

**Report of the Committee on
Pyrotechnics**

James K. Lathrop, Chair
Koffel Associates, Incorporated, CT [SE]

Kenneth L. Kosanke, Secretary
PyroLabs, Incorporated, CO [SE]

Thomas G. Arnold, Lancaster Bureau of Fire, PA [E]
Dane Boles, Quest Aerospace, Incorporated, AZ [M]
Richard Bowes, Natural Resources Canada, Canada [RT]
W. G. Bulifant, III, Dominion Fireworks, Incorporated, VA [U]
Jose R. Colon, Connecticut Department of Public Safety, CT [E]
 Rep. International Fire Marshals Association
John A. Conkling, Chestertown, MD [SE]
Randall W. A. Davidson, Risk International & Associates, Incorporated, CA [SE]
Vernon Estes, Canon City, CO [SE]
Gary A. Fadorsen, Pyrotech International Incorporated, OH [IM]
Phil Grucci, Fireworks by Grucci, Incorporated, NY [M]
Garry Hanson, Precocious Pyrotechnics, Incorporated, MN [M]
 Rep. National Fireworks Association
Julie L. Heckman, American Pyrotechnics Association, MD [M]
John Hendrick, Natural Resources Canada, Canada [E]
Lansden E. Hill, Jr., E. E. Hill & Son, Incorporated/Pyro Shows, TN [U]
Robert J. James, City of Bloomington, MN [E]
 Rep. Fire Prevention Code Committee
Bruce E. Kelly, Tripoli Rocketry Association, Incorporated, UT [U]
John Kitchens, City of Los Angeles Fire Department, CA [E]
Gerald R. Laib, US Department of the Navy, MD [SE]
Peter M. Lamb, Town of Newport Fire-EMS, NH [E]
Joshua Lazarus, State of New Jersey, NJ [E]
J. Patrick Miller, Hardin-Simmons University, TX [U]
 Rep. National Association of Rocketry
David J. Pier, MP Associates, Incorporated, CA [M]
Mary Roberts, Estes Industries, CO [M]
Gary C. Rosenfield, Industrial Solid Propulsion (ISP), UT [M]
David S. Shatzer, US Bureau of Alcohol, Tobacco, Firearms & Explosives, DC [E]
James R. Souza, Pyro Spectaculars, Incorporated, CA [U]
John R. Steinberg, Pyrotechnics Guild International, Incorporated, MD [U]
Lawrence Weinman, Luna Tech/Schneider-Weinman Consultants, TX [M]
Dan Westcott, Gadsden Fire Department, AL [E]
 Rep. NFPA Fire Service Section

Alternates

Arthur H. Barber, III, Springfield, VA [SE]
 (Alt. to Vernon Estes)
Scott Bartel, Black Sky Research, CA [U]
 (Alt. to Bruce E. Kelly)
Gary E. Brown, Pyro Spectaculars, Incorporated, CA [U]
 (Alt. to James R. Souza)
Kevin T. Brueckner, Fireworks and Stage FX America, Incorporated, CA [M]
 (Alt. to Garry Hanson)
Mark B. Bundick, First Chicago Capital Markets, IL [U]
 (Alt. to J. Patrick Miller)
Steve A. Coman, RES Specialty Pyrotechnics Incorporated, MN [U]
 (Alt. to John R. Steinberg)
Ettore Contestabile, Natural Resources Canada, Canada [RT]
 (Alt. to Richard Bowes)
H. Stephen Frantz, Western Enterprises, Incorporated, OK [U]
 (Alt. to Lansden E. Hill)
Felix J. Grucci, Jr., Fireworks by Grucci, Incorporated, NY [M]
 (Alt. to Phil Grucci)

Alfred J. Hogan, Reedy Creek Improvement District, FL [E]
 (Alt. to Peter M. Lamb)
Bonnie J. Kosanke, Journal of Pyrotechnics, Incorporated, CO [SE]
 (Alt. to Kenneth L. Kosanke)
Larry Mars, MP Associates, Incorporated, CA [M]
 (Alt. to David J. Pier)
Mark C. Orellana, Penn Township, Indiana Fire Department, IN [E]
 (Alt. to Jose R. Colon)
Brennan S. Phillips, US Department of Justice, WA [E]
 (Alt. to David S. Shatzer)
Gregg S. Smith, American Pyrotechnics Association, PA [M]
 (Alt. to Julie L. Heckman)
Bill Stine, Quest Aerospace, Incorporated, AZ [M]
 (Alt. to Dane Boles)
Tad A. Trout, American Promotional Events, Incorporated, CA [U]
 (Alt. to W. G. Bulifant)
Gerald D. Ward, Bethany Fire Protection District, IL [E]
 (Alt. to Dan Westcott)
Charles P. Weeth, Weeth & Associates, LLC, WI [SE]
 (Alt. to Gerald R. Laib)
William A. Weimer, B. J. Alan Company, OH [M]
 (Alt. to Lawrence Weinman)

Nonvoting

Matthew I. Chibbaro, US Department of Labor, DC [E]
 Rep. Occupational Safety & Health Administration
Joseph A. Domanico, US Department of the Army, MD [RT]
Mark W. Hagemann, US Department of Labor, DC [E]
 Rep. Occupational Safety & Health Administration
 (Alt. to Matthew L. Chibbaro)
Gary Zeller, Zeller International, NY

Staff Liaison: **Guy R. Colonna**

Committee Scope: This Committee shall have primary responsibility for documents on the manufacture, transportation, and storage of consumer and display fireworks, pyrotechnic special effects, and model and high power rocket motors. This Committee shall have primary responsibility for the use of display fireworks and for model and high power rocketry, and the construction, launching, and other operations that involve model and high power rocket motors. The Committee shall have primary responsibility for documents on the wholesale and retail sale and storage of consumer fireworks. The Committee does not have responsibility for documents on the use of consumer fireworks by the general public; on the use of pyrotechnic special effects before a proximate audience; on the manufacture, transportation, storage for use of military, automotive, agricultural, and industrial pyrotechnics.

This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the front of this book.

The Report of the Technical Committee on **Pyrotechnics** is presented for adoption.

This Report was prepared by the **Technical Committee on Pyrotechnics**, and proposes for adoption, amendments to NFPA 1125, **Code for the Manufacture of Model Rocket and High Power Rocket Motors**, 2001 edition. NFPA 1125-2001 is published in Volume 10 of the 2004/2005 National Fire Codes and in separate pamphlet form.

This Report has been submitted to letter ballot of the **Technical Committee on Pyrotechnics** which consists of 31 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.

1125-1 Log #1
(Entire Document)

Final Action: Reject

This Proposal appears as Comment 1125-2 (Log # 19) which was held from the A2001 ROC on Proposal 1125-110

SUBMITTER: Charles P. Weeth, Skyrockers of La Crosse, Inc.

RECOMMENDATION: Synchronize the manufacturing, storage and transportation code requirements and annex recommendations between NFPA 1124 and NFPA 1125. Use the same or similar definitions, structure, headings and order, tables, etc. in both documents for the same or similar issues. Address the most important conflicts as much as possible at this stage of the process, and hold the rest for further study.

In particular resolve the following that appear to address the same or similar issues but for some reason are different:

Definitions in NFPA 1125 that are not the same as in NFPA 1124
NFPA 1125 ROP Draft 3.1 Barricade and Screen Barricade, Explosive, Facility and Manufacturing Facility, Highway, Inhabited Building, Manufacture, Mixing Building, Nonprocess Building, Pressing System, Process Building, and Storage Building.

Definitions in NFPA 1124 that are not in NFPA 1125
NFPA 1124 ROP Draft 3.1. Black Powder, Bullet Sensitive Explosive Material, Code, Explosive Composition, Fuel, Mechanical Building, Motor Vehicle, Oxidizer, Process Area, Pyrotechnic Laboratory, Pyrotechnics, Shipping Building, and Unoccupied Building.

Code requirements in NFPA 1125 that are not the same as in NFPA 1124
NFPA 1125 ROP Draft 2.1.1, 2.1.2, 4.1, 4.2, 4.3, 4.5.3, 4.7, 4.8, 4.9.2.1, 4.9.3.1, 4.9.3.3, 6.2, 4.6, 6.1.2, 4-10, 4.12.7, 4.13.3.2, 4.13.1, 4.12.5, and 6.4.2
Code requirements in NFPA 1124 that are not in NFPA 1125

NFPA 1124 ROP Draft 1.1.8, 1.1.9, 1.1.10, 1.1.11, 4.4.2.1, 4.5.1, 4.5.2, 4.6.4, 4.6.6.2, 4.9, 4.10.4.2 to 4.10.4.10, 4.12, 4.13.5.3, 4.13.6, 4.14.3, 4.15.3, 4.16, 4.18, 5.1.1.2 to 5.1.1.4, and Chapter 8.

Annex recommendations in NFPA 1125 that are not the same as in NFPA 1124

NFPA 1125 ROP Draft A.3 Explosive, B.1, B.2, C.1.1, and C.1.2.1
Annex recommendations in NFPA 1124 that are not in NFPA 1125
NFPA 1124 ROP Draft A.3 Bullet Sensitive Material, Code, Nonprocess Building, Oxidizer, Process Building, Pyrotechnic Laboratory, A.4.6.2.2, A.4.10.3, A.4.10.4, A.4.13.3(c), A.5.4.2, A.5.4.3, A.5.6.3, A.6.1.4, A.6.4.5, A.6.4.11, Annex D Glossary, E.1.2.3, and Annex F.

Also resolve the apparent editorial differences between the code requirements and annex recommendations in the two documents that address the same issues.

NFPA 1125 ROP Draft 1.1.5, 1.2.1, 3.1 Magazine, 4.3.1, 4.5.2, 4.7.3, 6.3.1, 6.3.2.1, 6.3.2.2, 6.3.3, 6.3.4.1, 4.11.2 to 4.11.6, 4.12, 4.13.1, 4.14, 4.12.5.1, 6.4.1, 6.4.3, 6.4.1.1, 6.4.15, and B.3.

NOTE: Where heading numbers are provided, the heading titles and/or the subsequent code requirements or annex recommendations are the focus of the comparison.

SUBSTANTIATION: Most of the code requirements and annex recommendations for manufacturing, storage and transportation of low explosives are the same or are similar whether they are for fireworks or for rocket motors. The Committee should revise both documents so they are as consistent with each other as possible when the technical issues are the same or similar. The need to resolve these differences is important for code requirements and annex recommendations that are based on or that directly supplement federal regulations, especially 27 CFR, 29 CFR and 49 CFR.

COMMITTEE MEETING ACTION: Reject

COMMITTEE STATEMENT: The submitter did not provide specific code language for consideration by the Committee. The Committee notes that the submitter did not provide any specific direction.

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-2 Log #CP9
(1.1.7 (New))

Final Action: Accept

SUBMITTER: Technical Committee on Pyrotechnics

RECOMMENDATION: Add the following paragraph to Chapter 1:

1.1.7 This code shall not apply to the fabrication of model rocket motors or high power rocket motors by individuals for their personal use.

SUBSTANTIATION: This change clarifies that the code is not intended to apply to rocket motors built by users for their personal use.

COMMITTEE MEETING ACTION: Accept

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-3 Log #CP1
(Chapter 3 Definitions (GOT))

Final Action: Accept in Principle in Part

SUBMITTER: Technical Committee on Pyrotechnics

RECOMMENDATION: Adopt the preferred definitions from the NFPA Glossary of Terms for the following terms:

Commercial Manufacturer. (preferred) NFPA 1122, 2002, ed.
Any individual, firm, partnership, joint venture, corporation, or other business entity engaged in research, development, production, preparation, testing, maintenance, or supply of rockets, rocket motors, rocket propellant chemicals, rocket propellant, delay or ejection modules, or rocket components or parts.

Explosive. (secondary) NFPA 1125, 2001 ed.
Any individual, firm, partnership, joint venture, corporation, or other entity engaged as a licensed business in research, development, production, preparation, testing, maintenance, or supply of model and high power rockets, model and high power rocket motors, propellant, propellant chemicals, delay or ejection modules, or model and high power rocket components or parts.

Explosive. (preferred) NFPA 495, 2001, ed.
Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion.

Explosive. (secondary) NFPA 1125, 2001 ed.
Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion, including, but not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, and igniters; the term explosive includes any materials determined to be within the scope of Title 18, United States Code, Chapter 40, "Importation, Manufacture, Distribution, and Storage of Explosive Materials," and also includes any material classified as an explosive by the Hazardous Materials Regulations of the U.S. Department of Transportation.

Flight Cylinder. (preferred) NFPA 1127, 2002, ed.
A high-pressure container used in a hybrid rocket motor system to contain pressurized liquid or gas.

Flight Cylinder. (secondary) NFPA 1125, 2001 ed.
A high-pressure container used in a nitrous oxide hybrid rocket motor system to contain pressurized nitrous oxide.

Highway. (preferred) NFPA 502, 2001, ed.
Any paved facility on which motor vehicles travel.

Highway. (secondary) NFPA 1125, 2001 ed.
Any public street, public alley, or public road including a privately financed, constructed, or maintained road that is regularly and openly traveled by the general public.

Hybrid Rocket Motor. (preferred) NFPA 1127, 2002, ed.
A rocket motor that utilizes a fuel and an oxidizer in different physical states (solid, liquid, or gaseous).

Hybrid Rocket Motor. (secondary) NFPA 1125, 2001 ed.
A rocket motor in which the fuel exists in a different physical state (solid, liquid, or gaseous) than the oxidizer and that derives its force or thrust from the combination thereof.

Igniter. (preferred) NFPA 1126, 2001, ed.
An electrical, chemical, or mechanical device normally used to fire pyrotechnics.

Igniter. (secondary) NFPA 1125, 2001 ed.
A device containing a small quantity of igniting compound in contact with a bridge wire or resistance element used to ignite a rocket motor.

Inhabited Building. (preferred) NFPA 495, 2001, ed.
Any building or structure regularly used in whole or part as a place of human habitation.

Inhabited Building. (secondary) NFPA 1125, 2001 ed.
A building regularly occupied in whole or in part as a habitation for human beings, or any church, schoolhouse, railroad station, store, or other structure where people are accustomed to assembling.

Magazine. (preferred) NFPA 1124, 2003, ed.
A building or structure, other than an explosives manufacturing building, approved for the storage of explosive materials.

Magazine. (secondary) NFPA 1125, 2001 ed.
Any building or structure used exclusively for the storage of explosive materials that meets the requirements of 27 CFR 55.207-210.

Model Rocket Motor. (preferred) NFPA 1122, 2002, ed.
A 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.

Model Rocket Motor. (secondary) NFPA 1125, 2001 ed.

A rocket motor that has a total impulse of no greater than 160 N-sec, an average thrust of no greater than 80 N, and a propellant weight of no greater than 62.5 g (2.2 oz).

Module. (preferred) NFPA 1122, 2002, ed.

A pyrotechnic component of a reloadable model rocket motor in which the chemical composition is loaded into a finished assembly by the manufacturer.

Module. (secondary) NFPA 1125, 2001 ed.

A pyrotechnic component of a hybrid or reloadable rocket motor in which its chemical composition is preloaded into a finished assembly that does not necessitate mixing of ingredients by the user.

Natural Barricade. (preferred) NFPA 1124, 2003, ed.

A natural outdoor feature(s), such as hills or trees, with a density sufficient to prevent surrounding exposures that require protection from being seen from a magazine or building containing explosives when the trees are bare of leaves.

Natural Barricade. (secondary) NFPA 1125, 2001 ed.

Natural features of the ground, such as hills or timber of sufficient density that the surrounding exposures that require protection cannot be seen from the magazine or building containing explosives when the trees are bare of leaves.

Nonprocess Building. (preferred) NFPA 1124, 2003, ed.

An office building, a warehouse, or other building or area located in a manufacturing facility in which no fireworks, pyrotechnic or explosive composition, pyrotechnic articles, or components containing pyrotechnic or explosive materials are processed or stored.

Nonprocess Building. (secondary) NFPA 1125, 2001 ed.

Any office building, warehouse, or other building located in a rocket motor plant where no explosives are processed or stored.

Production Lot. (preferred) NFPA 1983, 2001, ed.

An identifiable series of products manufactured with identical design specifications and identical materials, and produced without any alterations to technique or procedure.

Production Lot. (secondary) NFPA 1125, 2001 ed.

A uniquely identifiable group of solid propellant model or high power rocket motors, motor-reloading kits, or pyrotechnic module(s) possessing the same characteristics resulting from production under common manufacturing conditions using the same batch of materials.

Railway. (preferred) NFPA 495, 2001, ed.

Any steam, electric, diesel electric, or other railroad or railway that carries passengers for hire on a particular line or branch in the vicinity of an explosives storage or manufacturing facility.

Railway. (secondary) NFPA 1125, 2001 ed.

Any steam, electric, diesel-electric, or other railroad or railway that carries passengers for hire on the particular line or branch in the vicinity of a rocket motor plant or storage facility.

Rocket Motor. (preferred) NFPA 1122, 2002, ed.

A device containing propellant that provides the force or thrust to cause a rocket to move.

Rocket Motor. (secondary) NFPA 1125, 2001 ed.

As used in this code, the term rocket motor means model rocket motor or high power rocket motor.

Sealed Flight Cylinder. (preferred) NFPA 1127, 2002, ed.

A flight cylinder used in a hybrid rocket motor system into which the pressurized liquid or gas can be loaded prior to launch and stored for an indefinite period.

Sealed Flight Cylinder. (secondary) NFPA 1125, 2001 ed.

A flight cylinder used in a nitrous oxide hybrid rocket motor system into which the nitrous oxide can be loaded prior to launch and stored for an indefinite period.

Solid Propellant Rocket Motor. (preferred) NFPA 1122, 2002, ed.

A rocket motor that contains a fuel and an oxidizer in solid form and whose force or thrust is produced by the combustion of the fuel and oxidizer.

Solid Propellant Rocket Motor. (secondary) NFPA 1125, 2001 ed.

A rocket motor containing a fuel and an oxidizer combined in a solid form and deriving its force or thrust from the combustion thereof.

Storage Building. (preferred) NFPA 1124, 2003, ed.

A building, structure, or facility in which consumer fireworks in any state of processing are stored, but in which no processing or manufacturing is performed.

Storage Building. (secondary) NFPA 1125, 2001 ed.

Any building or structure in the rocket motor plant in which model rocket motors or high power rocket motors in any state of processing or finished model rocket motors or high power rocket motors are stored, but in which no processing or manufacturing is actually performed.

Vented Flight Cylinder. (preferred) NFPA 1127, 2002, ed.

A flight cylinder used in a hybrid rocket motor system that continuously vents the pressurized liquid or gas to the atmosphere during the motor fill and ignition procedures.

Vented Flight Cylinder. (secondary) NFPA 1125, 2001 ed.

A flight cylinder used in a nitrous oxide hybrid rocket motor system that continuously vents nitrous oxide to the atmosphere during the motor fill and ignition procedure.

SUBSTANTIATION: Adoption of preferred definitions will assist the user by providing consistent meaning of defined terms throughout the National Fire Codes.

COMMITTEE MEETING ACTION: Accept in Principle in Part

The following actions are taken on the recommendation pertaining to coordinating definitions with the Glossary of Terms:

Commercial Manufacturer. (preferred) NFPA 1122, 2002, ed.

Any individual, firm, partnership, joint venture, corporation, or other business entity engaged in research, development, production, preparation, testing, maintenance, or supply of rockets, rocket motors, rocket propellant chemicals, rocket propellant, delay or ejection modules, or rocket components or parts.

Explosive. (preferred) NFPA 495, 2001, ed.

Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion.

Add annex material that goes with this definition also from NFPA 495 as shown:

A.3.3.x Explosive. A list of explosives determined to be within the scope of Title 18, United States Code, Chapter 40, is published at least annually by the Bureau of Alcohol, Tobacco, and Firearms, U.S. Department of the Treasury. The classification of explosives described in the "Hazardous Materials Regulations" of the U.S. Department of Transportation is provided in Annex E. These regulations were revised in 1991. The term includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, and igniters. The term includes any material determined to be within the scope of Title 18, United States Code, Chapter 40, "Importation, Manufacture, Distribution and Storage of Explosive Materials," and also includes any material classified as an explosive by the U.S. Department of Transportation, "Hazardous Materials Regulations," 49 CFR, 100-199.

Flight Cylinder. (preferred) NFPA 1127, 2002, ed.

A high-pressure container used in a hybrid rocket motor system to contain pressurized liquid or gas.

Retain secondary definition for highway.

Highway. (secondary) NFPA 1125, 2001 ed.

Any public street, public alley, or public road including a privately financed, constructed, or maintained road that is regularly and openly traveled by the general public.

Hybrid Rocket Motor. See Committee Action and Statement on Proposal 1125-6 (Log #CP6).

Igniter. Delete this definition.

Inhabited Building - accept the preferred definition, but retain the annex in existing NFPA 1125.

Inhabited Building. (preferred) NFPA 495, 2001, ed.

Any building or structure regularly used in whole or part as a place of human habitation.

Add annex to this definition as follows:

A.3.3.x Inhabited Building. This does not include any building or structure occupied in connection with a rocket motor plant.

Magazine. (preferred) NFPA 1124, 2003, ed.

A building or structure, other than an explosives manufacturing building, approved for the storage of explosive materials.

Model Rocket Motor. (preferred) NFPA 1122, 2002, ed.

A 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.

Retain Secondary definition for Module.

Module. (secondary) NFPA 1125, 2001 ed.

A pyrotechnic component of a hybrid or reloadable rocket motor in which its chemical composition is preloaded into a finished assembly that does not necessitate mixing of ingredients by the user.

Natural Barricade (preferred) NFPA 1124, 2003, ed.

A natural outdoor feature(s), such as hills or trees, with a density sufficient to prevent surrounding exposures that require protection from being seen from a magazine or building containing explosives when the trees are bare of leaves.

Retain secondary definition for Nonprocess Building.

Nonprocess Building. (secondary) NFPA 1125, 2001 ed.

Any office building, warehouse, or other building located in a rocket motor plant where no explosives are processed or stored.

Retain secondary definition for Production Lot.

Production Lot. (secondary) NFPA 1125, 2001 ed.

A uniquely identifiable group of solid propellant model or high power rocket motors, motor-reloading kits, or pyrotechnic module(s) possessing the same characteristics resulting from production under common manufacturing conditions using the same batch of materials.

<p>Retain secondary definition for Railway. Railway. (secondary) NFPA 1125, 2001 ed. Any steam, electric, diesel-electric, or other railroad or railway that carries passengers for hire on the particular line or branch in the vicinity of a rocket motor plant or storage facility.</p>	<p>Final Action: Reject</p>
<p>Rocket Motor. (preferred) NFPA 1122, 2002, ed. A device containing propellant that provides the force or thrust to cause a rocket to move. Accept preferred definition with editorial change as noted. Sealed Flight Cylinder (preferred) NFPA 1127, 2002, ed. A flight cylinder used in a hybrid rocket motor system into which the a pressurized liquid or gas can be loaded prior to launch and stored for an indefinite period. Solid Propellant Rocket Motor. (preferred) NFPA 1122, 2002, ed. A rocket motor that contains a fuel and an oxidizer in solid form and whose force or thrust is produced by the combustion of the fuel and oxidizer.</p>	
<p>Retain secondary definition for Storage Building. Storage Building. (secondary) NFPA 1125, 2001 ed. Any building or structure in the rocket motor plant in which model rocket motors or high power rocket motors in any state of processing or finished model rocket motors or high power rocket motors are stored, but in which no processing or manufacturing is actually performed. Accept preferred definition with editorial change as noted. Vented Flight Cylinder. (preferred) NFPA 1127, 2002, ed. A flight cylinder used in a hybrid rocket motor system that continuously vents the a pressurized liquid or gas to the atmosphere during the motor fill and ignition procedures.</p>	<p>Final Action: Accept</p>
<p>COMMITTEE STATEMENT: The Committee accepted the preferred definitions for Commercial Manufacturer, Explosive, Flight Cylinder, Inhabited Building, Magazine, Model Rocket Motor, Natural Barricade, Rocket Motor, Sealed Flight Cylinder, Solid Propellant Rocket Motor and Vented Flight Cylinder. Annex material was included with the preferred definitions for Explosive and Inhabited Building to clarify aspects of each definition. Editorial changes were made to Sealed Flight Cylinder and Vented Flight Cylinder to indicate that the pressurized liquid or gas was not limited to one material. The definition for Igniter was deleted as the term was not used in the body of the code. The definition for Hybrid Rocket Motor was modified by action of the Committee in Proposal 1125-6 (Log #CP6), which now permits the use of supplemental liquid fuels. The secondary definition for Highway was chosen as the preferred seems too broad and the secondary definition is based upon ATF regulations which are more applicable in this code. The secondary definition for Module was selected because the preferred is limited to model rocket motors only and NFPA 1125 is not limited. The secondary definitions for Nonprocess Building, Production Lot, Railway and Storage Building were retained as the preferred definitions for Nonprocess Building and Storage Building apply to fireworks which is not applicable in a rocketry code. The secondary definition for Railway is again based upon ATF regulations and therefore more applicable than the preferred definition. The Production Lot preferred definition is not applicable for rocketry purposes.</p>	
<p>NUMBER ELIGIBLE TO VOTE: 31 BALLOT RESULTS: Affirmative: 20 BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER</p>	<p>Final Action: Accept</p>
<p>1125-4 Log #4 (3.3 Loadable Rocket Motor (New))</p> <p>SUBMITTER: Gary C. Rosenfield, RCS Rocket Motor components RECOMMENDATION: Add new text as follows: Loadable Rocket Motor. A rocket motor that has been designed and constructed so that the user can load a single-use pressure-containing body or casing using the parts and components of a motor loading kit. SUBSTANTIATION: Definition is required to describe a new device that is being proposed by the author. COMMITTEE MEETING ACTION: Reject COMMITTEE STATEMENT: The definition is not required. NFPA 1125 already provides for the introduction of this new technology. NUMBER ELIGIBLE TO VOTE: 31 BALLOT RESULTS: Affirmative: 20 BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER</p>	

<p>1125-5 Log #5 (3.3 Motor Loading Kit (New))</p>	<p>Final Action: Reject</p>
<p>SUBMITTER: Gary C. Rosenfield, RCS Rocket Motor components RECOMMENDATION: Add new text to read as follows: Motor Loading Kit. A package designed by a commercial manufacturer that contains all the components and parts necessary to load a single-use loadable model or high power rocket motor casing. SUBSTANTIATION: Definition is required to describe a new device that is being proposed by the author. COMMITTEE MEETING ACTION: Reject COMMITTEE STATEMENT: The definition is not required. NFPA 1125 already provides for the introduction of this new technology. NUMBER ELIGIBLE TO VOTE: 31 BALLOT RESULTS: Affirmative: 20 BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER</p>	<p>Final Action: Accept</p>
<p>1125-6 Log #CP6 (3.3.26.3 Hybrid Rocket Motor)</p> <p>SUBMITTER: Technical Committee on Pyrotechnics RECOMMENDATION: Revise the definition as follows: 3.3.26.3 Hybrid Rocket Motor. A rocket motor in which one or more of the fuels exists in a different physical state (solid, liquid, or gaseous) different than the oxidizer and that derives its force or thrust from the combination thereof. SUBSTANTIATION: The changes in wording permit the inclusion of a supplemental liquid fuel in a hybrid high power rocket motor. COMMITTEE MEETING ACTION: Accept NUMBER ELIGIBLE TO VOTE: 31 BALLOT RESULTS: Affirmative: 20 BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER</p>	
<p>1125-7 Log #CP4 (3.3.26.7 Reloadable Motor System (New))</p> <p>SUBMITTER: Technical Committee on Pyrotechnics RECOMMENDATION: Add a new definition: 3.3.26.7 Reloadable Motor System. A combination of a reloadable rocket motor casing and a motor-reloading kit that are designed to be used together as a system. SUBSTANTIATION: This change provides a clarification that model rocket and high power rocket motor certification is the testing of a system, and not of the individual components or kits within that system. COMMITTEE MEETING ACTION: Accept NUMBER ELIGIBLE TO VOTE: 31 BALLOT RESULTS: Affirmative: 20 BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER</p>	<p>Final Action: Accept</p>
<p>1125-8 Log #CP10 (4.1.1)</p> <p>SUBMITTER: Technical Committee on Pyrotechnics RECOMMENDATION: Revise 4.1.1 as follows: 4.1.1 This Chapter shall only apply to the manufacture of any solid propellant rocket motor or motor reloading kit shall be conducted in accordance with this code. SUBSTANTIATION: The requirements in this Chapter were intended for regulating the hazards associated with the solid rocket fuel and not with the typical hazards associated with the manufacture of inert parts. COMMITTEE MEETING ACTION: Accept NUMBER ELIGIBLE TO VOTE: 31 BALLOT RESULTS: Affirmative: 20 BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER</p>	
<p>1125-9 Log #2 (5.8.5(f) (New))</p> <p>This Proposal appears as Comment 1125-19 (Log # 4) which was held from the A2001 ROC on Proposal 1125-102 SUBMITTER: C. James Cook, National Assoc. of Rocketry Stds & Testing Committee RECOMMENDATION: Add a new subsection to 5.8.5 as follows: (f) The certifying agency, using a published evaluation system and/or formal end-user failure reports, reports a problem within the scope of 5.8.5(a) through 5.8.5(e). SUBSTANTIATION: This codifies the mechanism to be used when NAR S&T determines a problem may exist. It is written to avoid capricious triggers, or word-of-mouth reporting.</p>	<p>Final Action: Reject</p>

COMMITTEE MEETING ACTION: Reject

COMMITTEE STATEMENT: Section 8.4 of the 2001 edition of the code currently addresses this recommendation. Decertification provides the certifying agencies the means to decertify a rocket motor or motor-reloading kit that no longer complies with the original certification or current certification criteria. The Committee feels the responsibility for how this is to be done resides with certifying agencies.

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-10 Log #3
(6.1.6(a)(3))

Final Action: Reject

This Proposal appears as Comment 1125-22 (Log # 5) which was held from the A2001 ROC on Proposal 1125-102

SUBMITTER: C. James Cook, National Assoc. of Rocketry Stds & Testing Committee

RECOMMENDATION: Revise text as follows:

6.1.6(a)(3) "Labeled average thrust shall be..."

SUBSTANTIATION: 6.1.6(a)(3) missing reference to label. Change brings code into line, like 6.1.6(a)(2) references labeled valve.

COMMITTEE MEETING ACTION: Reject

COMMITTEE STATEMENT: The Committee believes the accuracy of the labeled average thrust on a model rocket motor producing less than 20 Ns is not a safety issue. On the other hand, the Committee believes the labeling requirement for a high power rocket motor is necessary given the sizes of the rocket weights and motor total impulses.

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-11 Log #6

(Chapter 7 and Chapter 8)

Final Action: Reject

SUBMITTER: Gary C. Rosenfield, RCS Rocket Motor components

RECOMMENDATION: Add the words "loadable" or "loading" and the appropriate conjunction before the words "reloadable" and "reloading" everywhere the words "reloadable" or "reloading" are found in these chapters.

SUBSTANTIATION: Wording is necessary to include standards for loadable rocket motors.

COMMITTEE MEETING ACTION: Reject

COMMITTEE STATEMENT: The change in wording is not required. NFPA 1125 already provides for the introduction of this new technology, without this proposed revision.

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-12 Log #CP7

(7.5.1.2)

Final Action: Accept

SUBMITTER: Technical Committee on Pyrotechnics

RECOMMENDATION: Revise 7.5.1.2 as shown:

7.5.1.2 A hybrid propellant high power rocket motor shall use pressurized nitrous oxide as an oxidizer combined with one or more a separate solid fuels, one of which shall be solid.

Add a new 7.5.1.3 as shown and renumber remaining sections:

7.5.1.3 Only ethanol, methanol, or exclusive combination thereof shall be used in a hybrid propellant high power rocket motor that uses a supplemental liquid fuel.

SUBSTANTIATION: This allows for the inclusion of liquid fuels in hybrid high power rocket motors. The only liquids that have been tested sufficiently for use as fuel are ethanol, methanol, and mixtures of the two.

COMMITTEE MEETING ACTION: Accept

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-13 Log #7

(7.8.6.4)

Final Action: Accept

SUBMITTER: Gary C. Rosenfield, RCS Rocket Motor components

RECOMMENDATION: Revise text to read:

(4) If the time delay of any test item varies more than 1.5 seconds or 20 percent, whichever is greater, from the established mean time delay value of the rocket motor or motor-reloading kit. In no case shall this variation exceed 3 seconds."

SUBSTANTIATION: It is very difficult to maintain a time delay tolerance of +/- 1 second on some model and high power motors for a number of reasons including ignition transients, effect of motor temperature and pressure on delay burn rate, and exact determination of motor burnout. An extra 0.5 second tolerance will not affect safety.

COMMITTEE MEETING ACTION: Accept

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-14 Log #CP2

(7.12.3)

Final Action: Accept

SUBMITTER: Technical Committee on Pyrotechnics

RECOMMENDATION: Add the following to 7.12.3:

(9) If the casing of a reloadable motor is intended for limited use, the manufacturer shall state the maximum number of times the casing shall be permitted to be used.

SUBSTANTIATION: In the interest of user safety, the maximum number of times a limited use reloadable casing can be used must be included in the written instructions.

COMMITTEE MEETING ACTION: Accept

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-15 Log #CP3

(7.13)

Final Action: Accept

SUBMITTER: Technical Committee on Pyrotechnics

RECOMMENDATION: Revise text to read as follows:

7.13 Rocket Motor Marking.

7.13.1 A rocket motor or motor-reloading kit shall have imprinted on its external surface, casing, or wrapper, a recognized code indicating the nominal performance parameters - for example, "C6-5" [for a model rocket motor having a total impulse of 5.01 to 10.0 N-sec (1.1 to 2.2 pound-seconds), an average thrust of 6 N and a time delay of 5 seconds] or "5-second time delay module" (for a time delay module having a time delay of 5 seconds) - and the date of manufacture or equivalent coding.

Exception: If the size, shape, or surface of the rocket motor does not permit the required designation to be printed on it, then the equivalent coding shall be printed on the packaging.

7.13.2* Rocket motors, motor-reloading kits, and pyrotechnic components shall be marked with information complying with the Federal Hazardous Substances Act, 16 CFR 1500.

Exception: If the size, shape, or surface of the rocket motor does not permit the required designation to be printed on it, then the equivalent coding shall be printed on the packaging.

7.13.3 If the size of the rocket motor does not permit the required marking then the information required in 7.13.1 and 7.13.2 shall be printed on the packaging.

7.13.4 Reloadable motor casings that are intended for limited use shall be marked with the maximum number of times that the casing shall be permitted to be used.

SUBSTANTIATION: With the introduction of limited use reloadable casings, the manufacturer is now required to notify users as to the maximum number of times that the casing can be used. This improves the safe use of the product. The deletion of the applicability of this labeling requirement to include "shape and surface" reflects that as long as the motor is of sufficient size, that the label can be applied regardless of shape or surface.

Moving the exceptions to 7.13.3 complies with the Manual of Style.

COMMITTEE MEETING ACTION: Accept

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-16 Log #CP5

(8.1.1 and 8.2.1)

Final Action: Accept

SUBMITTER: Technical Committee on Pyrotechnics

RECOMMENDATION: Change 8.1.1 and 8.2.1 as follows:

8.1.1 A prerequisite for certification of a model rocket motor or reloadable motor system shall be the prior classification of the model rocket motor or the motor reloading kit used in the reloadable motor system by the U.S. Department of Transportation (DOT), or competent authority, as a Division 1.3 or 1.4 explosive, or a written acknowledgment from DOT, or one of its approved testing agencies, that the model rocket motor or motor-reloading kit is a flammable solid.

8.2.1 A prerequisite for certification of a high power rocket motor or reloadable motor system shall be the prior classification of the rocket motor or the motor reloading kit used in the reloadable motor system by the U.S. Department of Transportation (DOT), or competent authority, as a Division 1.3 or 1.4 explosive, or a written acknowledgment from DOT, or one of its approved testing agencies, that the high power rocket motor or motor-reloading kit is a flammable solid.

SUBSTANTIATION: This change provides a clarification that model rocket and high power rocket motor certification applies to the testing of a system, and not of the individual components or kits within that system.

COMMITTEE MEETING ACTION: Accept

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-17 Log #CP8
(8.1.6 and 8.2.6)

Final Action: Accept

SUBMITTER: Technical Committee on Pyrotechnics

RECOMMENDATION: Revise the following text as shown:

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 authority having jurisdiction, a recognized testing organization, or both, that originally granted the certification prior to sale or shipment. If the changes potentially affect characteristics measured in the original certification testing, that testing organization shall be permitted to require that samples of the changed product be submitted for testing.

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 authority having jurisdiction, a recognized testing organization, or both, that originally granted the certification prior to sale or shipment. If the changes potentially affect characteristics measured in the original certification testing, that testing organization shall be permitted to require that samples of the changed product be submitted for testing.

SUBSTANTIATION: This change clarifies the procedures to be followed by the testing organizations when a major change is made to the performance of a certified rocket motor or motor reloading kit.

COMMITTEE MEETING ACTION: Accept

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-18 Log #8
(8.1.7(b))

Final Action: Accept

SUBMITTER: Gary C. Rosenfield, RCS Rocket Motor components

RECOMMENDATION: Revise text to read as follows:

(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.”

SUBSTANTIATION: It is very difficult to maintain a time delay tolerance of +/- 1 second on some model and high power motors for a number of reasons including ignition transients, effect of motor temperature and pressure on delay burn rate, and exact determination of motor burnout. An extra 0.5 second tolerance will not affect safety.

COMMITTEE MEETING ACTION: Accept

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER

1125-19 Log #9
(8.2.7(b))

Final Action: Accept

SUBMITTER: Gary C. Rosenfield, RCS Rocket Motor components

RECOMMENDATION: Revise text to read as follows:

(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.”

SUBSTANTIATION: It is very difficult to maintain a time delay tolerance of +/- 1 second on some model and high power motors for a number of reasons including ignition transients, effect of motor temperature and pressure on delay burn rate, and exact determination of motor burnout. An extra 0.5 second tolerance will not affect safety.

COMMITTEE MEETING ACTION: Accept

NUMBER ELIGIBLE TO VOTE: 31

BALLOT RESULTS: Affirmative: 20

BALLOT NOT RETURNED: 11 ARNOLD, BOWES, BULIFANT, COLON, CONKLING, FADORSEN, GRUCCI, HANSON, HENDRICK, LAIB, PIER