.6, and changing "the test results" to "these test results" was also recommended.

Krister Hard of IKEA commented that the 76.2 mm flame height should be more stringent due to the variability in candle burning and because the heights are only checked every hour. The issue has been debated, and the Task Group sees no need for the change. He also commented about the effect of tealight holders on secondary ignition, but holders will be covered in an accessories standard. IKEA continues to be concerned about the 76.2 mm flame height for some types of candles. He comments on "the end of candle life" in section 5.2.4.9 – basically, whether non-freestanding candles are tested to completion or to end of "useful" life. The Task Group is not amenable to changes on this point. He questions the 20 mm spacing criteria, but Jim Becker explained that there is no data indicating a fire safety problem due to candle spacing, and that the intent was to try to determine results from specific candles. Closer spacing would constitute more stringent testing, and in the real world, could constitute misuse. Krister comments that some freestanding candles may not pass the stability test without a holder. The Task Group agrees and believes that such candles should fail. Krister suggested that candles prone to flashover should be burned in such a way that the final burn period is always 4 or 8 hours, but the Task Group believes this would be impractical in most instances. Krister is likely to be at the Subcommittee meeting in September, and will have an opportunity to defend his positions further at that point.

Marta Caris of Health Canada commented on several points. Jim Becker responded to them, and Mary Korpan of Health Canada indicated they were amenable to many of his comments. Marta proposes dropping the decimal place from 76.2 mm and 95.3 mm in the flame height requirement. The Task Group is amendable as long as the change is editorial. However, the Task Group is still not amenable to lowering the maximum flame height. Alternative wording for the last sentence in section 4.1.1.3 was proposed – the Task Group feels this is unnecessary. Marta proposed wick trimming and candle spacing, wax remaining, and other requirements for labels. These suggestions will be referred to the Label Task Group. Marta proposed specifying ignition sources in section 4.2.1.1. Jim Becker replied that the standard now allows no secondary ignition sources and the Group believe this could not be more specific. In sections 4.3, 4.3.2.1 and 4.3.2.2, Health Canada proposed alternative wording for the candles to which the requirement applies, essentially including all candles. However, this was not the Group's intent for the sections.

Marta proposed tolerance limits for the 10 degree tilt specification. Jim Becker explained our rationale for not including them and Mary was satisfied. It was proposed that candles should be tested for stability while the candles are burning because burning may cause

asymmetry that could lead to instability. However, burning candles while tilting certainly will cause other problems for the burn procedure itself.

Health Canada proposed other criteria for which candles should be tested; specifically, spitting, smoldering, and sooting. Jim Becker asked if they had data indicating these were fire safety problems and they do not. They recommended safety requirements for accessories that are being dealt with in a separate standard under development. They recommended changing from periodic to continuous observations during testing. The Group's rationale of not wanting to place an unfair labor burden on small producers and concerns about putting people continuously in burn rooms satisfied them. They proposed that the ambient testing condition ranges were too wide and that "draft free" should be defined. The Group's rationale is that the conditions currently specified are more realistic for real-life burn conditions. They proposed a measurement frequency for flame heights. The Group has discussed this issue extensively and chosen not to do so because failures in many candles would be obvious from later observation, candles must still pass other requirements like secondary ignition, and the Group has a desire not to unduly increase the testing burden. Health Canada also proposed a fragrance percentage limit for gel candles, as well as other requirements. The Group believes these are design criteria that should be avoided in this standard.

George indicated that the Group should be more proactive in including Canada in the standards process and diligent in maintaining a dialog with them, as it would be better that any standards they develop are in line with this standard.

Jim Hoebel discussed developments on the American Fire Safety Act introduced by Senator Hollings for upholstered furniture, mattresses, candles, and cigarettes. Cigarettes are being dropped from the Act because they are being considered in separate legislation. ASTM PS-59 is referenced in the Act, and would become mandatory if the Act was adopted. The Senate Commerce Committee held hearings on July 14 for about 2 hours before Senators Smith and Hollings. CPSC testified that they were dissatisfied on the progress with upholstered furniture, and committed to developing proposed standards for furniture and mattresses. CPSC is satisfied with progress relating to candle safety. Representatives of trade groups for the target industries, including Bob Higgins of NCA, also testified, for the most part in opposition to adoption of the Act. Jim Hoebel believes that, if CPSC follows through on its promises, the Senate is unlikely to proceed further on the Act.

Thursday, August 5, 2004

Members of the Group introduced themselves, as there are new additions this morning.

The history of the development of the accessories standard was discussed. Members of the subgroup working on the standard were recognized.

Changes to the accessories standard since previous meetings were outlined. Bob Moss suggested in section 1.3 spelling out "laboratory". Jim Hoebel suggested striking that

sentence, and the Group agreed. The Group also believes that the word "safety" should be added between "minimum" and "requirements".

In Section 2.2.5, Bob questions why the term "afterglow" is defined when it is not used elsewhere. Afterglow can be an issue however, and would affect the rate of burn calculations. The decision on whether to retain the definition will be held over, pending the result of further discussions. Jim Hoebel suggests that the issue of afterglow may have been dealt with in development of the General Apparel Flammability Standard, and suggested that Allyson or others at CPSC should research how the situation was dealt with previously. There was discussion whether "combustible" material in Section 1.3 is the correct term to use. Bob Weitzel will do some research on this issue. The phrase "such as plastic or fabric" will be removed from section 1.3. Jim Hoebel suggested removing the entire part of the sentence prior to "precautions", and the Group agreed.

There was discussion whether to keep the definition of candle accessory contained in section 2.2.1 since the term is also defined in the candle terminology standard. However, the terminology standard is up for 5-year review, so the time is now to change the definition, as necessary. It was suggested to add "adapted" with "designed". Dave Buri suggested also "sold, displayed or marketed". Jeanne Weatherly suggested adding "surround, touch or hold". It was pointed out that things like packaging should not be considered accessories, so it was also suggested to revise to "burning candle". Bob Moss suggested "marketed" rather than "adapted". The Group decided on the definition "An object designed, intended, or marketed for use with a candle." Jim Becker will propose the change to the Terminology Task Group.

Because of the amount of discussion generated thus far, the Group needs to focus on the smaller points of revision to the standard by the subgroup. If the Group has suggestions for other changes, Jim Becker asks that members get those to him by September 10. The next Task Group meeting, scheduled now for October 13-14, will deal almost exclusively with the accessories standard point by point, so that it can be balloted by the end of the year.

Dave Buri asked if the standard applies to outdoor candles. Nothing in the standard currently excludes accessories used with outdoor candles. S.C. Johnson has a particular product to which the standard could well apply, but which cannot be foreseen to catch fire. Dave will try to draft language that would reasonably exclude his situation.

Discussion moved to section 4.1.10 and the following sections, and the 60-second provision. Jeanne is curious as to the justification for 60 seconds. Rob Harrington explained the thought process was that a problem burning candle is likely to be in contact with an accessory for a period of at least 60 seconds. George pointed out that our preference is really that an accessory should not burn at all, and as this is probably not practical, the test needs to be severe. Jim Becker will check with Dave Edinburn for his recollection of the justification for the 60-second specification.

Jeanne asked about the sample size specifications in 4.1.12. Other standards, like the toy standard, specify multiple samples. Jeanne asked if 4 samples would be statistically significant. She also points out that the Task Group avoided sample size specifications in the candle fire safety standard. Dave Fredrickson believes that more samples should probably be tested, and that the method should say 4 minimum. George agrees with Jeanne, and believes that each individual company must decide what level of testing is necessary to mitigate liability. Bob Wietzel agrees with Dave. Ken Blanchard pointed out that the danger of using a sample plan is that it allows a maximum number of acceptable failures. The consensus of the Group at the current time seems to be to go with 4 minimum. In section 5.2.1, strike "maximum 14".

Jeanne pointed out that, in section 4.1.12, each type of material needs to be tested as part of the finished accessory, not as a separate item. This modification will be made.

The verbiage of section 4.1.16 was discussed. Bob Moss wants to change "major axis" to "along direction of burn" or something similar. However, "major axis" may be appropriate for some items. The section probably needs to be split into two parts for circular and non-circular accessories.

Discussion moved to Section 5. The 3-inch burn rate was a compromise as some standards allow higher numbers (up to 6") and some people wanted lower numbers (particularly 0). Rob has a problem with the 6" specification. He conducted a lab test on a pad of notebook paper and it passed. Dave Fredrickson has previously suggested that smaller numbers would be appropriate, particularly 1 inch/minute. Jim Hoebel argued that the number is probably reasonable as a compromise with the goal of reducing fires. This item will be discussed further at the next meeting.

The document needs to be reviewed to provide consistency in accuracy between inches and millimeters (i.e. 3.0 inches = 76 mm).

Jim Becker wanted to discuss the addition of a section 10, Hazard Analysis. Dave Edinburn indicates this is a section increasingly being found in ASTM standards. Jim Hoebel asked whether the addition provides value to the producer of accessories in understanding the standard. Many in the Group indicate they do not understand it. Many feel it is upside down, as the process diagram flows from the bottom. Bob Moss does not believe it adds anything. Ken does see benefit as a quick summary, but should be reversed to top down flow. Jim Becker indicates the diagram needs to better reflect the process described in the document. The Group feels the section is not necessary.

Discussion moved to gel candles. Jim Becker summarized the history of actions to date. While fire incidence data indicates a disproportionate number of fire incidences related to gel candles, the Group has, to date, been unable to reproduce the indicated problems in the lab with testing suggested by gel manufacturers (i.e., using incompatible fragrances with low flash points, in candles conditioned at elevated temperatures). Schubert Pereira suggests the Group was "unlucky" in not seeing the problem. Heating/cooling cycles such as those found in unconditioned warehouses accentuate the problem. Also, since the

lab samples tested were not sealed, the more volatile components may have evaporated. Dave Fredrickson indicated that S.C. Johnson made a decision to make their recall a number of years ago based on data from the field – the incidence percentage was low enough that it was difficult to see in the laboratory. Both Dave Fredrickson and Schubert suggest that wick selection is critical, and that wicks used in wax candles are often not appropriate for gels. Schubert suggests that a gel standard should have a lower flame height requirement than for wax candles.

Ideally, the Group wants to perform testing that will eventually allow it to understand the failure modes for gel candles, aiding the development of provisions to reduce related fires. Dave Fredrickson suggests that gel candles should be dealt with in a different standard than candles with other fuels, particularly from a regulation enforcement standpoint.

Rich pointed out that further testing needs to involve other types of gels than those from Penreco, which may or may not have the same incidence of problems. The Group would like to rerun the previous tests with the conditioning and sealing additions suggested. Rich would also like to supply some additional fragrances for testing. Jim Becker will work with interested parties to move the testing forward.

Task Group Member Company Meeting Attendees

Wednesday, August 4, 2004

Jim Becker, Candle Solutions
Evelyn Bicknese, Bicknese & Bicknese and IGCA
Dave Buri, S.C. Johnson
Ed Calcote, Shell Oil Products US
Bill Comber, Libbey Glass
Thomas Dierker, Atkins & Pierce
Geoffrey Faires, Dial
Bill Hartke, MTL-ACTS Labs
Robert Harrington, Blyth Industries (Candle Corporation of America)
Jim Hoebel, consumer
Bob Moss, SEA Ltd.
George Pappas, Lumi-lite Candles
Rich Signorelli, Belmay
John Tedeschi, Bath & Body Works
Allyson Tenney, CPSC
Bob Weitzel, Ohio Fire Chiefs Association
Christy Wheeler, Atkins & Pierce
John Witham, Candle-lite

Thursday, August 5, 2004

All of the above, plus

Dave Fredrickson, consultant, former S.C. Johnson employee (via teleconference)
Jeanne Weatherly, Bath & Body Works
Schubert Pereira, Nature's Finest (Rug Doctor)
Ken Blanchard, IGCA
Tom Acklin, Autograph Foliages

Less

Bill Hartke
John Witham