



FACEBOOK FORUM

FIRST DUE CONSIDERATIONS FOR LIQUEFIED PETROLEUM (LP) GAS FIREFIGHTING

BROADCAST DATE: September 22, 2020
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CHARACTERISTICS

Liquefied Petroleum (LP) gases are not toxic, but they present possible inhalation hazards. If released in a confined space, propane can displace oxygen and act as a simple asphyxiant.

They are tasteless, colorless, and usually odorless.

When mixed with the proper amount of air, they can burn.

LP-gases are capable of being either a liquid or gas. However, under ambient conditions, propane will be a gas.

Most LP-gases can be stored and transported as liquids under pressure and can easily vaporize into gas under the proper conditions.

Under normal outdoor temperatures liquid LP-gases expand rapidly into gas. One cubic foot of liquid propane will boil-off and produce 270 cubic feet of propane vapor.

LP-gases will expand when heat is applied. If stored inside a container, this expansion will increase the volume of the liquid and the pressure inside the container.

PHYSICAL PROPERTIES

Specific gravity (Liquid) .504 at 60°F (water = 1)	Max Flame Temperature 3595°F
Vapor Density 1.52 at 60°F (air = 1)	Combustion ration 24 to 1
Boiling Point (- 44°F)	Melting Point (-305°F)
Flash point (-156°F)	Upper Flammable Limit 9.6%
Ignition Temperature 920°F - 1120°F	Lower Flammable Limit 2.15%
Propane C3H8	Methane CH4
Heat Value Per gallon (liquid) 91,502 BTU	

Labels and Placards

Red background / White Flame / Hazardous class 2

1075 / 1978

NFPA 704

Blue- 1

Red-4

Yellow-0

No special in White section

Vapor Pressures

4 psig @ -44 °F

28 psig @ 0° F

120 psig @ 70 °F

190 psig @ 100 °F

250 psig @ 120 ° F

Atmospheric Temperatures set the pressure inside the tanks. Additional exterior heat sources will change that temperature. Relief valves are designed to help lower pressures. Large tanks to Bulk containers have relief valves set at 250 PSI. 20 LBS cylinders set at 375 PSI. Fork lift cylinders are also set at 375 PSI.

If venting, understand what is causing it.

Bad relief valve

Contact supplier

Control ignition sources in the area. {Monitor}

Exterior heat source

Extinguish the heat source, if it is a separate fire from the fuel / pipe breaks.

If product from pipes or other tanks deflect the flame off the exposure tanks and cool area.

NEVER EXTINGUISH A BURNING GAS, YOU MUST SHUT THE FUEL SOURCE OFF CAUSING THE PROBLEM. If you put it out with a hose line continue to disperse the gas and monitor the area.

Considerations into handling a Propane Fire

BLEVE: Boiling Liquid Expanding Vapor Explosion

Runaway Linear crack

Container opens and liquid released all at once

Offensive, Defensive, Non-Intervention

When Not to fight

- More than a 5-minute flame impingement
 - This is a very conservative, but safe policy
 - Know when not to fight when;
 - There is nothing to lose
 - No other life or property is at risk
 - Long response time
 - You cannot shut off the fuel
 - Tank has deformities
 - Lack of water supply
 - There is a lack of personnel to staff the hose lines
 - You cannot put water on the vapor space (top) of vessel
 - The relief valve cannot operate
 - Such as when the vehicle has rolled over on its top
- Marginally Safe Operations
- Marginal water supply
 - Marginal ability to maintain an adequate water supply
 - Poor attack angles
 - Adverse weather conditions
 - Difficult terrain
 - Between 3 to 5 minutes of impingement time
 - Possible Safe Operations
 - Less than 3 minutes of flame impingement
 - If relief valve has vented, it has reset
 - You can shut off the fuel supply
 - You have an adequate and reliable water supply
 - Clear access to the vapor space of the vessel