



# **APA STANDARD 87-1B FIREWORKS BROCHURE**

*A Guide to Understanding APA Standard 87-1B*



U.S. Department  
of Transportation

Pipeline and  
Hazardous Materials  
Safety Administration

**[WWW.PHMSA.DOT.GOV](http://WWW.PHMSA.DOT.GOV)**



# TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>2</b>
<b>2018 APA STANDARD 87-1B</b>	<b>3</b>
<b>DISPLAY FIREWORKS – DEFINITIONS AND GENERAL REQUIREMENTS</b>	<b>3</b>
DEFINITIONS	3
GENERAL REQUIREMENTS	4
<b>SPECIFIC REQUIREMENTS FOR DISPLAY FIREWORKS</b>	<b>5</b>
DISPLAY FIREWORKS	3
<b>THERMAL STABILITY TEST REQUIREMENTS</b>	<b>7</b>
SPECIAL PROVISIONS FOR TRANSPORTATION	7
<b>EX APPROVAL APPLICATION</b>	<b>8</b>
<b>APPLYING FOR AN EX APPROVAL (EX NUMBER)</b>	<b>9</b>
<b>COMPLIANCE AND SAFE TRANSPORTATION OF HAZARDOUS MATERIALS</b>	<b>10</b>
<b>FREQUENTLY ASKED QUESTIONS</b>	<b>11</b>

## EXECUTIVE SUMMARY

The Office of Hazardous Materials Safety (OHMS) within the Pipeline and Hazardous Materials Safety Administration (PHMSA) of the United States Department of Transportation (DOT) is responsible for approving the classification of explosives in accordance with the Hazardous Materials Regulations (HMR; 49 CFR parts 171-180).

This brochure details the process required to apply for a “UN0335, Fireworks, 1.3G” EX Classification Approval (EX Number) through PHMSA. In accordance with 49 CFR § 173.64, as well as the requirements in the 2018 American Pyrotechnics Association (APA) Standard 87-1B “Standard for the Construction, Classification, Approval, and Transportation of Display Fireworks” (2018 APA Standard 87-1B), which is incorporated by reference in 49 CFR § 171.7(f), set forth the regulations and the requirements to apply for an approval or certification.

The regulatory requirements for applying for explosive approvals can be found in:

- 49 CFR § 107.705—Registrations, reports, and applications for approval.
- 49 CFR § 173.56—New explosives—definition and procedures for classification and approval.
- 49 CFR § 173.64—Exceptions for Division 1.3 and 1.4 Fireworks.

Each firework application submitted by the manufacturer should comply with the requirements set forth in the HMR and the 2018 APA Standard 87-1B (49 CFR § 173.64). Only display fireworks that comply with the 2018 APA Standard 87-1B may be approved by PHMSA.

*The contents of this guide do not have the force and effect of law and are not meant to bind the public in any way, and the guide is intended only to provide information to the public regarding existing requirements under the Hazardous Materials Regulations. Compliance with the requirements of the HMR and the 2018 APA Standard 87-1B is the responsibility of the reader.*

## 2018 APA STANDARD 87-1B

Applications for 1.3G display fireworks, in accordance with 49 CFR § 173.64, that comply with the requirements of the 2018 APA Standard 87-1B may be approved by PHMSA.

### DISPLAY FIREWORKS – DEFINITIONS AND GENERAL REQUIREMENTS

Part 2 of the 2018 APA Standard 87-1B provides definitions and general requirements for Display Fireworks and Quickmatch and Fuse, delay.

#### DEFINITIONS

Examples of “Display Fireworks” terms include, but are not limited to, the following as specified in the 2018 APA Standard 87-1B:

- **Approval (also known as a competent authority approval):** Written authorization from the OHMS Associate Administrator, PHMSA, of the U.S. DOT, or other designated Department official, to perform a function that requires prior authorization under the HMR.
- **Display Fireworks:** Devices containing chemical compositions that are intended for use in professional firework shows and designed to produce visible or audible effects and comply with the limits and requirements of 2018 APA Standard 87-1B.
- **Electric Igniter (E-Match):** A device used for the electrical ignition of pyrotechnic devices.
- **“UN0101, Fuse, non-detonating *instantaneous or quickmatch*”:** A piece of black match that is encased in a paper and/or plastic sheath designed to burn fast.
- **Manufacturer of Fireworks:** An entity that produces the firework device.
- **Report:** A concussive effect with or without flash of light produced by the ignition of a chemical composition.





## GENERAL REQUIREMENTS

This section covers the general requirements for “UN0335, Fireworks, 1.3G” display fireworks and “UN0101, Fuse, non-detonating *instantaneous or quickmatch*,” and the respective definitions. These requirements, where applicable, must be met for all display fireworks constructed under the 2018 APA Standard 87-1B. These definitions include, but are not limited, to the following:

- **Applicant** – The applicant must be the manufacturer of the device (49 CFR § 173.64(a)(1)). In addition, foreign applicants must have a U.S. Designated Agent who may submit an application to PHMSA on their behalf (see 49 CFR § 105.40).
- **Chaining Fuse:** A piece of quickmatch equipped with connections used to create a finale chain.
- **Reports:**
  1. A single report is permitted when line 21 is marked “yes” and is limited to 71 grams per individual tube or shell; and
  2. Multiple reports are permitted when line 26 is marked “yes” and are limited to 25 grams each.

- **Thermal Stability Test:** Must be conducted in accordance with the requirements outlined in Part 4 of APA Standard 87-1B and 49 CFR § 173.64(a)(2).

## SPECIFIC REQUIREMENTS FOR DISPLAY FIREWORKS

Part 3 of the 2018 APA Standard 87-1B provides the specific requirements for novelties and consumer fireworks.

### DISPLAY FIREWORKS

This table lists Display Fireworks in the 2018 APA Standard 87-1B requiring approval by PHMSA, and includes their corresponding reference section in the 2018 APA Standard 87-1B.

DEVICE	Refer to 2018 APA Standard 87-1B Part 3 Section 3.2
<b>Ground Devices, Individual</b>	<b>3.2.1</b>
Firecracker	3.2.1.1
Flasher/Strobe	3.2.1.2
Fountain (Cone, Cylindrical, Gerb)	3.2.1.3
Ground Report	3.2.1.4
Illumination Torch (Lance)	3.2.1.5
Smoke	3.2.1.6
Waterfall/Shower	3.2.1.7
Wheel	3.2.1.8
<b>Aerial Devices, Individual</b>	<b>3.2.2</b>
Aerial Shell and Mine Preloaded (Color with or without reports)	3.2.2.1
Aerial Shell Preloaded (Report Only)	3.2.2.2
Aerial Shell (Color with or without reports)	3.2.2.3
Aerial Shell (Report Only)	3.2.2.4
Aerial Shell of Shells	3.2.2.5
Aerial Spinner (Helicopter)	3.2.2.6
Girandola	3.2.2.7
Mine (Shell, Tube, Bag)	3.2.2.8
Mine Preloaded	3.2.2.9

Missile – Fin Stabilized	3.2.2.10
Missile – Spin Stabilized	3.2.2.11
Rocket (Sky Rocket)	3.2.2.12
Roman Candle	3.2.2.13
<b>Cake and Combination Devices</b>	<b>3.2.3</b>
Cake	3.2.3.1
Combination	3.2.3.2
<b>Miscellaneous</b>	<b>3.2.4</b>
Quickmatch	3.2.4.1
Fuse (Delay, Time)	3.2.4.2



**NOTE:** For devices not listed in the 2018 APA Standard 87-1B, refer to 49 CFR § 173.56.

## THERMAL STABILITY TEST REQUIREMENTS

Part 4 of the 2018 APA Standard 87-1B describes the Thermal Stability Test requirements applicable to all devices offered for transportation. The device must pass the thermal stability test in compliance with 49 CFR § 173.64.

## SPECIAL PROVISIONS FOR TRANSPORTATION

Part 5 of the 2018 APA Standard 87-1B, Special Provisions for Transportation, addresses the following parameters:

- Misfired Fireworks
- Assembled Devices and Set Pieces
- Transportation of Fireworks with Fuses (highway flares) and Electric Igniters and;
- Transportation with Installed Electric Igniter (E-Match)

## EX APPROVAL APPLICATION

In accordance with 49 CFR § 173.64(a)(3), the process to apply for an EX approval requires the manufacturer to apply in writing to the Associate Administrator for Hazardous Materials Safety. The applicant is then notified in writing by the Associate Administrator that the fireworks have been classed, approved, and assigned an EX number. Each application must be complete and include all relevant background data and copies of all applicable drawings, test results, and any other pertinent information on each device for which approval is being requested (49 CFR § 173.64(a)(3)). The manufacturer must sign the application and certify that the device for which the approval is requested conforms to the 2018 APA Standard 87-1B (49 CFR § 173.64(a)(3)). Lastly, the manufacturer must ensure that no duplicate applications have been submitted.

PHMSA requires that fireworks EX Approval applications be submitted in English. In accordance with 49 CFR § 173.64(a)(3), PHMSA considers a completed application submitted for approval to contain the following (at a minimum):

- Application Request
- Device Diagram
- Chemical Composition Sheet
- Results of the thermal stability test
- A Signed Certification Statement
- U.S. Designated Agent letter in accordance with 49 CFR §§ 107.705(a)(5) and 105.40 (for foreign based applicants)

If an application is denied, the manufacturer will be notified in writing the reasons for the denial in accordance with 49 CFR § 107.709. The Associate Administrator may require the fireworks be examined by PHMSA-approved explosives lab as described in 49 CFR § 173.56.

## APPLYING FOR AN EX APPROVAL (EX NUMBER)

PHMSA created an online application system (Portal), found at <https://portal.phmsa.dot.gov>, allowing applicants to submit EX Approval Applications and receive immediate confirmation of receipt upon completion of an application.

All applicants requesting an EX Approval are encouraged to use the Portal system. However, PHMSA continues to permit applicants to submit applications using e-mail, parcel/postal mail, or fax.

***\*\*Do not submit duplicate applications (i.e., on-line applications, postal or parcel mail, e-mail and/or fax), as this will only slow down processing.\*\****

E-mail: [fireworks@dot.gov](mailto:fireworks@dot.gov)

Mail: U.S. Department of Transportation  
Pipeline and Hazardous Materials Safety Administration  
Associate Administrator for Hazardous Materials Safety  
ATTN: Office of Hazardous Materials Safety  
Sciences and Engineering Division  
Energetic Materials Branch (PHH-24)  
1200 New Jersey Avenue, SE  
East Building, 2nd Floor  
Washington, DC 20590-0001

Fax: (202) 366-5713

# COMPLIANCE AND SAFE TRANSPORTATION OF HAZARDOUS MATERIALS

Compliance with the terms of an approval from PHMSA is the responsibility of the person or company authorized to perform the specific function(s). An EX Approval may be suspended or terminated if the performance of the holder fails to meet required conditions in accordance with 49 CFR § 107.713.

To ensure that approvals are used safely and in accordance with the required terms and conditions, and that companies continue to be fit to conduct authorized operations, enforcement and safety investigators from various Federal agencies, including U.S. DOT, routinely conduct compliance and safety inspections.

Persons found to be in violation of the HMR may be subject to civil penalties, criminal penalties, and imprisonment. Maximum penalties depend on several factors, including the nature and circumstances, extent and gravity, and severity of the consequences of the violation. Civil penalties are set out in 49 U.S.C. § 5123, but the actual maximum civil penalties are updated annually due to inflation in accordance with the Federal Civil Penalties Inflation Adjustment Act of 1990 and the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015. Criminal violations of hazardous materials regulations can result in sentences of up to 10 years imprisonment and additional fines, as specified in 49 U.S.C. § 5124.



## FREQUENTLY ASKED QUESTIONS

**Q:** Where can I find information on applying for a fireworks EX approval?

**A:** Information regarding fireworks, the approval process for an EX approval application, a sample application, and additional information can be found at the following link:

[2018 APA Standards 87-1 and Permitted and Restricted Chemicals List - A/B/C | PHMSA \(dot.gov\)](#)

**Q:** Can I apply for an approval online?

**A:** Yes, the applicant can apply via the PHMSA Portal, found at <https://portal.phmsa.dot.gov>.

**Q:** How will I know if my application has been received?

**A:** Once a completed application is submitted, the applicant will receive an email with a ten (10) digit tracking number for the specific application.

**Q:** How can I check the status of my application?

**A:** Completed applications may be tracked using the provided tracking number within the Approvals Search database at the following link:

<https://www.phmsa.dot.gov/approvals-and-permits/hazmat/approvals-search>.

**Q:** What additional information does a foreign applicant provide when requesting an approval?

**A:** Foreign applicants must provide a designation letter for its the U.S. Designated Agent for Service with each application in accordance with 49 CFR §§ 105.40 and 107.705(a)(5).

**Q:** Can the thermal stability test be conducted and dated the same date as the application?

**A:** The Thermal Stability Test must be completed prior to the manufacturer certifying its application.

**Q:** Are tracking numbers different from EX Numbers?

**A:** Yes, the tracking number is an internally assigned number for use within PHMSA. It does not authorize transportation and should not be placed on packaging or shipping papers.

**Q:** How does a manufacturer mark EX Numbers on the device, or the packaging if the device is too small?

**A:** Please refer to the general requirements for a finished display firework device in section 2.4 of the 2018 APA Standard 87–1B.

**Q:** Are EX Numbers required to be on the package and/or shipping papers?

**A:** Yes, See 49 CFR § 172.320 for clarification.

**Q:** How long does an EX Approval application typically take to process?

**A:** Review of an application may take up to 120 days. Applicants applying through the online PHMSA Portal may see their applications processed more quickly. **\*Do not submit duplicate applications\*** Submitting duplicate applications may slow down processing time.

**Q:** How will I know whether my application has been approved?

**A:** After evaluating the application, the applicant will be notified by email of the approval or denial of their application.

**Q:** Can a new manufacturer use the same EX number to produce an explosive with the same composition as the previously approved explosive?

**A:** No. EX approvals are issued to the explosives manufacturer in accordance with 49 CFR § 173.56. If a new manufacturer would like to produce the explosive, it must obtain its own EX approval from PHMSA.

**Q:** Can I submit a series of devices under one EX application request?

**A:** Yes, please refer to the general requirements section and specific device requirements in the 2018 APA Standard 87–1B for guidance on series applications.

**Q:** Can EX approval numbers be transferred or sold?

**A:** No. EX approval numbers may not be sold and they are not transferrable. Please see PHMSA's guidance on this topic:

<https://www.federalregister.gov/documents/2019/10/08/2019-21964/hazardous-materials-clarification-of-process-to-reissue-explosives-classification-approvals>

**Q:** What are some common reasons for denial?

**A:** Common reasons for denial include, but are not limited to, the following:

- Application does not comply with 2018 APA Standard 87–1B;
- Inconsistent information provided in the application, diagram, and/or chemical composition sheet;
- Failure to provide a designation letter for its U.S. Designated of Agent for Service (for foreign applicants).

**Q:** What if I have additional questions?

**A:** Please see below for additional resources:

- The Hazardous Materials Information Center (Info Center):
  - ◊ Phone Number: 1–800–467–4922
  - ◊ E-mail: [infocenter@dot.gov](mailto:infocenter@dot.gov)
- PHMSA Energetic Materials Branch at [fireworks@dot.gov](mailto:fireworks@dot.gov).
- PHMSA Approvals Website:
  - ◊ <https://www.phmsa.dot.gov/approvals-and-permits/phmsa-approvals-and-permits>

**Q:** Can the U.S. Designated Agent of service submit an application on behalf of the manufacturer?

**A:** Yes, the U.S. Designated Agent of service may submit an application and supporting documentation on behalf of a manufacturer. However, the U.S. Designated Agent is neither considered to be the applicant nor the manufacturer. Only an authorized representative from the manufacturer may certify a fireworks application. The EX classification approval will be issued to the manufacturer.



This page intentionally left blank



## **FOR ADDITIONAL INFORMATION CONTACT:**

The Hazardous Materials Info Center  
1-800-HMR-4922  
(1-800-467-4922)  
Email: [infocntr@dot.gov](mailto:infocntr@dot.gov)  
<https://phmsa.dot.gov>

Pipeline and Hazardous Materials Safety Administration  
Outreach, Engagement, and Grants Division  
1200 New Jersey Ave., SE  
Washington, DC 20590  
Email: [training@dot.gov](mailto:training@dot.gov)  
202-366-4900  
202-366-7342 (Fax)



U.S. Department  
of Transportation

**Pipeline and  
Hazardous Materials  
Safety Administration**

PHH50-0196-0722