



OREGON FIRE CODE Interpretations and Technical Advisories

A collaborative service by local and state fire professionals, along with our stakeholders and customers, to provide consistent and concise application of Oregon's fire prevention and life safety regulations.

Date: February 7, 2019

Ruling: Technical Advisory No. 19-01 (Revised TA# 14-10, 11-12, 09-01)

Subject: Guidelines for the use of gas mines/ghost mines during outside public displays only using liquid fuels.

Code Reference: 2019 Oregon Fire Code, Section 57.

Definitions: For the purpose of this technical bulletin, the following definitions apply.

- **Gas Mine.** A flame effect that uses black powder and an electric match to lift and ignite gasoline from a mortar tube into the air.
- **Ghost Mine.** A flame effect that uses black powder and an electric match to lift and ignite methanol from a mortar tube into the air with addition of a coloring agent(s).

Permits. Permits from the Oregon Office of State Fire Marshal must be obtained as well as having the local fire authority and/or law enforcement jurisdiction sign off on the plan. The following items must be with the application for a permit:

- A diagram of the display layout including distances to crowd and other hazards. Include remediation of near by combustible fuels, i.e. vegetation, crop, and grass as required by the local authority having jurisdiction.
- A copy of the written procedure for igniting gas mines/ghost mines. Including a diagram of the mortar, showing pipe schedule size, height, width, and staking procedure.
- Proof of liability insurance, the minimum amount of liability insurance shall be \$1,000,000.00.
- A list of training and/or certification for flame effect operators that meet NFPA 160 (2016 edition), Chapter 8.

Note: *Additional safety requirements may be required using NFPA 160 (2016 edition).*

Maximum Sizes and Quantities Allowed.

- Maximum 6-inch diameter steel mortar tube, minimum schedule 10 pipe and minimum 30 inch – maximum 36 inch height.
- Maximum two gallons of gasoline per mortar tube.

- A maximum lift charge of 70 grams of 2FA Black Powder liquid-seal (using fiberglass resin) and fused with an electric match per mortar tube.

Minimum Distance Requirements.

- **Fireworks.** Gas mines and Ghost mines must be a minimum of 50 feet away from fireworks displays.
- **Linear Mortar Tubes.** Mortar tubes shall not be spaced less than 15 feet on center and shall be placed in a straight line. See Distance to Audience Table for distances to audiences.

Distance to Audience Table

Distance to Audience*	Quantity of Mortars	Display Length (feet)
200	1-25	<200
400	26-50	<400
600	51-100	<1000
800	>100	>1000
*Distances are based on a vertical launch with winds <15 mph. Based on maximum quantities and mortar size		

- **Cluster Mortar Tubes.** Not more than 5 mortar tubes shall be used in a cluster, and the minimum distance to the audience shall not be less than 200 feet.

Demonstrations. The company performing the flame effect shall conduct a demonstration if required by the authority having jurisdiction.

Fire Extinguishers. A minimum of two (2), 80-B:C rated fire extinguishers and two (2), 2 ½ gallon stored-pressure water extinguishers are required per every 100 feet of display. All extinguishers must be manned during the igniting of the display.

Weather Considerations. Gas mines and ghost mines shall be ignited only if the wind is less than 15 MPH.

Fuel Dispensing Operations. All fuel dispensing shall be in accordance with Chapter 57 of the Oregon Fire Code.

Other References: National Fire Code - NFPA 160 (2016 edition).