

NFPA[®]

1127

**Code for
High Power Rocketry**

2018



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NFPA® 1127

Code for

High Power Rocketry

2018 Edition

This edition of NFPA 1127, *Code for High Power Rocketry*, was prepared by the Technical Committee on Pyrotechnics. It was issued by the Standards Council on October 10, 2016, with an effective date of October 30, 2016, and supersedes all previous editions.

This edition of NFPA 1127 was approved as an American National Standard on October 30, 2016.

Origin and Development of NFPA 1127

Starting in 1978, the technical progress in solid propellant rocket motors, rocket airframe materials, bonding agents, and construction techniques has given rise to a new form of nonprofessional rocketry based on model rocketry but using larger and more powerful commercially made solid propellant rocket motors in larger and heavier rocket airframes. This new activity was called high power rocketry. Flying activities now take place throughout the United States in locations where the authority having jurisdiction permits the activity and where the Federal Aviation Administration (FAA) grants waivers to Part 101 of the “Federal Aviation Administration Regulations.” After more than two decades of operational experience, safety rules, operational procedures, and other facets of the activity have been worked out and tested. Since 1986, the Tripoli Rocketry Association, Inc., has worked with the National Association of Rocketry, with longtime representation on the NFPA Technical Committee on Pyrotechnics. Both organizations have contributed to the development of national standards.

NFPA 1127 contains instructional guidelines and specific requirements for the design, construction, limitation of charge and power, and reliability of all high power rocket motors manufactured for sale to users; for the qualification and certification of users; for the design and construction of high power rockets propelled by these motors; and for the conduct of tests, launchings, and other operations involving rockets so that hazards are minimized.

The NFPA Technical Committee on Pyrotechnics believes that a separate NFPA code for high power rocketry is essential because of significant differences in operations and to prevent confusion of the two activities in the minds of public safety officials. High power rocket activities should be allowed within the requirements of this code so that science-minded citizens can enjoy the activity safely.

The 1998 edition included a completely revised Chapter 3 that incorporated requirements and safety provisions for hybrid motor technology. The committee also created a table of clearance distances to promote fire safety in the vicinity of the launch pad. Chapter 5 was revised to be consistent with federal regulations for the storage of low explosives (high power rocket motors and motor reloading kits).

The 2002 edition presented a reorganized document in order to correlate this code with NFPA 1122, *Code for Model Rocketry*, and NFPA 1125, *Code for the Manufacture of Model Rocket and High Power Rocket Motors*. Requirements applicable to high power rocket motor manufacturing, motor testing, and certification were moved to NFPA 1125. The document was also revised to comply with NFPA style.

The 2008 edition presented amendments based upon findings outlined in a study by the National Association of Rocketry on the safety of sport rocketry. The revisions addressed improvements to rocket recovery, launch guidance devices, launch site specifications, and spectator clearance distances. The National Association of Model Rocketry’s *High Power Rocket Safety Code* was added as an annex. The Committee also revised definitions to comply with the NFPA Glossary of Terms.

The 2013 edition updated federal regulation citations and references, and editorial corrections were made to Table 4.15.1 and Table 4.16.3. The definitions of *rockets* and *rocket motors* were modified to be consistent with changes made to definitions in NFPA 1125, Code for the *Manufacture of Model Rocket and High Power Rocket Motors*. Limitations were placed on arming of firing systems, to ensure safety before placement and after removal of rockets from launch pads. Limitations also were placed on personnel permitted to be at the launch pad during firing. Separation distances were established for simultaneous launches of multiple high power rockets. Criteria were provided to guide alterations to reloadable high power rockets motors in order to maintain motor certification. The code also clarified the type of storage magazine required for storage of rocket motors, motor reloading kits, and pyrotechnic modules.

The 2018 edition allows for the installation of an ignition device into a vented hybrid rocket motor at any time, recognizing that there is no hazard until the vented hybrid rocket motors are filled with oxidizer and that this type of motor has been certified for some time.

The 2018 edition also contains an update in Annex B to the National Association of Rocketry's *High Power Model Rocket Safety Code* to the current 2012 edition.

Technical Committee on Pyrotechnics

Glenn A. Dean, *Chair*

Virginia Department of Fire Programs, VA [E]
Rep. International Fire Marshals Association

Gregory S. Altland, City of York Fire/Rescue Services, PA [E]

Arthur H. Barber, III, Springfield, VA [U]
Rep. National Association of Rocketry

Richard Bowes, Natural Resources Canada, Canada [RT]

W. G. Bulifant, III, Dominion Fireworks, Inc., VA [U]

Anthony J. Cesaroni, Cesaroni Technology Inc., FL [M]

John A. Conkling, Chestertown, MD [SE]

Randall W. A. Davidson, Risk International & Associates, Inc., CO [SE]

Burl Finkelstein, Kason Industries, Inc., GA [SE]

Phil Grucci, Fireworks by Grucci, Inc., NY [M]

Garry Hanson, Precocious Pyrotechnics, Inc., MN [M]
Rep. National Fireworks Association

Julie L. Heckman, American Pyrotechnics Association, MD [M]
Rep. American Pyrotechnics Association

Lansden E. Hill, Jr., E. E. Hill & Son, Inc./Pyro Shows, TN [U]

Edward J. Kaminski, Clark County Fire Prevention Bureau, NV [E]

Stephen Lubliner, Tucson, AZ [SE]

Mike O'Lena, U.S. Bureau of Alcohol, Tobacco, Firearms & Explosives, AL [E]

Daniel P. Peart, B. J. Alan Company, OH [M]

David J. Pier, MP Associates, Inc., CA [M]

Sean Ramsey, U.S. Coast Guard, DC [E]

Rachel Robbins, Natural Resources Canada, Canada [E]

Mary Roberts, Estes Industries, CO [M]

John D. Rogers, American Fireworks Standards Laboratory, MD [RT]

Gary C. Rosenfield, RCS Rocket Motor Components, Inc./Survival Laser, Inc., UT [M]

James R. Souza, Pyro Spectaculars, Inc., CA [U]

John R. Steinberg, Pyrotechnics Guild International, Inc., MD [U]
Rep. Pyrotechnics Guild International, Inc.

Charles P. Weeth, Weeth & Associates, LLC, WI [SE]

Darren Wright, Tripoli Rocketry Association, DE [U]

Christopher T. Wyman, New Hampshire State Fire Marshal's Office, NH [E]
Rep. National Association of State Fire Marshals

Marge Yarbrough, California State Fire Marshal, CA [E]

Tony Zmorski, Walt Disney World, FL [U]

Alternates

Karl E. Baumann, RCS Rocket Motor Components, Inc., UT [M]
(Alt. to Gary C. Rosenfield)

Gary E. Brown, Pyro Spectaculars, Inc., CA [U]
(Alt. to James R. Souza)

Edward L. Cochran, Minneapolis, MN [U]
(Alt. to Arthur H. Barber, III)

Albert M. Comly, Jr., Lower Gwynedd Township, PA [E]
(Voting Alt.)

Chad Deardorff, City of York Fire/Rescue Services, PA [E]
(Alt. to Gregory S. Altland)

Jerald E. Farley, American Promotional Events, Inc., WA [M]
(Alt. to David J. Pier)

H. Stephen Frantz, Pyro Shows of Texas, Inc., TX [U]
(Alt. to Lansden E. Hill, Jr.)

Felix J. Grucci, Jr., Fireworks by Grucci, Inc., NY [M]
(Alt. to Phil Grucci)

Raechelle K. Laughlin, B. J. Alan Company, OH [M]
(Alt. to Daniel P. Peart)

Joshua Lazarus, J Lazarus Consulting & Training, LLC, NJ [SE]
(Alt. to Charles P. Weeth)

Jeroen Louwers, Cesaroni Technology Inc., Canada [M]
(Alt. to Anthony J. Cesaroni)

Paul G. Makuc, Connecticut State Police, CT [E]
(Alt. to Christopher T. Wyman)

Daryl Marmon, Wald-All American Fireworks, KS [U]
(Alt. to John R. Steinberg)

Craig A. Meyers, Clark County Fire Department, NV [E]
(Alt. to Edward J. Kaminski)

Andrew T. Nicholls, Orlando Special Effects, Inc., FL [M]
(Alt. to Garry Hanson)

Steven Sites, Virginia State Fire Marshals Office, VA [E]
(Alt. to Glenn A. Dean)

Gregg S. Smith, American Pyrotechnics Association, PA [M]
(Alt. to Julie L. Heckman)

Shawn C. Stevens, U.S. Bureau of Alcohol, Tobacco, Firearms & Explosives, AL [E]
(Alt. to Mike O'Lena)

Tad A. Trout, American Promotional Events, Inc., CA [U]
(Alt. to W. G. Bulifant, III)

Marie Vachon, Natural Resources Canada, Canada [E]
(Alt. to Rachel Robbins)

Bert von Rosen, Natural Resources Canada, Canada [RT]
(Alt. to Richard Bowes)

Graham Walsh, Safety Consulting Engineers, Inc., IL [SE]
(Alt. to John A. Conkling)

Gerard W. Wingard, American Fireworks Standards Laboratory, SC [RT]
(Alt. to John D. Rogers)

Nonvoting

Demar Granados, U.S. Consumer Product Safety Commission, MD [C]

Mark Hagemann, U.S. Department of Labor, DC [E]

Nancy Pearce, NFPA Staff Liaison

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