

# Guide to the Code of Practice for the Storage of LP Gas Cylinders and Cartridges

**FLO GAS**  
**BOTTLED GAS**



**FLO GAS**

## THE REGULATIONS

*On 1st September, 1990, the Dangerous Substances (Storage of Liquefied Petroleum Gas) Regulations 1990 were formally introduced by the Health & Safety Authority (H.S.A.). The Regulations are framework in character. They lay down general requirements but rely for detailed guidance upon Codes of Practice. This guide is specifically directed at persons involved in the storage of LP Gas cylinders at filling, distribution and retail premises, as well as those premises with more than 70 kg storage capacity.*

The appropriate Code is IS 3213 "Code of Practice for the Storage of LP Gas Cylinders and Cartridges". This is a synopsis of the code, but persons requiring more detailed information will have to refer to the code which is available from National Standards Authority of Ireland, Ballymun Road, Glasnevin, Dublin 9. Tel. 01-8370101

## SCOPE OF CODE

The Code applies to the keeping of LP Gas in containers where the total quantity stored exceeds 15 kg. It also applies to containers on loaded vehicles parked other than on a public highway.

The code applies to portable refillable containers up to 150 litre water capacity (63 kg). The LP Gas commonly supplied in containers is either Commercial Butane or Commercial Propane or mixtures thereof.

## HAZARDS OF LP GAS

LP Gas may leak as a gas or a liquid. As a gas it is heavier than air and as a liquid it is lighter than water. If liquid leaks, it will rapidly evaporate and form a relatively large cloud which will drop to the ground and run downhill. Consequences may range from small fires to severe explosions associated with leaks involving large quantities of LP Gas.



## STORAGE

### GENERAL

- LP Gas cylinders should be stored or displayed upright at all times with the valves uppermost.
- LP Gas cylinders should be stored in a well ventilated position preferably in the open air.
- LP Gas cylinders may be stored indoors in a specially designed storage place within a building.
- A limited number of cylinders may be kept inside retail premises for resale and demonstration purposes.
- LP Gas cylinders should not be stored below ground level in cellars, basements, pits or on roof-tops.
- The extent of the LP Gas storage area should be clearly marked and suitable notices should be displayed.

### OUTDOOR STORAGE

The storage area should be located and spaced in accordance with Table 1 - see Appendix 1. It is recommended that at least 40% of the perimeter of the designated LP Gas storage area should be open fence. However, the code specifically caters for a 4-walled storage area, minimum area 60 sq. metres. See Appendix 2 - larger walled area. The Code also allows 400kg or less to be stored against a building or wall, under certain conditions.

#### LP GAS CYLINDERS SHOULD NOT BE STORED OR KEPT WITHIN 3 METRES OF THE FOLLOWING:

- Vessel containing flammable liquid (e.g. diesel, etc.)
- Compressed gas cylinders including acetylene.
- Bulk LP Gas vessel of 5,000 litres capacity or less.
- Explosive or combustible materials.

Separation distance should be increased to 7.5 metres in the case of liquid oxygen, bulk LP Gas vessel over 5,000 litres capacity or cylinder filling plants.

### STORAGE PROTECTION

Every LP Gas storage area should be enclosed by a substantial fence not less than 1.8 metres high unless the area is otherwise adequately protected i.e. the area comes within a greater fenced area.

Each compound should have two or more exits, gates should open outwards and should not be self-locking. A single exit is permitted provided the escape travel is less than 12 metres.

## STEEL CAGES

For garage forecourts and similar premises, lockable steel cages should be used to store a maximum of 1,000 kg of LP Gas. A small mesh size should be used to prevent tampering and cages should be sited in accordance with Table 1. Cage must be 6 metres from nearest dispenser, manhole to underground tank, or vent pipe.

## CYLINDER STACKING

The general requirements for stack sizes are set out in Table 1. Maximum size of any stack is 30,000 kg and

- (a) the gangway between palletised stacks should not be less than 2.5 metres.
- (b) the gangway between unpalletised stacks should not be less than 1.5 metres.
- (c) maximum height of any unpalletised stacks should not exceed 2.5 metres.

Nominally empty cylinders should be considered full and should be stored separately 3 metres from full cylinders.

## INDOOR STORAGE

### CYLINDERS MAY BE STORED INDOORS IN

- (a) a specially designed single storey building;
- (b) a specially designed storage place within a building.

A specially designed building may not have more than five compartments with a maximum of 5,000 kg of LP Gas per compartment. The building should be of single storey construction with a minimum fire rating of four hours. Well dispersed ventilation openings must be provided at both high level and floor level.

A specially designed storage area within a building may be used to store up to 1,000 kg of LP Gas. Minimum of four hours fire rating is required and ventilation requirements as above. The storage area can be located on the ground floor of a building with more than one storey provided the public have no access or no sleeping accommodation on the premises.



## STORAGE IN RETAIL PREMISES

### TOTAL AMOUNT OF LP GAS INDOORS IS 100 KG

- No more than 5 cylinders should be allowed on display for resale.
- No more than 4 cylinders should be connected to appliances for demonstration purposes.
- Only dummy or certified gas free containers should be used for permanent display or advertising.

## FIRE PROTECTION

- One 9 kg dry powder fire extinguisher is required for storage up to 400 kg.
- Two fire extinguishers required up to 5,000 kg.
- An additional fire extinguisher for each additional 10,000 kg storage.
- Between 1,000 kg and 25,000 kg storage, adequate water supply should be readily available but may be provided by the public mains, or pumped from a static tank, river, canal, etc.
- For storage of 25,000 kg or more LP Gas, at least 2 monitors should be available for use at such sites, with a capacity to provide at least 2,300 litres/minute (500 gallons/minute) for 60 minutes.

## EMERGENCY PROCEDURES

Prepare an action plan to suit your premises. It should normally include the following:

- Raise the alarm.
- Call the Fire Brigade and state LP Gas on the premises.
- Evacuate the premises.

Your DATA SHEET includes further information on action in case of fire/gas leak.

## TRAINING

It is essential that the gas supplier should provide adequate information, instructions and training to persons responsible for storage of LP Gas cylinders. Fundamental knowledge should be known of the following:

- The physical characteristics and hazards of LP Gas.
- The fundamentals of fire fighting and fire control.
- The procedures for dealing with defective or leaking cylinders.
- The action to be taken in an emergency.

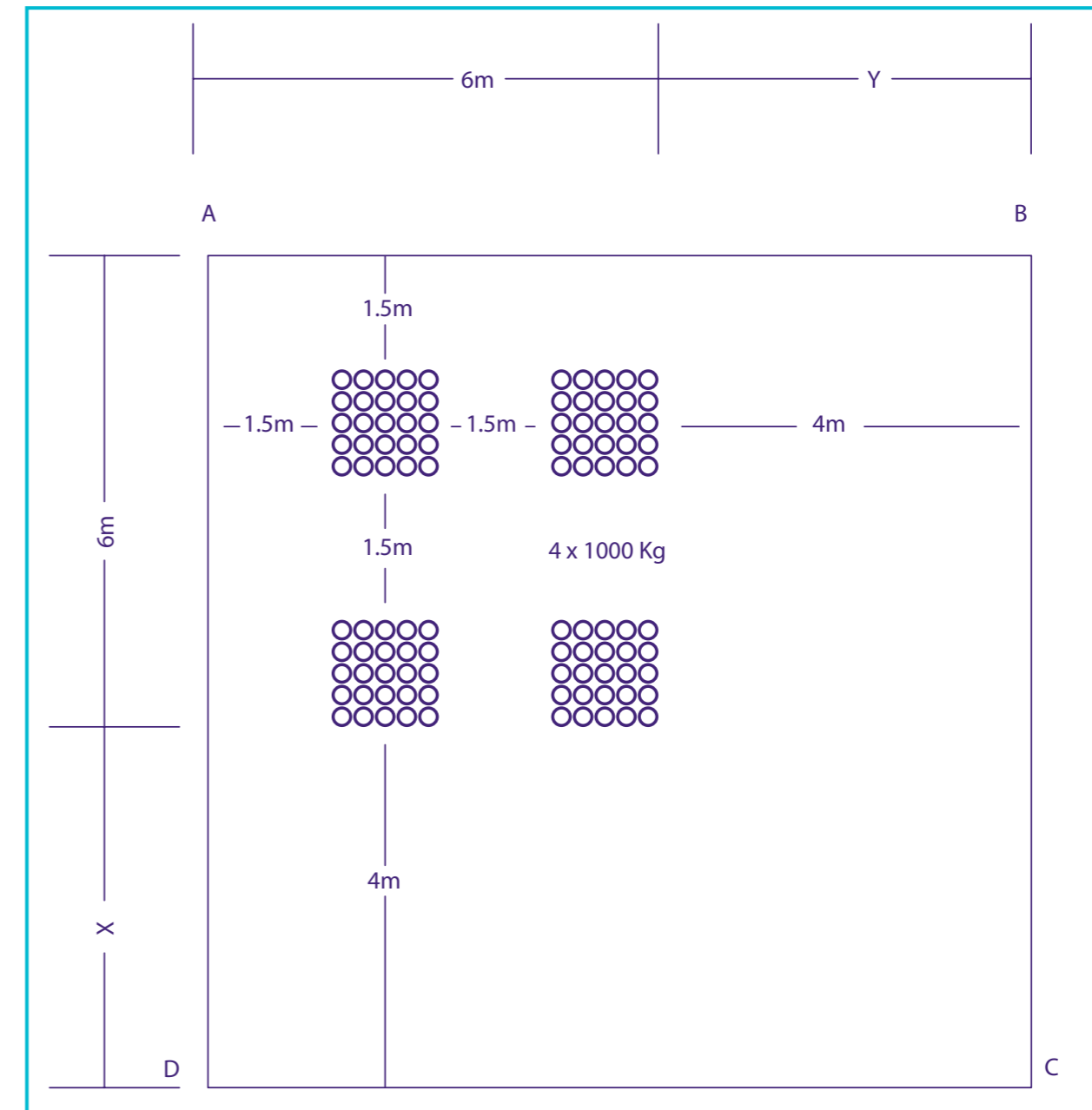
## APPENDIX 1: OUTDOOR STORAGE

**TABLE 1 - MINIMUM SEPARATION DISTANCES FOR:  
(1) TOTAL LP GAS STORAGE; (2) SIZE OF MAXIMUM STACK**

(1) Total quantity LP Gas store	(2) Size of largest Stack	(3) Minimum separation distance to boundary building or fixed ignition sources from the nearest cylinder (where no fire wall is provided)	(4) Minimum separation distance to boundary building or fixed ignition source from fire wall (where provided) (a), (b)
Kilograms	Kilograms	Metres	Metres
from 15 to 400		1 (c)	Nil
from 400 to 1,000	up to 1,000	3	1
from 1,000 to 4,000		4	1
from 4,000 to 6,000	from 1,000 to 3,000	5	1.5
from 6,000 to 12,000		6	2
from 12,000 to 20,000	from 3,000 to 5,000	7	2.5
from 20,000 to 30,000	from 5,000 to 7,000	8	3
from 30,000 to 50,000	from 7,000 to 9,000	9	3.5
from 50,000 to 60,000	from 9,000 to 10,000	10	4
from 60,000 to 100,000		11	4.5
from 100,000 to 150,000	from 10,000 to 20,000	12	5
from 150,000 to 250,000	from 20,000 to 30,000	15	6
above 250,000		20	7

Where the boundary wall is a fire wall the separation distances from the cylinder stacks to the boundary wall can be reduced to Column 4 (subject to paragraph 57 of code)

## APPENDIX 2: LARGE WALLED AREA



Larger Walled Area. (Minimum 60 sq. mtrs.)

Sides AB and AD are firewalls.

Dimensions X,Y separation distance of Table 1 column 3 (Minimum of 4 mtrs.)

Note: See Para. 57 of IS3213

## **DROGHEDA**

Knockbrack House, Matthews Lane, Donore Road,  
Drogheda, Co. Louth. T: 041 983 1041 E: info@flogas.ie www.flogas.ie

## **CORK**

Tivoli Industrial Estate, Tivoli, Co. Cork.  
T: 021 450 6688 E: info@flogas.ie www.flogas.ie



facebook.com/flogasireland



@FlogasIreland



January 2014 Issue B