

# Bulk Liquid Oxygen Separation

## Understanding the risk

We learn in basic fire chemistry that oxygen is one of the legs with heat and fuel that completes the fire triangle. Consequently, when combustible materials are in the presence of significant amounts of pure oxygen — such as in the illustrated liquid oxygen installation extra precautions must be taken to prevent a fire or minimize its consequences.

## Controlling the hazard

Bulk Liquid Oxygen containers must be separated from a variety of exposures due to its chances of worsening the fires.



One method to reduce the likelihood of a fire is to separate the oxygen source from other exposures. National Fire Protection Association

55, Compressed Gases and Cryogenic Fluids Code includes the following table of exposures and recommended separation distances.

Exposure	ft	m
Buildings of Type I and II construction as described in the building code	1	0.3
Buildings of Type II, IV and V construction as described in the building code	50	15
Wall openings (measured from high-pressure or liquefied gas regulators, pressure relief devices, vaporizers, manifolds and interconnected piping)	10	3
Property lines	5	1.5
Public sidewalks and parked vehicles	10	3
Public assembly occupancies	50	15
Areas occupied by non-ambulatory patients (measured from the primary pressure relief device discharge vent and fill/vent connections)	50	15
Exterior walls that form a three-sided court around the container ---- Refer to section 8.12.2.7 of NFPA 55-2020	*	*
Aboveground storage of flammable and combustible liquids		

The information contained herein is for information purposes only. Following the recommendations and guidance herein may not in every case ensure coverage of a loss under your insurance policy. In order to better understand the coverage provided by your insurance policy please refer to your insurance policy terms and conditions.

Exposure	ft	m
0 to 1,000 gallons (0 to 3785 L)	25	7.5
More than 1,000 gallons (3785 L)	50	15
<b>Underground or vault storage of flammable and combustible liquids</b>		
Horizontal distance from oxygen vessel to tank or vault	15	4.6
Horizontal distance from oxygen vessel to fill/vent connections or other tank openings	25	7.5
<b>Aboveground flammable gases</b>		
Liquefied hydrogen (any amount)	75	22.5
Other liquefied gas, 0 to 1,000 gallons (0 to 3785 L)	25	7.5
Other liquefied gas, more than 1,000 gallons (3785 L)	50	15
Non-liquefied or dissolved gases, 0 scft to 25,000 scf** (0 Nm to 708 Nm )	25	7.5
Non-liquefied or dissolved gases, more than 25,000 scf (708 Nm )	50	15
<b>Rapidly burning solids, including, but not limited to, excelsior, paper or combustible waste</b>		
Slowly burning solids, including, but not limited to, heavy timber or coal	25	7.5

Exposure	ft	m
Inlets to underground sewer or drainage systems (measured from liquid delivery connections, pressure relief outlets, mobile supply equipment & liquid withdrawal connections)	8	2.5
Areas below connections where liquids can fall during loading & unloading operations & system operation, from combustible surfaces including, but not limited to, asphalt or bitumastic paving and expansion joint fillers	3	1
<b>Encroachment by overhead utilities</b>		
Horizontal distance from the vertical place below the nearest overhead wire of an electric trolley, train or bus line	50	15
Horizontal distance from the vertical place below the nearest other types of overhead wires	5	1.5
Piping containing hazardous materials	15	4.6

For more information, contact your **RMC** Risk engineer

**Reference**

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