

TANK SIZING

The appropriate size of tank will depend on the following factors:

- total estimated gas consumption of all of the appliances on the system at peak demand
- physical constraints imposed by the site
- access for installation of tank
- access for deliveries
- required frequency of delivery

Where the site allows, it is sensible to allow for storage of sufficient gas for six weeks consumption at maximum demand.

More than one tank can be used to provide the necessary storage requirement and provide sufficient surface area to give the required maximum off-take rate.

Off-take capacity

The tank must be able to boil-off gas fast enough to supply the maximum hourly demand for gas of all of the appliances at peak time. The larger the tank, the greater the surface area of the liquefied gas, and the greater the potential off-take rate. However, in practice, the off-take rate is restricted by the vapour off-take valve.

For maximum off-take rates for standard tank sizes, see Table 2. However, it should be noted that tanks can be grouped to provide the required off-take rate.

Gas requirement

The figures in Table 1 provide a useful rule of thumb for calculating gas requirement against appliance heat input.

Table 1.
Gas requirements against appliance heat input

Heat input (kW/h)	Gas requirement: (m ³ /h)	Gas requirement: (kg/h)
10	0.38	0.72
20	0.76	1.44
30	1.13	2.16
40	1.52	2.88
50	1.89	3.60
70	2.65	5.04
100	3.78	7.19

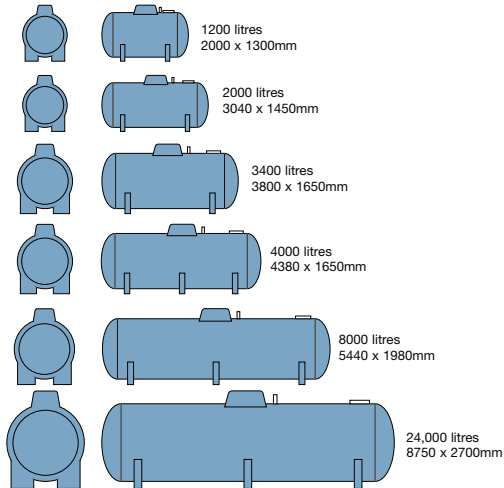
Table 2.

Maximum off-take rates for standard tank/cylinder sizes

Tank capacity (litres)	Tank size (LxD, mm)	Maximum off-take rate: (m ³ /h)	Equivalent heat input (kW/h)
Above-ground tanks			
1200	2000x1300	5.66	150
2000	3040x1450	7.10	187
3400	3800x1650	10.00	261
4000	4380x1650	10.20	269
8000	5440x1980	17.56	463
24,000	8750x2700	39.65	1046

Figure 4. Tank sizes

Height (to top of tank hood) x length (mm)



Note: All dimensions are approximate and tank sizes can vary depending on manufacturer.

TANK SITING

Every tank installation varies, so this brochure is intended for general guidance only. Please consult a Calor specialist on the most suitable positioning for storage tanks. Depending on the conditions of the site and factors such as water table and soil type, tanks can be sited either above or below ground. The unobtrusiveness of underground tanks makes them ideal for sensitive locations such as listed buildings and National Parks.

A suitable roadway must be provided to allow the tank to be delivered and serviced by delivery tankers; the roadway must allow the tanker to get within 25m of the inlet valve and be sited so that the driver can see the vehicle during the re-filling process.

To ensure that the Company is able to fulfil its statutory obligation to provide a safe gas supply, Calor require access to the land on which the tanks are sited, including the access road and gas pipeline.

Further information on tank siting is available in UKLPG Code of Practice COP1.

Above-ground tanks

Tanks are available in sizes of 1,200, 2,000, 3,400, 4,000, 8,000 and 24,000 litres for installation above ground; more than one tank can be used in a single installation. Tanks which are installed above ground may require a purpose-built compound which might need to be fenced if the general public has access to the area.

A Calor specialist will advise on the design of the storage compound which consists of a smooth concrete hard-standing covering the area occupied by the tanks and a security fence spaced a minimum of 1500mm from the tank(s) on all sides; the space between the fence and the hard-standing can be concrete or gravel.

All materials used within the compound must offer a fire resistance of at least 2 hours. A wall can be provided as part of the security fence, providing it meets the 2-hour fire resistance requirement and is installed parallel to the longest axis of the tank(s). It is permissible to use two walls but they must be parallel to one another.

For all installations, a water supply will be needed for fire brigade use and a 19mm hose-reel where the storage capacity exceeds 2,000 litres.

Where there is any risk of damage to the installation by road vehicles, suitable crash protection must also be provided.

Table 3. Compound dimensions

Tank capacity (litres)	Configuration	Plinth size (LxW, m)	Compound size (LxW, m)
1200	single tank	2.5x1.1	5.5x4.1
	2 tanks abreast	2.5x3.2	5.5x6.2
	2 tanks in-line	6.0x1.1	9.0x4.1
	3 tanks abreast	2.5x5.3	5.5x8.3
	3 tanks in-line	9.5x1.1	12.5x4.1
2000	single tank	3.2x1.3	6.2x4.3
	2 tanks abreast	3.2x3.7	6.2x6.5
	2 tanks in-line	7.4x1.3	10.4x4.3
	3 tanks abreast	3.2x5.9	6.2x8.9
	3 tanks in-line	11.6x1.3	14.6x4.3
4000	single tank	4.9x1.4	7.6x4.4
	2 tanks abreast	4.9x3.8	7.6x6.9
	2 tanks in-line	10.3x1.4	13.2x4.4
	3 tanks abreast	4.9x6.2	7.6x9.2
	3 tanks in-line	15.8x1.4	18.8x4.4
	4 tanks abreast	4.9x8.6	7.6x11.6
	5 tanks abreast	4.9x11.0	7.6x14.0
6 tanks abreast	4.9x13.4	7.6x16.4	

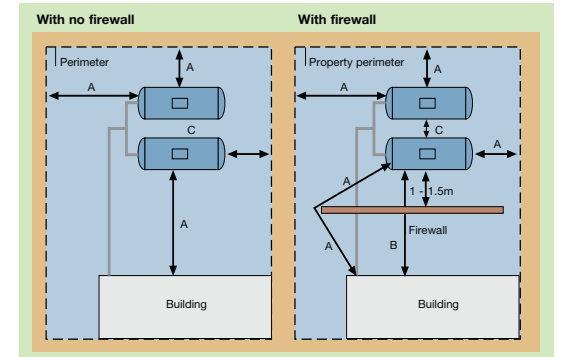


Figure 5. Compound dimensions for vessels from 2500 to 9000 litres

Table 4. Separation distances for multi-tank installations

Propane capacity (litres)	Minimum safety distances from buildings, boundary, property line or fixed ignition source (m):		Maximum number of tanks in group	Distance between tanks (m)	Height of firewall* (m)
	no firewall A	with firewall B			
1200	3	1.5	5	1	1.4
2000	3	1.5	3	1	1.5
3400	7.5	4	6	1	2
4000	7.5	4	6	1	2
8000	7.5	4	3	1	height of vessel
24,000	15	7.5	6	1.5	height of vessel

* the height of the vessel if greater