

# Scorched Nuts Fire Art Guide



This guide is to serve as a reference for the construction and use of flame effects while at Scorched Nuts.

**At this time, no pressurized effects(poofers) will be permitted onsite, the only effects that will be permitted will be static/ambient effects.**

This is only a guide, at any time the org, FAST members, authority having jurisdiction (AHJ), or land owner may adjust these guidelines due to conditions or situations.

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## Safety Guidelines for Flame Effects

The majority of flame effects at Scorched Nuts are Liquefied Petroleum Gas (LP-Gas) effects; LP-Gas is often commonly referred to as propane. Most of the guidelines below deal with LP-Gas as a fuel. Regardless of fuel type or technological basis, all Flame Effects must be constructed in such a way as to meet or exceed applicable laws, codes and industry standards.

***No liquid effects will be permitted at Scorched Nuts.***

The National Fire Prevention Association (NFPA) publishes numerous codes and standards for the construction and use of LP-Gas systems, including:

- **NFPA 54** – National Fuel Gas Code
- **NFPA 58** – Liquefied Petroleum Gas Code
- **NFPA 160** – Standard for the Use of Flame Effects Before an Audience

NFPA documents are available for viewing and purchase on the [NFPA website](#) and should be reviewed by all Flame Effects artists.

## Construction of Flame Effects

- All LP-Gas cylinders shall be designed, fabricated, tested, and marked in accordance with the regulations of the US Department of Transportation (DOT) or the ASME Boiler and Pressure Vessel Code.
- All LP-Gas cylinders must have an unexpired certification date stamp and be in good working order. Tanks in poor condition or out of date are a danger to fill and may cause injury to the artists, and/or participants.
- Each LP-Gas flame effect must have a single 1/4-turn shut-off valve as the primary emergency fuel shut-off. When closed, this valve must inhibit *all* fuel flow to the flame effect, regardless of how many LP-Gas cylinders are connected to the flame effect. This valve must be exposed and visible at all times, and must be clearly marked as the emergency fuel shut-off.
- All components of the fuel system (fittings, piping, valves, connectors, etc.) must be designed and rated for both the type and pressure of fuel being used. The use of improper fittings can lead to leaks and failures in the fuel system resulting in fires and or injury.
- All LP-Gas metallic piping and fittings that may experience a pressure greater than 125 psi shall be schedule 80 or heavier. (Any fittings or piping prior to the regulator)
- All LP-Gas Hoses that will be operated in excess of 5 psi shall be designed for a working pressure of at least 350 psi and shall be continuously marked by the manufacturer to indicate its maximum operating pressure and compatibility with LP-Gas.

- Air or pneumatic line is not acceptable as fuel hose. LP-Gas degrades rubber hose not specifically designed for use with that fuel. This results in the hose cracking from the inside out, potentially leading to a catastrophic failure.
- **Hose clamps are prohibited on LP-Gas hose at any pressure.** All fuel hose connections shall be factory made, or constructed with a crimped fitting specifically designed for that purpose. Hose clamps are well known for cutting and chafing fuel lines or coming loose, possibly leading to catastrophic failure.
- All metallic tubing joints shall use flare fittings. The use of compression fittings or lead soldered or braised fittings are prohibited.
- Any welding alteration of pressure vessels, or alteration or fabrication of other system components that hold pressure, must be performed by an American Society of Mechanical Engineers (ASME) certified welder, and must be stamped and certified as such.
- Fuel tanks for stationary flame effects must be protected from vehicle traffic and be well illuminated at night.
- flame effects should be constructed and sited in such a way that the flame head and/or hot components are at least 12 inches from the ground surface, to prevent scorching or scarring of the ground. If the flame being projected is larger, more height may be required or requested by the org. As a guide, the heat radiation from the flame effect should not cause the surface of the ground to exceed 117°F above the ambient temperature after the equilibrium temperatures are attained.
- Any artwork, towers or other structures that incorporate flame effects should be secured from the wind and encircled with an appropriate safety perimeter to prevent injury to participants.

## Operation of Flame Effects

### *Walk-in projects*

Due to the size of the event and FAST staff, no walk-in art projects will be accepted.

### *Flame Effect Operators*

Flame effects operators and assistants must be 21 years of age or older and be trained in the use of fire extinguishers.

Operators and assistants must wear fire resistant clothing while operating flame effects. No synthetic fibers are to be worn.

### *Personal Responsibility*

No carelessness, negligence, or unsafe conditions with flame effects shall be tolerated. Do not drink, take drugs, or smoke when working with flame effects.

### *Safety Perimeter*

An appropriate audience safety perimeter (and performer's safety zone if applicable) shall be established well in advance of flame effects operation, and must be approved by FAST. Because of the variety of artwork that incorporates flame effects, a member of FAST will help you determine the correct perimeter distance.

In any case, a 20' zone around the flame effects must be kept free of all combustible or flammable materials, and nothing should overhang this zone.

### *Fueling*

Only people familiar with the safety considerations and hazards involved are permitted to connect/disconnect LP-Gas tanks. Wearing personal safety gear (glasses, gloves, etc.) during liquid fuel filling is required.

### *Daily Safety Check*

A daily safety check of all flame effect components and connections is mandatory before operation begins. Never start operation of a flame effect until the daily safety check is completed. If a safety hazard is identified either during the safety check or during operation, the Fire Safety Liaison must delay or halt operation until the hazard is corrected.

### *Operating Guidelines*

Never light a flame effect until all performers, safety monitors and participants are in place and ready.

Never operate a flame effect in such a way that it poses a danger to people or property.

### *Attending to Flame Effects*

Flame effects must never be left unattended. Any flame effect found running unattended will be shut down. Egregious and/or repeat offenses will result in the confiscation and/or disabling of the effect.

### *No Smoking or Open Flame*

**ABSOLUTELY** no smoking or open flame within 10 feet any storage area where flammable liquids or fuel gases are stored. All fuel and flammables must be stored in approved containers which must remain closed except when filling or dispensing, or when connected to a system for use.

### *Fire extinguishers*

During operation, there should be a minimum of 1 5lb (or greater) ABC dry chemical fire extinguisher onsite and clearly accessible during operation. All fire extinguishers should be in good working order and fully charged. **If you do not have a fire extinguisher for your art piece and fuel storage area your art piece will not operate. The ORG will not provide any extinguishers for this purpose.**

### *Fuel During Operation*

**During operation, there will only be enough propane at the art piece for one (1) nights worth of operation.** Additional fuel near the art piece may pose a cascade risk if a tank were to fail during operation. If you require additional fuel for the event, it will be stored in a designated fuel dump at the camp. Each tank should be secured against accidental tip over with either strapping or a perimeter around the tank.

### *Fuel delivery onsite*

At this time, there are no fuel delivery services available at the event site. Please plan to bring enough fuel for your art piece for the duration that you plan to operate.

### *Fuel Storage*

All fuel that is present onsite that is not being used for that day's operation will be secured in a fuel storage area at each camp. Each fuel storage area will be roped or barricaded off to limit unintentional access. **All fuel storage areas will be a minimum of 10' from any source of ignition or flammable material. All fuel storage areas will have their own 5lb (or greater) ABC dry chemical fire extinguisher that will remain there at all times.** The fuel storage area shall maintain a clear access path to allow for any emergency response or org vehicles to access the area. Each fuel storage area will be checked on a daily basis to ensure they are clear of debris, or flammable material.

### *Tank Farm*

Due to either the proximity of other camps, or the quantities being stored, the org may require you to store your tanks in a centralized fuel storage area (Tank Farm). Please have a method of labeling your tanks for identification if they are to be placed in the tank farm. The minimum info on the tank tag should be the camp name and flame effect contact.

The org is not responsible for your tanks while they are within the tank farm. You are still required to check on your tanks on a daily basis to ensure they are being stored in a safe manner. The org will monitor the general area for safety and security concerns but it is each operator's responsibility to ensure their tanks are secure.

## Flame Effect Permitting Process

1. Fire artist fills out the flame effect form as completely as possible.
2. Fire artist submits a drawing showing all of the components of the system, materials, and ratings.
3. FAST reviews each and may contact the artist for additional info.
4. The FAST team invites the artist to bring the piece to scorched! If they are not invited, they let the artist know what they can do in order to be invited next year.
5. Once onsite, the artist sets up the flame effect. They then contact the GATE or ranger to let FAST know they are ready for inspection. The art piece should be completely set up to performing a test. **DO NOT IGNITE THE PIECE PRIOR TO FAST GIVING PERMISSION**
6. FAST meets with the artist to go over the art piece to ensure it is constructed safely and of appropriate materials. They will also inspect the fuel storage area, as well as the general site for the art piece for safety concerns. If they approve of the setup the art piece it is lit to check functionality and approval is given. If it is not initially approved, FAST will coach the artist in how to make changes to be approved (if possible). The artist will then reschedule an inspection to approve the piece.

**At any time before or after approval, FAST/the Org can shut the art piece down in due to safety, security, site, or property damage. The art piece will remain offline until given permission by FAST/the Org to re-ignite.**

