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Liquefied petroleum gas cylinders — Part 2: Safe use of Liquefied Petroleum Gas (LPG) in domestic dwellings — Code of practice

EAST AFRICAN COMMUNITY

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Foreword

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The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 038.

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Liquefied petroleum gas cylinders — Part 2: Safe use of Liquefied Petroleum Gas (LPG) in domestic dwellings — Code of practice

1 Scope

This Draft East African Standard deals with the safe use of Liquefied Petroleum Gas (propane and butane) stored either in cylinders or in bulk containers in domestic dwellings.

This standard applies to cylinders up to 50 Kg net weight of LPG'

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions shall apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

No terms and definitions are listed in this document.

4 General

Propane and butane are stored in cylinders and bulk tanks as liquid under pressure. When the pressure is released, i.e. when the valve is opened, the liquid boils and gas is evolved. Both gases are heavier than air and any leaking gas will tend to collect at a low level. The gas has a distinctive smell which enables leaks to be easily detected. The gas is highly flammable and a small quantity of gas in air can form an explosive mixture. Cylinders should always be used and stored in a upright position with the valve uppermost.

5 Safe usage

To avoid accidents, the following fundamental advice shall be carefully read and adhered to before and when using gas cylinders and appliances:

- a) Always follow the user and maintenance instructions provided by the manufacturers of the gas cylinders and appliances carefully.
- b) Should any soot accumulate on pans, fire radiants, etc. or any smell be detected, consult a competent installer, consult a competent installer/ distributor/ appointed agent. b) Always check cylinder connections for gas leaks by brushing with soapy water or detergent. Never check for gas leaks with a naked flame.
- c) Never use gas cylinders and appliances without adequate ventilation. All gas cylinders and appliances require a plentiful supply of fresh air for correct operation. Fixed ventilators or air inlets shall not be closed.

- d) Turn off all gas cylinders and appliances when not in use.
- d) Unless the appliance incorporates automatic ignition when lighting it, always make sure you apply a lighted match or taper to the burner before turning on the gas.
- e) If any appliance is disconnected for repair, maintenance, etc., ensure that the gas line is capped off and sealed.
- f) If valves and/or knobs are stiff to operate or appear to be a source of leakage, call in a competent installer/distributor/ appointed agent.
- g) Always seek advice from your installer/ distributor/ appointed agent when in doubt.

6 Routine checking and maintenance

It is essential to check the installation as follows:

- a) Flexible hoses and tubing should be regularly inspected and replaced when signs of cracking or other deterioration appear. After replacement ensure that the ends are well secured and leak tight.
- b) It is recommended that the soundness of the complete gas system should be checked at least once per annum. If any appliance is disconnected for repair, etc. the gas line should be capped off and sealed: Strict attention should be paid to tap operation and at the first sign of deterioration in its performance the gas supplier or a competent installer should be informed.
- c) Gas cylinders and appliances shall be maintained in good working condition in accordance with manufacturer's maintenance instructions
- d) Should any soot accumulate on pans, fire radiants, etc., or any smell be detected, the installer/distributor/ appointed agent should be consulted.

7 Changing gas cylinders

The following procedure should be adopted:

- a) Ensure that the replacement gas cylinder is compatible with the existing installation
- b) Extinguish any fire, flame or source of ignition (including cigarettes, smoking pipes and pilot lights) before changing gas cylinders.
- c) Ensure that the gas cylinder valve(s) is/are closed before disconnecting an empty cylinder or before removing any plastic cap or plug on the outlet connection of the replacement cylinder. Never use tools on cylinder valves, hand wheels or levers.

NOTE Cylinders with threaded connections have a left-hand thread. For cylinders with self/sealing/clip on valves, ensure that the regulator tap is closed before disconnection.

- d) Ensure that the replacement cylinder connections are gas-tight. If smell is detected, test leakage by brushing with soapy water around the connections; bubbles will form if vapour is leaking. Never check for a gas leak with a naked flame
- e) It is essential that the correct pressure regulator with the correct pressure setting and capacity for the installation be used in accordance with the manufacturer's instructions.
- f) In the case of a connection on a pressure regulator or gas appliance, which relies upon a sealing washer to maintain a gas-tight joint, it is essential to check that the washer is present, that it is sound and is correctly positioned prior to making the connection. Where the connection relies on a metal-to-metal seating or bullnose connection to obtain a gas-tight joint it is essential that the mating surfaces be clean and undamaged. In no circumstances shall a damaged valve or connection be used.

- g) Where connections are designed to be tightened with a spanner, it is essential that a spanner of the correct size is used and that the union is firmly tightened; hand tightness is not sufficient. When self-sealing valves are incorporated in a gas cylinder, connections shall be made in accordance with the manufacturer's instructions and tools shall not be used.
- h) If the continuation of supply is interrupted when a cylinder is changed, it is essential that all appliance taps are turned off before the change is made.
- i) With bulk storage tanks, always ensure that the site is kept clean and clear of rubbish. Such vessels are designed to be filled on site by the gas distributors.

8 Emergency action

8.1 Introduction

Although it is hoped that an emergency involving liquefied petroleum gas will not arise, it is necessary to lay down an emergency action procedure and people who use liquefied petroleum gas or keep it on the premises should be aware of the procedure.

The emergency action to be taken depends on the situation and there are three readily identifiable situations. The first is when leakage of LPG is suspected or detected; the second is when gas escapes through a fault in the appliance or the tubing and has ignited; the third is when the liquefied petroleum gas cylinder is exposed to fire, external to the cylinder. (See Clause 9 for model emergency action notice.)

8.2 Leakage without fire

Liquefied petroleum gas is normally stench and thus a leakage of it will usually be detected by smell. Leakage may also be detected by 'frosting' at the point of escape. If a leakage of liquefied petroleum gas is suspected or detected, it is imperative that the following procedure should be adopted:

- a) Do not operate any electrical switches.
- b) Shut off the supply of gas, e.g. by closing the main cylinder valve or valves. Extinguish all possible sources of ignition, e.g. heaters, cookers, pilot lights, cigarettes, etc. in the vicinity. Ventilate the premises by opening doors and windows fully.
- c) If, after closing the valve, the leak persists, the LPG cylinder shall, where possible, be moved to the open air, away from people and their properties, and as far as possible from drains and any source of ignition
- d) Extreme care should be taken to remove the cylinder in such a way as to prevent spillage of liquid. All naked flames in the area should be extinguished.
- e) Continue to ventilate the premises.
- f) If the leak persists and it is not possible to move the LPG cylinder outdoors, the premises should be effectively ventilated (doors and windows fully open). Meanwhile call the fire brigade because there is a serious potential danger of explosion.
- g) Warnings should be given to evacuate the building and to extinguish all naked flames in the area.
- h) Before the installation is used again, expert advice should be sought from the supplier so that the cause of the leak can be rectified.

8.3 Leakage of Liquefied Petroleum Gas which has ignited

If there is a liquefied petroleum gas and the gas has ignited, there is a possibility that combustible material in the vicinity will catch fire and lead to a more serious incident, perhaps with the fire reaching the cylinder of LPG. If the leakage of liquefied petroleum gas is from the high pressure side of the system, the flames may be so intense that it is unlikely that they will be readily extinguished; also the length of the flames will be such that combustible material, a considerable distance from the leak will, be ignited. However, if the leakage of liquefied petroleum gas is from the low pressure side of the system, the flame is unlikely to be large and it may be possible

to extinguish the flames or reduce the possibilities of the flame spreading to combustible material. In either event, the following steps should be taken:

- a) Before any attempts to extinguish the flame, ensure all gas supply is shut off if it is safe to do so, Once the gas supply has been shut off by closing the cylinder valves and the gas flame has gone out, any resultant fire shall be extinguished
- b) If the flame cannot be immediately extinguished:
 - i) . Alert everyone to vacate and move to safe area
 - ii) Call the fire brigade and state that a liquefied petroleum gas cylinder is involved and its location.
 - iii) Evacuate all personnel to a safe area.

8.4 Liquefied petroleum gas cylinder involved in fire

If a liquefied petroleum gas cylinder, of whatever size, is exposed to fire, there is a likelihood of the cylinder bursting with explosive violence. If there is a fire external to the liquefied petroleum gas cylinder which has spread to the cylinder, the following action should be taken:

- a) Alert everyone to vacate and move to safe area
- b) Call the fire brigade and state that a liquefied petroleum gas cylinder is involved and its location.
- c) Evacuate all personnel to a safe area.

8.5 Cylinders remote from the fire

Provided that it can be done quickly and without endangering anyone, ensure the valve is closed and remove the liquefied petroleum gas cylinder, if possible, from the premises to a safe area away from the fire.

9 Model emergency action notice or leaflet for users of liquefied petroleum gas

9.1 Gas leakage (usually detected by a distinct smell)

- DO NOT OPERATE ELECTRICAL SWITCHES.
- NEVER CHECK FOR A LEAK WITH A NAKED FLAME.
- IMMEDIATE ACTION — CLOSE All Cylinder Valves.
- EXTINGUISH all sources of ignition.
- OPEN all doors and windows.
- If leakage cannot be stopped, REMOVE CYLINDERS to a safe place in the open air and advise the supplier. If this is not possible, evacuate the premises and call the fire brigade.
- DO NOT USE THE INSTALLATION until it has been checked by the gas supplier or other competent person.

9.2 Fire

- Immediate action — if safe to do so, shut off gas supply. Do not attempt to extinguish gas flame by any other means. Raise alarm and call the fire brigade, stating that a liquefied petroleum gas cylinder is involved and its location.
- Do not go near a cylinder which is exposed to fire.

- Alert everyone in the immediate area of the fire and evacuate the building.
- Notify the fire brigade on their arrival of the location of the cylinder.
- If a cylinder is not involved in the fire and it is safe to do so, close all cylinder valves and remove the cylinders to a safe place.

PUBLIC REVIEW DRAFT

Bibliography

KS 9-2:2006, Liquefied petroleum gas cylinders — Part 2: Safe use of liquefied petroleum gas (LPG) in domestic dwellings — Code of practice

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