

# EL DORADO COUNTY REGIONAL FIRE PROTECTION STANDARD



## Permit Requirements for Model Rocket Operations

STANDARD #H-004

EFFECTIVE 06-30-09

REVISED 7-20-17

### PURPOSE

This standard is intended to provide the permit requirements and safety directives for the operations of Model Rockets within the boundaries of the Fire Departments of El Dorado County.

### SCOPE

This Standard shall pertain to all individuals who plan to possess, test fire or launch model rockets within the jurisdictional boundary of your local Fire Department. Model rocketry can be fun and educational, however, testing or launching these devices can also cause fires that place lives and property at risk. Anyone wishing to test fire or launch model rockets is required to apply for a permit with the local Fire Department and conform to specific requirements. These requirements include specific limitations pertaining to various age groups, times of year and locations. The local Fire Department does not approve specific locations for use as a model rocket launching site. Meeting the site conditions listed on the permit application is the responsibility of the permit holder. The permit is not valid without the written permission of the property owner of the launch site. Model rocket safety is extremely important, especially since many of the users of model rockets are children. The local Fire Department will strictly enforce all laws, both state and local, which pertain to the safe handling, use or sale of model rocket engines.

### AUTHORITY

The California State Fire Marshal regulates the use of model rockets under the California Fire Code (CFC). The CFC gives the authority to the local Fire Department to grant a permit to use model rockets within the area governed by the local Fire Department. It is illegal to launch a model rocket without a permit from the local Fire Department. 2016 California Fire Code, Title 19 California Code of Regulations, NFPA 1122

### DEFINITIONS

For the purposes of this standard, certain terms and words are defined as follows:

**Model Rocket:** any toy or educational device which weighs not more than 1500 grams (53 ounces), at liftoff, including rocket propellant, including the motor, and any payload, which is propelled by model rocket motors, or no more than the manufacturer's recommended maximum

lift off weight. A model rocket's structural parts, including the body, nose cone, and fins, shall be made of paper, wood, or plastic and shall contain no substantial metal parts.

**Model Rocket Motor:** commercially manufactured, non-reusable rocket propulsion device which is constructed of a nonmetallic casing and solid propellant, wherein all of the ingredients are self-contained so as not to require mixing or handling by the user and which have design and construction characteristics determined by the State Fire Marshal to provide a reasonable degree of safety to the user. For the purpose of this Standard, model rocket motors shall not contain more than 126 grams (4.4 ounces) of propellant.

**Classification and Labeling:** Individual engines shall bear the California State Fire Marshal seal and the registration number of the licensee.

**Model Rocket Engine:** For the purpose of this standard the term Model Rocket Engine shall be the same as Model Rocket Motor defined above.

### **PERMIT CONDITIONS:**

- No model rocket user shall launch any model rocket from any site in the local Fire Department jurisdiction without first obtaining a permit from the fire code official.
- The Fire Marshal or Designated Representative, shall issue all model rocket permits.
- The issued model rocket permit shall authorize the use of commercially prepared model rocket motors bearing an approved seal of the State Fire Marshal only.
- The permit authorizes use of model rocket motor sizes: ¼ A, ½ A, A, B, C, and D.
- The local fire department does not provide approval for any specific site in the AHJ. Written permission from the property owner must be documented on the permit before it is valid.
- When kept in any dwelling, apartment house, lodging house or hotel, model rocket motors shall be stored in a stout wooden box or equivalent container. Storage of over 25 pounds shall be in a Class II magazine or an approved location by the AHJ.
- If a fire official determines that any condition of the permit has been violated, it shall be just cause for the revocation of the permit.
- The local Fire Department permits shall be valid only from November 1<sup>st</sup> of one year to April 30<sup>th</sup> of the next year.
- (A) In General. -- Notwithstanding any other provision of law relating to the incorporation of unmanned aircraft systems into Federal Aviation Administration plans and policies, including this subtitle, the Administrator of the Federal Aviation Administration may not promulgate any rule or regulation regarding a model aircraft, or an aircraft being developed as a model aircraft, if—
  - (1) the aircraft is flown strictly for hobby or recreational use;
  - (2) the aircraft is operated in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization;

- (3) the aircraft is limited to not more than 55 pounds unless otherwise certified through a design, construction, inspection, flight test, and operational safety program administered by a community-based organization;
  - (4) the aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft; and
  - (5) when flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower (when an air traffic facility is located at the airport) with prior notice of the operation (model aircraft operators flying from a permanent location within 5 miles of an airport should establish a mutually-agreed upon operating procedure with the airport operator and the airport air traffic control tower (when an air traffic facility is located at the airport)).
- (B) Statutory Construction. -- Nothing in this section shall be construed to limit the authority of the Administrator to pursue enforcement action against persons operating model aircraft who endanger the safety of the national airspace system.
  - (C) Model Aircraft Defined. -- In this section, the term "model aircraft" means an unmanned aircraft that is—
    - (1) capable of sustained flight in the atmosphere;
    - (2) flown within visual line of sight of the person operating the aircraft; and
    - (3) flown for hobby or recreational purposes.

**Launch Supervision:**

- Age Restrictions: Model rocket motors shall not be sold, given or delivered to any person under 18 years of age with the exception that motors bearing the standardized motor coding 1/4A, 1/2A, A, or B, C, and D may be sold to any person 14 years of age or older.
- Children 12 years of age or older who are taking part in a model rocket education program may receive model rocket motors and launch approved model rocket motors when under the direct supervision and control of a person 18 years of age or older. The approved model rocket motor must be obtained only from the adult in charge of the launching. Rocket motors for this exception are limited to engine coding 1/4 A, 1/2 A, A, B, C and D.
- A model rocket user is prohibited from selling motors in his possession to any other person. The user shall keep all model rocket motors in his possession from the time of purchase to the time when the motor is installed in the model rocket during the preparation for firing.

**Storage: When kept in any dwelling, apartment house, lodging house or hotel, model rocket motors shall be stored in a stout wooden box or equivalent container. Storage of over 25 pounds shall be in a Class II magazine or an approved location by the AHJ.**

### **Launch Site Safety:**

- The Permit Holder listed on the permit shall be responsible for the safety of all spectators and other persons connected with the firing of model rockets and shall supervise the arming of the rocket with the rocket motor and the firing and disposing of all unfired or defective rocket motors.
- Before a model rocket motor may be tested or fired, its exhaust path shall be cleared of all flammable and combustible materials and objects prior to the igniting of such motor.
- Persons who conduct, participate in, or observe the testing or firing of a model rocket motor shall maintain a safe distance from such motor, particularly its exhaust path.

### **Launch Sites:**

It shall be the responsibility of the model rocket permit holder to secure written permission from the property owner of any site used to launch a model rocket. This permit is not valid without completing the following: property owner name, property address, property owner signature.

Launch sites shall meet the following requirements:

- A launch site shall consist of a firing area and a recovery area.
- The firing area is that area immediately surrounding the launching devices within a radius of 10 feet (20 feet in diameter). The launch device shall be located in the center of the firing area.
- The outside edge of the firing area shall not be closer than 25 feet to the boundary of the launch site.
- The recovery area shall include the firing area and the minimum area determined necessary to retrieve the launched rocket. This minimum area shall be based upon the estimated height achieved by the model rocket.
- Launch sites shall not be located in grain fields, dry grass, brush or forest covered lands.
- Launch sites shall not include any buildings or structures.
- Launch sites shall not be operated in a manner that creates a hazard to persons or property.
- Launch sites shall not contain or be located near any high voltage lines, major highways or any other high hazard obstacles.

### **Launching Requirements:**

No launching of model rockets shall take place unless all the following conditions are met:

- Model rockets shall be launched only during daylight hours.

- Model rockets shall only be launched during the period of time beginning November 1<sup>st</sup> of one year and April 30<sup>th</sup> the following year.
- Surface wind at the launch site shall not exceed 20 mph and vertical visibility from the firing area shall be at least 5,000 feet.
- A stable launching platform with a guide (tube, wire, or other suitable device) shall be used to restrict the horizontal motion of the rocket until sufficient flight velocity is achieved to maintain stability during flight.
- To prevent accidental eye injury, the launcher shall be placed so that the guide tube or wire is above eye level or the end shall be capped whenever people are near the launch platform.
- Model rocket motor ignition shall be by remote electrical means only and properly supervised by the permit holder.
- A launching angle of not more than 30 degrees vertical shall be used.
- The recovery device material (parachute or other) ejected from the rocket during the launch-flight sequence shall be of flame resistant material per Title 19.
- All personnel conducting the firing shall maintain a clear distance of 30 feet minimum from the launch platform during countdown and firing. All personnel assisting or observing the firing shall maintain a clear distance of 50 feet minimum from the launch platform during countdown and firing.

### **Testing Requirements:**

Model rocket motors may be fired on the ground for the purpose of determining performance.

Testing locations shall conform to the following minimum conditions:

- The model rocket motor shall be affixed to a testing device or to an immovable structure in such a manner that the motor may not become free during the conduct of such test or experiment.
- The model rocket motor shall be ignited only by remotely operated electrical means fully under the control of the person conducting the test.
- The model rocket motor exhaust and ejecta shall be controlled to prevent any hot materials, sparks, embers or other burning materials from landing on or near combustible vegetation, structures, or materials or leaving the property.
- When tests are conducted indoors, each model rocket engine tested shall be in a closed noncombustible hood or booth with a vent that shall lead directly to the outside of the building. The model rocket motor exhaust and ejecta discharged from the building shall be controlled to prevent any hot materials, sparks, embers or other burning materials from *landing on or near combustible vegetation, structures, or materials.*

**FIGURE 1 - (Table 4.9 NFPA 1122)  
MODEL ROCKET LAUNCH SITE STANDARDS**

Rectangular Area - Minimum = Shortest Side

Circular Areas - Minimum = Diameter in Feet

<b>Engine Types All Time Delays</b>	<b>Minimum Dimension in Feet</b>	<b>Installed Total Impulse (N – Sec)</b>
¼ A – ½ A	50	0 – 1.25
A	100	1.26 – 2.50
B	200	2.51 – 5.00
C	400	5.01 – 10.00
D	500	10.01 – 20.00

**\*\*\* Motor sizes larger than D are not allowed in El Dorado County Fire Prevention Officers Jurisdiction per 2016 California Fire Code, NFPA 1122, and Title 19 CCR.**



<b>EL DORADO COUNTY REGIONAL FIRE PROTECTION STANDARD - MODEL ROCKET PERMIT</b>
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Complete Applicant and Property Owner information prior to submitting to AHJ.

<b>Permit Applicant Complete the Following:</b>		
Permit Holder Name:		
Address:		
Phone:		
Age:	DOB:	DL / ID #:
I have read and I understand the above listed conditions of this permit. I accept all risk associated with the use of model rockets.		
Permit Holder Signature:		Date:

<b>Launch Site Property Owner to Complete the Following:</b>	
Property Owner Name:	
Property Address/Description:	
Property Owner Signature:	Date:

The El Dorado County Fire Prevention Officers will strictly enforce all laws, both state and local, which pertain to the safe handling, use or sale of model rocket engines.

If a fire official determines that any condition of the permit has been violated, it shall be just cause for the revocation of the permit.

<b>EDC Fire Prevention Officer to Complete the Following:</b>	
Permit Valid <input type="checkbox"/>	Permit Revoked <input type="checkbox"/>
From: _____ To: _____ by _____	
Issuing Officer Name:	
Issuing Officer Approval:	Date: