



First Revision No. 1-NFPA 1125-2019 [Chapter 2]

Chapter 2 Referenced Publications

2.1 General.

The documents or portions thereof listed in this chapter are referenced within this code and shall be considered part of the requirements of this document.

2.2 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 10, *Standard for Portable Fire Extinguishers*, ~~2017~~ 2022 edition.

NFPA 70[®], *National Electrical Code*[®], ~~2017~~ 2020 edition.

NFPA 101[®], *Life Safety Code*[®], ~~2015~~ 2021 edition.

NFPA 400, *Hazardous Materials Code*, ~~2016~~ 2022 edition.

NFPA 704, *Standard System for the Identification of the Hazards of Materials for Emergency Response*, ~~2017~~ 2022 edition.

NFPA 1122, *Code for Model Rocketry*, ~~2013~~ 2018 edition.

NFPA 1127, *Code for High Power Rocketry*, ~~2013~~ 2018 edition.

2.3 Other Publications.

2.3.1 U.S. ~~US~~ Government Publications.

~~U.S.~~ US Government ~~Printing~~ Publishing Office, 732 North Capitol Street, NW, Washington, DC ~~20402~~ 20401-0001 .

Title 16, Code of Federal Regulations, Part 1500, Federal Hazardous Substances Act.

Title 16, Code of Federal Regulations, Parts 1500.85(8) and (9), Consumer Product Safety Commission (CPSC) Regulations.

Title 18, United States Code, Chapter 40, "Importation, Manufacture, Distribution, and Storage of Explosive Materials," 1970, revised 1990, 2002.

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

Title 29, Code of Federal Regulations, Part 1910.119.

Title 40, Code of Federal Regulations, U.S. EPA, Superfund Appropriation and Reauthorization Act (SARA), Title III.

Title 49, Code of Federal Regulations, Parts 100 ~~to end~~ –199 (Hazardous Materials Regulations, U.S. Dept. of Transportation).

DOT SP-7887, Special Permit Authorization to Title 49, Code of Federal Regulations, Parts 171–180.

2.3.2 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 495, *Explosive Materials Code*, ~~2013~~ 2018 edition.

NFPA 1122, *Code for Model Rocketry*, ~~2013~~ 2018 edition.

NFPA 1124, *Code for the Manufacture, Transportation, and Storage of Fireworks and Pyrotechnic Articles*, 2017 edition.

NFPA 1127, *Code for High Power Rocketry*, ~~2013~~ 2018 edition.

Submitter Information Verification

Committee: PYR-AAA

Submission Date: Thu Sep 26 15:58:33 EDT 2019

Committee Statement

Committee Statement: Updating reference standards to the most recent edition year.

Response Message: FR-1-NFPA 1125-2019



First Revision No. 6-NFPA 1125-2019 [Section No. 7.4.1]

7.4.1 Motor Casing Temperature Requirements.

7.4.1.1

A solid-propellant rocket motor shall be designed and constructed so that the temperature of the external surface of the rocket motor casing and fittings, if any, shall not exceed 200°C (392°F) for motors generating under 160 N-sec (36 lb-sec) of total impulse, and 220°C (428°F) for motors generating in excess of 160 N-sec (36 lb-sec), during or after operation.

7.4.1.2

An expendable solid-propellant rocket motor generating in excess of 80 N-sec (18 lb-sec) and using a non-metallic casing shall be permitted to have a maximum external casing temperature of up to 316°C (600°F).

Submitter Information Verification

Committee: PYR-AAA

Submittal Date: Mon Sep 30 14:49:38 EDT 2019

Committee Statement

Committee Statement: The temperature limit for external casings have been revised to allow for certification of long burn motors as their external case temperature is higher due to longer burn time. The committee is seeking additional comment, testing, or data to justify the 316 C temperature limit.

Response FR-6-NFPA 1125-2019

Message:

[Public Input No. 7-NFPA 1125-2019 \[Section No. 7.4.1\]](#)

[Public Input No. 8-NFPA 1125-2019 \[Section No. 8.1.7\]](#)

[Public Input No. 9-NFPA 1125-2019 \[Section No. 8.2.7\]](#)



First Revision No. 3-NFPA 1125-2019 [Section No. 8.1.6]

8.1.6

Any changes exceeding manufacturing tolerances made to the physical design or chemical composition of a model rocket motor, motor reloading kit, or component(s) by a manufacturer after certification testing shall be reported to the recognized testing organization that originally granted the certification prior to sale or shipment. If the changes potentially affect performance characteristics measured in the original certification testing, that testing organization shall be permitted to require that samples of the changed product and any supporting changes to the user instructions be submitted for testing.

Submitter Information Verification

Committee: PYR-AAA

Submittal Date: Mon Sep 30 12:42:05 EDT 2019

Committee Statement

Committee Statement: Changes in the performance characteristics are what affects the certification of the rocket motor and not other characteristics that do not affect performance.

Response Message: FR-3-NFPA 1125-2019

[Public Input No. 1-NFPA 1125-2019 \[Section No. 8.1.6\]](#)

**First Revision No. 7-NFPA 1125-2019 [Section No. 8.1.7]****8.1.7**

Before granting such certification, samples of a motor or reloadable motor system shall be examined as follows:

- (1) Static testing, conducted at or corrected to sea level and $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ($68^{\circ}\text{F} \pm 9^{\circ}\text{F}$), of a minimum of 10 samples to determine that total impulse, average thrust, and delay time comply with the following requirements:
 - (a) Standard deviation of the total impulse data shall be no greater than 6.7 percent of the mean measured value.
 - (b) No time delay shall be measured to have a variation greater than 1.5 seconds or 20 percent (whichever is greater, but not to exceed 3 seconds) from the labeled value.
 - (c) Labeled value of average thrust shall be within 20 percent [or 10 N (2.25 lbf), 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.
- (2) For metal-casing reloadable motors, rupture testing of one sample to ensure that the casing complies with the burst pressure requirements of 7.4.6 and longitudinal failure mode requirements of 7.4.4
- (3) Thermal testing to ensure that the casing temperature during and after static firing complies with 7.4.1
- (4) Heat sensitivity testing to ensure that the motor or motor-reloading kit complies with 7.1.2
- (5) Examination of the packaging, marking, and instructions to verify compliance with all provisions of 7.3 and 7.12 through 7.14

Submitter Information Verification

Committee: PYR-AAA

Submission Date: Mon Sep 30 14:54:01 EDT 2019

Committee Statement

Committee Statement: Cross referencing the relevant requirement sections for bursting pressure and the packaging, marking, and instructions.

Response Message: FR-7-NFPA 1125-2019

Public Input No. 5-NFPA 1125-2019 [Section No. 8.1.7]



First Revision No. 4-NFPA 1125-2019 [Section No. 8.2.6]

8.2.6

Any changes exceeding manufacturing tolerances made to the physical design or chemical composition of a high-power rocket motor, motor-reloading kit, or component(s) by a manufacturer after certification testing shall be reported to the recognized testing organization that originally granted the certification prior to sale or shipment. If the changes potentially affect performance characteristics measured in the original certification testing, that testing organization shall be permitted to require that samples of the changed product and any supporting changes to the user instructions be submitted for testing.

Submitter Information Verification

Committee: PYR-AAA

Submittal Date: Mon Sep 30 12:46:22 EDT 2019

Committee Statement

Committee Statement: Changes in the performance characteristics are what affects the certification of the rocket motor and not other characteristics that do not affect performance.

Response Message: FR-4-NFPA 1125-2019

[Public Input No. 2-NFPA 1125-2019 \[Section No. 8.2.6\]](#)

**First Revision No. 8-NFPA 1125-2019 [Section No. 8.2.7]****8.2.7**

Before granting such certification, samples of a high-power motor or reloadable motor system shall be examined as follows:

- (1) Static testing, conducted at or corrected to sea level and $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ($68^{\circ}\text{F} \pm 9^{\circ}\text{F}$), of two or more samples to determine that total impulse, average thrust, and delay time comply with the following requirements:
 - (a) Standard deviation of the total impulse data shall be no greater than 6.7 percent of the mean measured value.
 - (b) No time delay shall be measured to have a variation greater than 1.5 seconds or 20 percent (whichever is greater, but not to exceed 3 seconds) from the labeled value.
 - (c) Imprinted average thrust shall be within 20 percent [or 10 N (2.25 lbf), 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.
 - (d) Imprinted total impulse shall be the mean measured value.
- (2) For metal-casing reloadable motors, rupture testing of one sample to ensure that the casing complies with the burst pressure requirements of 7.4.6 and failure mode requirements of 7.4.3 and 7.4.4
- (3) Thermal testing to ensure that the casing temperature during and after static firing complies with 7.4.1
- (4) Heat sensitivity testing to ensure that the motor or motor-reloading kit complies with 7.1.2
- (5) Examination of the packaging, marking, and instructions to verify compliance with all provisions of Sections 7.3 and 7.12 through 7.14

Submitter Information Verification

Committee: PYR-AAA

Submittal Date: Mon Sep 30 14:56:47 EDT 2019

Committee Statement

Committee Statement: Cross referencing the relevant requirement sections for bursting pressure and the packaging, marking, and instructions.

Response Message: FR-8-NFPA 1125-2019

Public Input No. 4-NFPA 1125-2019 [Section No. 8.2.7]



First Revision No. 5-NFPA 1125-2019 [Section No. 8.3]

8.3 Listing of Certified ~~High-Power~~ Rocket Motors and Motor-Reloading Kits.

8.3.1

~~The authority having jurisdiction~~ The recognized testing organizations shall maintain a current and complete list listings of all ~~these high-power~~ rocket motors and motor-reloading kit types that ~~are they have~~ certified as complying with the standards and requirements detailed in Sections 8.1 and 8.2 and shall make copies of this list available to ~~citizens and public safety officials~~ those who request it.

8.3.2

Manufacturers and testing organizations shall provide information regarding user constraints, recalls, or additional manufacturer instructions for certified motors and motor-reloading kits on their websites or via telephone.

Submitter Information Verification

Committee: PYR-AAA

Submittal Date: Mon Sep 30 13:02:40 EDT 2019

Committee Statement

Committee Statement: This section applies to all rocket motors and AHJs are not the ones to maintain these lists, as that is the testing organizations responsibility.

Response Message: FR-5-NFPA 1125-2019

Public Input No. 3-NFPA 1125-2019 [Section No. 8.3]

Public Input No. 6-NFPA 1125-2019 [New Section after 8.3]



First Revision No. 2-NFPA 1125-2019 [Chapter D]

Annex D Informational References

D.1 Referenced Publications.

The documents or portions thereof listed in this annex are referenced within the informational sections of this code and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

D.1.1 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 99, *Health Care Facilities Code*, ~~2015~~ 2021 edition.

NFPA 220, *Standard on Types of Building Construction*, ~~2015~~ 2021 edition.

NFPA 495, *Explosive Materials Code*, ~~2013~~ 2018 edition.

NFPA 1122, *Code for Model Rocketry*, ~~2013~~ 2018 edition.

NFPA 1124, *Code for the Manufacture, Transportation, and Storage of Fireworks and Pyrotechnic Articles*, ~~2017~~ 2022 edition.

NFPA 1127, *Code for High Power Rocketry*, ~~2013~~ 2018 edition.

D.1.2 Other Publications.

D.1.2.1 ~~U.S.~~ US Government Publications.

~~U.S.~~ US Government ~~Printing Publishing~~ Office, 732 North Capitol Street, NW, Washington, DC ~~20402~~ 20401-0001.

ATF Ruling 2005-3, 27 CFR 555.11: Meaning of Terms, U.S. Bureau of Alcohol, Tobacco, and Firearms, November 2005.

Title 16, Code of Federal Regulations, Part 1500.83(a)(36).

Title 18, United States Code, Chapter 40, "Importation, Manufacture, Distribution, and Storage of Explosive Materials," 1970, revised 1990, 2002.

Title 49, Code of Federal Regulations, "Hazardous Materials Regulations," Parts 100–199.

D.2 Informational References. (Reserved)

D.3 References for Extracts in Informational Sections.

NFPA 495, *Explosive Materials Code*, ~~2013~~ 2018 edition.

NFPA 1122, *Code for Model Rocketry*, ~~2013~~ 2018 edition.

Submitter Information Verification

Committee: PYR-AAA

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Committee Statement

Committee Statement: Updating reference standards to the most recent edition year.

Response Message: FR-2-NFPA 1125-2019