

Unofficial Record of Change Proposals and their Disposition

NFPA Code 1125, A2011 Revision Cycle

NFPA Technical Committee on Pyrotechnics Meeting

Salt Lake City, Utah January 31 – February 2, 2010

Note: All dispositions are unofficial pending a post-meeting mail ballot

Log #CP1 Entire Document

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Review entire document to: 1) Update any extracted material by preparing separate proposals to do so, and 2) review and update references to other organizations' documents, by preparing proposal(s), as required.

Substantiation:

To conform to the NFPA Regulations Committee Projects

Action:

Accept

Log #CP3 7.6.1.1

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Add a new paragraph 7.6.6.1.

7.6.1 A model rocket motor shall contain no more than 62.5 g (2.2 oz) of propellant ~~materials~~.

7.6.1.1. A model rocket motor manufactured for sale to or use by individuals 18 years of age or older shall be permitted to contain no more than 125 gm (4.4 oz) of propellant.

Substantiation:

A 2009 revision to Federal Aviation Regulations (14 CFR 101.22) establishes the definition of "Class 1 – Model Rocket" as "an amateur rocket that uses no more than 125 grams (4.4 ounces) of propellant." The factors of rocket motor performance affecting consumer safety are total impulse and thrust, not propellant weight. The Consumer Product Safety Commission [16 CFR 1500.85(a)(8)(ii)] restricts the propellant mass of model rocket motors sold to children.

Action:

Accept

Log #CP4 7.6.2.1

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Remove the exception and change to paragraph 7.6.2.1.

7.6.2 A model rocket motor shall produce a total impulse less than 80 N-sec (17.98 lb-sec).

~~Exception: A model rocket motor manufactured for sale to or use by individuals 18 years of age or older shall be permitted to have a total impulse not in excess of 160 N-sec (36 lb-sec).~~

7.6.2.1 A model rocket motor manufactured for sale to or use by individuals 18 years of age or older shall be permitted to have a total impulse not in excess of 160 N-sec (36 lb-sec).

Substantiation:

This is a technical change that eliminates an exception to comply with NFPA code language formatting.

Action:

Accept

Log #CP5

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

3.3.25.4 Model Rocket Motor. A solid propellant rocket motor that has a total impulse of no greater than 160 N-sec (36 lb-sec), an average thrust of no greater than 80 N (18 lbf), ~~and a propellant weight of no greater than 62.5 g (2.2 oz)~~ and that otherwise meets the other requirements set forth in NFPA 1125, *Code for the Manufacture of Model Rocket and High Power Rocket Motors*.

Substantiation:

The certification standards for model rocket motors make it clear that only a solid propellant motor can be certified as a model rocket motor, but the code does not explicitly say this, so the status of hybrid motors is unclear. The factors of rocket motor performance affecting consumer safety are total impulse and thrust, not propellant weight. The propellant mass limitations have been addressed in 7.6.1. This more closely aligns the model rocket motor definition with NFPA proper code formatting

Action:

Accept

Log #CP6 3.3.25.2

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Change 3.3.25.2 to read:

3.3.25.2 High Power Rocket Motor. A rocket motor that has more than 160 N-sec but no more than 40,960 N-sec (9,209 lb-sec) of total impulse, or that produces an average thrust of greater than 80 N, or that contains greater than 62.5 g (2.2 oz) of propellant and does not otherwise meet all of the requirements for a model rocket motor set forth in NFPA 1125, *Code for the Manufacture of Model Rocket and High Power Rocket Motors*.

Substantiation:

This change clearly delineates between a model rocket motor and high power rocket motor. It ensures that a rocket motor that does not meet the strict requirements of a model rocket motor is automatically placed in the restricted use category of a high power rocket motor.

The current definition does not include English-unit equivalencies for some of its metric-unit values and is not consistent with the rest of this code.

Action:

Accept

Log #CP7 7.13.3

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

7.13.3 A rocket motor or motor reloading kit that is classified as high power shall be marked on its external packaging with the words "high power rocket motor" and "for sale only to certified users 18 years of age or older".

Renumber current paragraphs 7.13.3 and 7.13.4 after inserting this new paragraph.

Substantiation:

Of the 63 "G" power class (80 to 160 N-sec) motors that are certified today under NFPA 1125, 34 are classified as "high power" by virtue of some characteristic and 29 are classified as "model rocket". All "H" and larger motors are high power motors, and all "F" and smaller motors are currently model rocket motors. High power rocket motors require user certification to purchase or fly and may only be sold to those age 18 and older. Model rocket motors may be sold to non-certified consumers of any age in retail stores and flown with far fewer restrictions. Store owners and consumers cannot distinguish from current packaging whether a G motor is of a type whose purchase and use is restricted.

Action:

Accept

Log #CP8 7.13.4

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

7.13.4 A rocket motor or motor reloading kit that is classified as high power but has a total impulse of 160.0 N-sec or less shall be marked with a designation of "HP" preceding the motor type letter code.

Re-number current paragraphs 7.13.3 and 7.13.4 after inserting this new paragraph

Substantiation:

Of the 63 "G" power class (80 to 160 N-sec) motors that are certified today under NFPA 1125, 34 are classified as "high power" by virtue of some characteristic and 29 are classified as "model rocket". All "H" and larger motors are high power motors, and all "F" and smaller motors are currently model rocket motors. High power rocket motors require user certification to purchase or fly and may only be sold to those age 18 and older. Model rocket motors may be sold to non-certified consumers of any age in retail stores and flown with far fewer restrictions. This marking will permit rapid identification by users and range safety officers of whether a G or smaller motor is of a type where high-power range safety procedures must be employed for flight.

Action:

Accept

Log #CP9 7.7.2

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Change 7.7.2 to read:

7.7.2 A rocket motor that contains greater than ~~62.5 g (2.2 oz)~~ 125 g (4.4 oz) of propellant shall be classified as a high power rocket motor.

Substantiation

A 2009 revision to Federal Aviation Regulations (14 CFR 101.22) establishes the definition of "Class 1 – Model Rocket" as "an amateur rocket that uses no more than 125 grams (4.4 ounces) of propellant."

Action

Accept

Log #CP10 7.7.5.3

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Delete 7.7.5.3. Add a new 7.12.3 (10).

7.12.3 (10) If a motor or motor reloading kit uses a propellant that does not produce a minimum of ejected particles or sparks the manufacturer shall provide instructions with warnings of the additional fire hazards and the required precautions associated with operation of these motors.

Substantiation:

The current paragraph providing a requirement for text in instructions belongs in that section of the code that lists all other such requirements for instructions. The special instructions on extra operating hazards and precautions should be provided with any motor whose propellant incorporates Ti sponge or other materials designed to produce sparking effects.

Action

Accept

Log #CP11 7.7.5.1

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Correct the units in 7.7.5.1:

7.7.5.1 No Ti sponge particles shall be used that are larger than ~~42~~ 2380 microns (8 mesh).

Substantiation:

This corrects a technical error. 8 mesh is 2380 microns, not 12 microns.

Action

Accept

Log #CP12 7.4.1

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Change 7.4.1 to read:

7.4.1 A solid propellant rocket motor shall be designed and constructed so that the temperature of the external surface of the motor casing and fittings, if any, shall not exceed 200°C (392°F) for motors generating under 160N-sec of total impulse, and 220°C (428°F) for motors generating in excess of 160 N-sec, during or after operation.

Substantiation:

During certification testing of commercial motors, the National Association of Rocketry Standards & Testing Committee has found a small number of HPR motors that are generating temperatures at or near the 200°C limit currently specified. They requested the services of a professional metallurgist to review the properties of the 6061-T6 aluminum used in such casings, using ASTM and other peer-reviewed publications, to determine if allowing higher temperatures would be detrimental to the safety and reliability of the rocket motor casing. The results of this effort has indicated that exposure of a reloadable motor casing to temperatures of 225°C +/- 5°C for less than one hour will not adversely affect the long-term structural properties of the motor casing.

Action:

Accept

Log #CP13 8.1.8

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Add a new paragraph 8.1.8:

8.1.8 The certification testing of a user-selectable delay motor system shall require firing three motors at the maximum delay time, three motors at the minimum delay time permitted by the manufacturer's instructions, and at least three motors at an intermediate delay time. . Any user-adjustable delay reductions will be accomplished with the manufacturer's instructions and delay adjustment tool, if provided. When the manufacturer provides user-selectable alternate delay elements for the rocket motor, three of each of the alternate elements shall be tested. Each delay time must be in compliance with the error tolerance limits for individual delays as defined by 8.2.7(1)(b) of NFPA 1125.

Substantiation:

Several rocket motor manufacturers have introduced products that incorporate an adjustable delay time feature or separately-sold selectable delay elements and are therefore intended to be altered by the user prior to use, using manufacturer-provided components, instructions and/or tools. NFPA 1125 8.1.7 does not contain provisions to evaluate the accuracy of a user-adjustable delay to the requirement specified in NFPA 1125 8.1.7(1)(b).

Action:

Accept

Log #CP14 8.2.8

Submitter:

Technical Committee on Pyrotechnics

Proposal

Add a new 8.2.8 and renumber the subsequent paragraphs:

8.2.8 The certification testing of a user-selectable delay motor system shall require firing at least one motor at the maximum delay time, one motor at the minimum delay time permitted by the manufacturer's instructions, and at least one motor at an intermediate delay time. Any user-adjustable delay reductions will be accomplished with the manufacturer's instructions and delay adjustment tool, if provided. In the case where the manufacturer provides user-selectable alternate delay elements for the rocket motor, at least one of each of the alternate elements shall be tested. Each delay time must be in compliance with the error tolerance limits for individual delays as defined by 8.2.7(1)(b) of NFPA 1125.

Substantiation

Several rocket motor manufacturers have introduced products that incorporate an adjustable delay time feature or separately-sold selectable delay elements and are therefore intended to be altered by the user prior to use, using manufacturer-provided components, instructions and/or tools. NFPA 1125 8.2.7 does not contain provisions to evaluate the accuracy of a user-adjustable delay to the requirement specified in NFPA 1125 8.2.7(1)(b).

Action

Accept

Log #CP15 8.1.7 (1)(c)

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Change 8.1.7 (1)(c) to read:

Labeled value of average thrust shall be within 20 percent (or 10 Newtons, whichever is greater) of the average thrust that is computed by dividing the mean total impulse measured during propellant burn time by the mean propellant burn time.

Substantiation:

The current text of 8.1.7(1)(C) is a circular requirement that results in no enforceable requirement. Altering the requirement to those specified in section 8.2.7(1)(C), results in an enforceable requirement that does not adversely affect the current marking of any currently certified model rocket motor. The need for this change is based on a request by a motor manufacturer to mark a G class model rocket motor with an average thrust 20N less than the actual performance measured during certification testing.

Action

Accept

Log #CP16 3.3.9.1

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Change Table 7.4.3 to read:

Table 7.4.3 High Power Rocket Motor Casing Maximum Projection Distance

N-sec	Total Impulse lb-sec	Motor	Maximum Distance	
			m	ft
<u>0-160.00</u>	<u>0-36.0</u>	<u>G or smaller</u>	<u>15.0</u>	<u>50</u>
160.01-320.00	<u>36.1-72.0</u>	H	15.0	50

Substantiation:

High power motors may be under 160 N-sec; these motors need to have a casing maximum projection distance defined. The unit conversion from N-sec to lb-sec is now correct.

Action:

Accept

Log #1 3.3.25.4 Model Rocket Motor and 3.3.25.2 High Power Rocket Motor

Submitter:

Anthony J. Cesaroni, Cesaroni Technology Incorporated

Recommendation:

Action:

Reject

Substantiation:

The submitter's concerns are addressed in Log CP#2, Log CP#3, Log CP#4, and Log CP#5.

Log #4 2.3.1

Submitter:

Edward L. Cochran, Minneapolis, MN

Recommendation:

Title 27, Code of Federal Regulations, Part 555 Bureau of Alcohol, Tobacco, Firearms, and Explosives, U.S. Department of the Justice.

Substantiation:

Corrects Part number 55 to reflect revision to Part 555.

Action:

Accept

Log #6 4.3.1

Submitter:

Edward L. Cochran, Minneapolis, MN

Recommendation:

Revise text to read as follows:

4.3.1 Records shall be maintained in accordance with 27 CFR 555.

Substantiation:

Corrects Part number 55 to reflect revision to Part 555.

Action:

Accept

Log #9 5.4.1

Submitter:

Edward L. Cochran, Minneapolis, MN

Recommendation:

Revise text to read as follows:

5.4.1. Records shall be maintained in accordance with 27 CFR 555.

Substantiation:

Corrects Part number 55 to reflect revision to Part 555.

Action:

Accept

Log #10 **6.1.1**

Submitter:

Edward L. Cochran, Minneapolis, MN

Recommendation:

Revise text to read as follows:

6.1.1. Low explosives not exempt under 27 CFR 555 shall be stored only in a Type 1, 2, 3, or 4 magazine. They shall be so stored at all times unless in the process of manufacture, testing, packaging, or transport.

Substantiation:

Corrects Part number 55 to reflect revision to Part 555.

Action:

Accept

Log #11 **Table 6.1.2, Footnote**

Submitter:

Edward L. Cochran, Minneapolis, MN

Recommendation:

Revise text to read as follows:

Source: 27 CFR 555 (ATF regulations for the storage of explosive materials).

Substantiation:

Corrects Part Number 55 to reflect revision to Part 555.

Action:

Accept

Log #8 5.2.1

Submitter:

Edward L. Cochran, Minneapolis, MN

Recommendation:

Revise text to read as follows:

5.2.1. Any person engaged in the manufacture of composite propellant rocket motors, motor-reloading kits, or pyrotechnic modules shall possess a federal license ~~as if so required by 18 USC Chapter 40, Title XI, Regulation of Explosives of the Crime Control Act of 1970~~ as if so required by Title 27, Code of Federal Regulations, Part 555 and shall comply with all applicable federal, state, and local laws and regulations.

Substantiation:

Changed reference from 18 USC 40, which is reference in the definitions, to the more detailed regulations in 27 CFR 555.

Action:

Accept

Log #12 3.3.9.1 Low Explosive

Submitter:

Edward L. Cochran, Minneapolis, MN

Recommendation:

3.3.9.1 Low Explosive. Explosive materials that can be caused to deflagrate when confined (e.g., Black Powder, safety fuses, igniters, igniter cords, fuse lighters, and display fireworks defined as low explosives ~~by U.S. Department of Transportation regulations in 49 CFR 173 except for bulk salutes~~) by 27 CFR Part 555.202(b) Bureau of Alcohol, Tobacco, Firearms, and Explosives, implementing 18 USC Chapter 40 Title XI Regulation of Explosives of the Crime Control Act of 1970).

Substantiation:

Changes definition to refer to Title 27 CFR 555, which directly regulates manufacturing and storage of explosives, which is the focus of the NFPA code.

Action:

Accept in principle.

Substantiation:

We agree with the submitter but made the change from 555 to 555.202(b) to refer to the specific paragraph.

Log #13**4.13.5****Submitter:**

Edward L. Cochran, Minneapolis, MN

Recommendation:

Revise the text to read as follows:

4.13.5 The authority having jurisdiction for fire safety in the locality in which explosive materials are to be store shall be notified of the type, magazine capacity, and location of each site where such explosive materials are stored ~~in accordance with 27 CFR 55.20 (f)~~. The notification shall be made verbally before the end of the day and in writing within 48 hours of when storage has commenced in accordance with 27 CFR 555.201 (f), ~~in accordance with 27 CFR 55.20 (f)~~.

Substantiation:

Corrects Part number 55.20 to reflect revision to Part 555.201; clarifies text to be consistent with CFR 555.201

Action:

Accept

Log #7**Table 4.6.1****Submitter:**

Edward L. Cochran, Minneapolis, MN

Recommendation:

Revise text to read as follows:

Insert 1125_L7_Table 4.6.1 here

Substantiation:

Deletes the terms "Passenger" and "Public" form the table for consistency with the definitions in Chapter 3.

Action:

Accept

Log CP #16 Table 6.1.2

Submitter:

Technical Committee on Pyrotechnics

Recommendation:

Revise text to read as follows:

Insert 1125_L7_Table 6.1.2 here

Substantiation:

Deletes the terms "Passenger" and "Public" from the table for consistency with the definitions in Chapter 3.

Action:

Accept

Log #5 5.12.5

Submitter:

Edward L. Cochran, Minneapolis, MN

Recommendation:

Delete 5.12.5

~~5.12.5. The local fire authority shall be notified verbally before the end of the day and in writing within 48 hours of the commencement of storage of explosives in accordance with 27 CFR 55.202.~~

Substantiation:

Redundant with 4.13.5.

Action:

Reject.

Substantiation:

Although the words are identical, the requirement needs to be repeated for limited quantity manufacturing operations for composite propellant rocket motors.

Log #3 **7.12**

Submitter:

Ken Montanye, Smyrna, SC

Recommendation:

New text to read as follows:

Model rocket and high power motors and igniters shall include instructions in both English and Spanish.

Substantiation:

Safety with a growing number of consumers who speak Spanish. Having the instructions in both English and Spanish would give a better safety coverage.

Action:

Reject

Substantiation:

Such a proposal needs to be voluntary and left in the hands of the manufacturer. It is not appropriate as a code requirement.

Log #2 **8.1**

Submitter:

Ken Montanye, Smyrna, SC

Recommendation:

New text to read as follows:

Igniters shall be tested and certified to standards set forth by a recognized testing facility. A minimum of 10 percent of igniters manufactured shall be subject to testing.

Substantiation:

Safety—igniters represent a major component of model rocket and high power rocket motors, without these devices the motor would be useless. There are many types of launch controllers available and igniters should be tested as to their use with these controllers.

Action:

Reject

Substantiation:

The submitter has made an interesting proposal. Since the submitter did not provide sufficient language with testing criteria, this proposal will be further studied by the Committee.