

Determining Propane Cylinder Quantity

Guide for Installing 100 lb. Cylinders

For continuous draws where temperatures may reach -18°C (-0°F). Assume the vaporization rate of 100 lb. cylinder as approximately 50000 Btu/hr.

$$\text{Number of cylinders/side} = \frac{\text{Total load in Btu}}{50000}$$

Example:

Assume total load = 200,000 Btu/hour.

$$\text{Cylinders/side} = \frac{200000}{50000} = 4 \text{ cylinders/side}$$

The chart in Figure 1 shows the vaporization rate of containers in terms of the temperature of the liquid and the wet surface area of the container. When the temperature is lower or if the container contains less liquid, the vaporization rate of the container is a lower value.

Lb. of Propane in Cyl.	Maximum Continuous Draw In Btu/Hour At Various Temperatures In °C (°F)				
	-18°C (0°F)	-7°C (20°F)	4°C (40°F)	16°C (60°F)	21°C (70°F)
100	113000	167000	214000	277000	300000
90	104000	152000	200000	247000	277000
80	94000	137000	180000	214000	236000
70	83000	122000	160000	199000	214000
60	75000	109000	140000	176000	192000
50	64000	94000	125000	154000	167000
40	55000	79000	105000	131000	141000
30	45000	66000	85000	107000	118000
20	36000	51000	68000	83000	92000
10	28000	38000	49000	60000	66000

Figure 1 Vaporization Rate, 100 lb. Propane Cylinders, Approximate

Determining Propane Vaporization Capacity

Guide for ASME LP Gas Storage Containers

% of Container Filled	K Equals	Propane* Vaporization Capacity at -18°C (0°F) in Btu/Hr.†
60	100	D x L x 100
50	90	D x L x 90
40	80	D x L x 80
30	70	D x L x 70
20	60	D x L x 60
10	45	D x L x 45

* These formulae allow for the temperature of the liquid to refrigerate to -29°C (-20°F), producing a temperature differential of -7°C (20°F) for the transfer of heat from the air to the container's *wetted* surface and then into the liquid. The vapor space area of the vessel is not considered since its effect is negligible.

† D=outside diameter in inches
L=overall length in inches
K=constant for percent volume of liquid in container.

Figure 2 Propane Vaporization Capacity

Vaporizing Capacities for Other Air Temperatures

Multiply the results obtained with the formulae in Figure 2 by one of the factors in the following table for the prevailing air temperature.

Prevailing Air Temperature	Multiplier
-26°C (-15°F)	0.25
-23°C (-10°F)	0.50
-21°C (-5°F)	0.75
-18°C (0°F)	1.00
-15°C (5°F)	1.25
-12°C (10°F)	1.50
-9°C (15°F)	1.75
-7°C (20°F)	2.00

Figure 3 Propane Vaporization Temperature