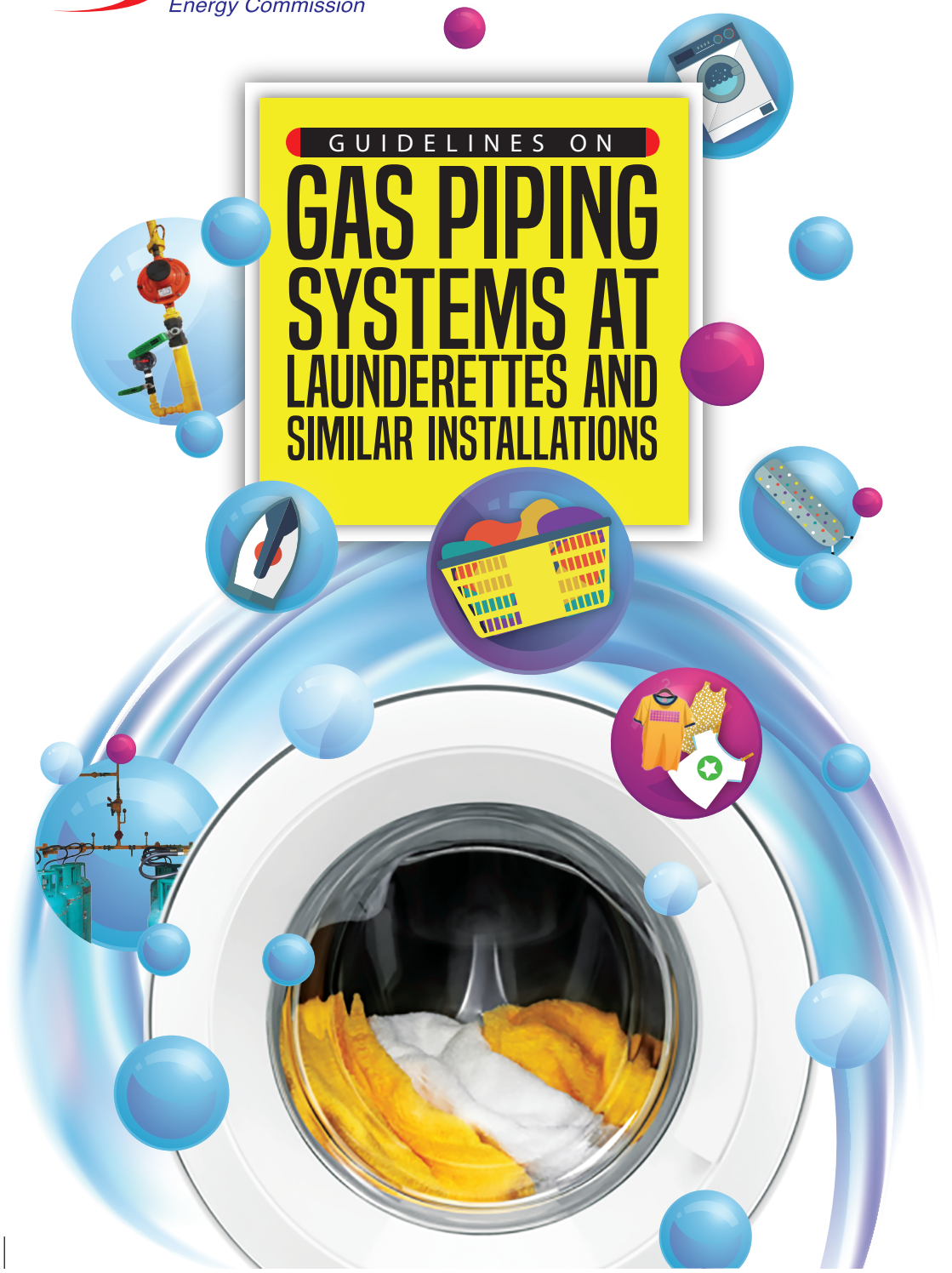
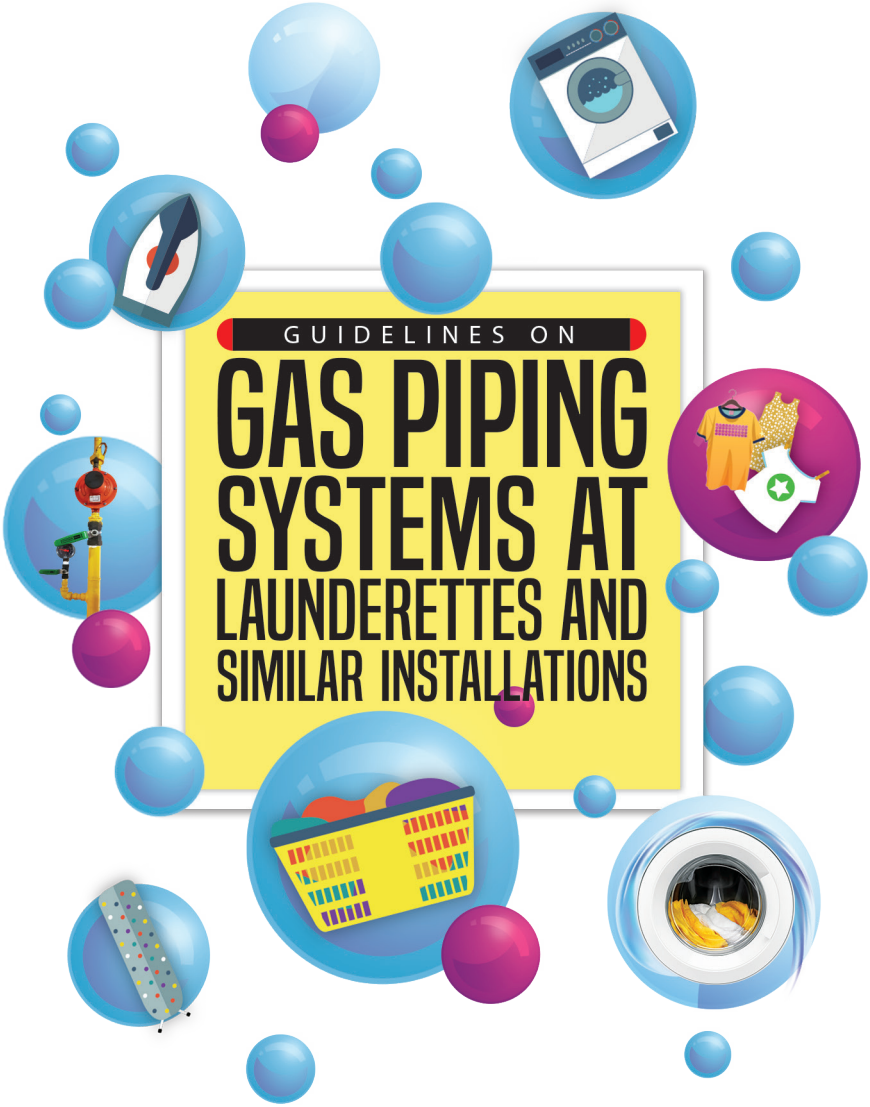
Suruhanjaya Tenaga
Energy Commission

GP/ST/No.25/2020

GUIDELINES ON

# GAS PIPING SYSTEMS AT LAUNDERETTES AND SIMILAR INSTALLATIONS





GUIDELINES ON

# GAS PIPING SYSTEMS AT LAUNDERETTES AND SIMILAR INSTALLATIONS

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**SURUHANJAYA TENAGA (ENERGY COMMISSION)**
NO.12, Jalan Tun Hussein, Precinct 2, 62100 Putrajaya, Malaysia
Tel : (603) 8870 8500
Fax : (603) 8888 8637
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Suruhanjaya Tenaga
Energy Commission

# GAS SUPPLY ACT 1993
# ( Act 501)

# GUIDELINES ON GAS PIPING SYSTEMS AT LAUNDERETTES AND SIMILAR INSTALLATIONS

In exercise of the power conferred by Section 37C of the Gas Supply Act 1993 [Act 501], the Commission issues the following guidelines.

## Citation and Commencement

1. These Guidelines may be cited as the Guidelines on Gas Piping Systems at Launderettes and Similar Installations ("Guidelines")
2. These Guidelines shall come into operation on the date of its registration.

## Purpose of these Guidelines

3. The purpose of these Guidelines is to guide consultants, gas contractors, launderette franchisors, competent persons and owners or management companies of premises in the management and maintenance of gas piping systems and installations in such premises and to ensure that such piping systems and installations are in good condition and safe for public use.

Suruhanjaya Tenaga
Energy Commission

## Application of these Guidelines

4. These Guidelines will address safety aspects of piping systems, LPG storage, installations and other equipment used in the operation and maintenance of gas installations at launderettes and premises using similar installations.

## Amendment and Variation

5. The Commission may at any time modify, vary, review or revoke these Guidelines.

**Dated** : 11 February 2020

**Abdul Razib Dawood**
Chief Executive Officer
Energy Commission

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# 1.0 OBJECTIVES

1.1 These Guidelines are developed by the Commission with the following objectives:

(a) to ensure that gas installations at launderettes and at premises using similar installations comply with the requirements stipulated in the Act and all subsidiary legislations made thereunder and Malaysian Standards MS 830:2013 and MS 930:2017; and

(b) to mitigate the risks associated with gas installations at launderettes and at premises using similar installations.

# 2.0 SCOPE

2.1 These Guidelines shall apply to owners, tenants and operators of gas installations and at premises using such installations and any of their personnel or a personnel of their contractors or sub-contractors working on the installation.

2.2 These Guidelines may also assist local authorities in carrying out their duties insofar as it involve gas installations at launderettes or at premises using similar installations.

2.3 These Guidelines are not intended in any way to circumvent the application of and obligations or requirements under any other written law or standards. Parties relying on these Guidelines are advised to obtain independent advice on the applicability of the same to their installations.

# 3.0 DEFINITIONS AND INTERPRETATION

3.1 In these guidelines, the following terms shall bear the following meanings:

**"Act"** means the Gas Supply Act 1993 [Act 501], as amended, modified or supplemented from time to time;

**"API"** means American Petroleum Institute;

**"ASTM"** means American Standard Testing Material;

**"ATI"** means an approval to install issued pursuant to Regulation 15 of the Gas Supply Regulations 1997;

**"ATO"** means an approval to operate issued pursuant to Regulation 16 of the Gas Supply Regulations 1997;

**"check valve"** means a mechanical valve to allow a one-way flow of gas;

**"Commission"** means Suruhanjaya Tenaga;

**"Energy Laws"** means the Act and all subsidiary legislations made thereunder, as amended, modified or supplemented from time to time;

**"launderette"** means a place of business where clothes and linen can be washed or dried using an electrical equipment for a fee where the operation of the launderette utilises gas supply either from an LPG storage in the form of a cylinder or from a person licensed under section 11 of the Act or both;

**"LPG"** means liquefied petroleum gas;

**"LPG storage"** means a location to store LPG cylinders which are to be used for operational purposes at or by a launderette or premises using similar installations;

**"Malaysian Standards"** means standards issued by the Department of Standards Malaysia or its successors or assigns;

**"mechanical ventilation system"** means a ventilation system driven by air handling units connected to ductwork within a building that supplies air to and extracts air from interior spaces;

**"pigtail"** means a rubber hose connecting an LPG cylinder to any manifold;

**"premises"** means a building that is used for commercial purposes;

**"similar installation"** means an installation which obtains its gas supply from an LPG storage in the form of a cylinder or from a person licensed under section 11 of the Act or both; and

**"Zone 2"** means a hazardous area classified as a Zone 2 in accordance with Malaysian Standards MS 830:2013.

3.2 Subject to paragraph 3.1 and unless expressly indicated to the contrary or unless the context otherwise requires, terms adopted and used in these Guidelines shall bear the same meaning as they are defined in the Energy Laws.

3.3 If there are any conflicts between the provisions of these Guidelines and of those contained in the Energy Laws, the provisions in the Energy Laws shall prevail.

## 4.0 LPG CHARACTERISTICS

The following illustrates typical characteristics of LPG:

| | Typical LPG Characteristics | |
|---|---|---|
| **i** | Specific Gravity | 0.55@15°C; water =1 |
| **ii** | Gross Calorific Value, (kcal/Sm³) | 28,058 |
| **iii** | Burning Velocity, (m/s) | **0.46** |
| **iv** | Upper Flammability Limit, (%) | **9.0** |
| **v** | Lower Flammability Limit, (%) | **1.8** |
| **vi** | Auto-ignition Temperature, (°C) | **>410** |
| **vii** | Theoretical Air Requirement, (m³/m³) | **28.81** |

## 5.0 REGULATORY REQUIREMENTS

5.1 The installing of any piping system shall be carried out by a person holding a valid Certificate of Registration as a Gas Contractor.

5.2 The installation work mentioned in paragraph 5.1 shall be carried out or directly supervised by a competent person working for the Gas Contractor.

5.3 Prior to the installation of a piping system, the owner of the piping system shall obtain an ATI.

5.4 Upon completion of the installation, the owner of the piping system shall obtain an ATO. For installations receiving the supply of gas directly from a retail licensee, the ATO shall be displayed at a visible and suitable location within the premises.

5.5 In order to supply gas through the piping system, a licence in accordance with Section 11 of the Act shall be obtained.

5.6 All licenses obtained pursuant to section 11 of the Act shall be displayed at a visible and suitable location within the premises.

# 6.0 TECHNICAL REQUIREMENTS





## 6.1 **Installation Requirements**

(a) These requirements shall be fulfilled by a Gas Contractor.

(b) The design of the installation shall follow the requirements stipulated in the latest Malaysian Standards MS 830 and MS 930 or any modifications or substitutions thereto as directed by the Commission.

(c) Hoses shall not be used to connect a gas appliance to any LPG cylinder. However, an exception is granted to premises utilising not more than two (2) appliances such as a water heater and dryer which are manned at all times during operation provided that:

(i) the number of LPG cylinders used shall not exceed two (2); and

(ii) only one (1) cylinder may be connected to one (1) appliance.

(d) If the launderette or premises using similar installations is located in a building containing a continuous row of shop houses, the LPG storage must not contain more than 12 units of 50kg LPG cylinders.

(e) Gas detectors approved by the Commission shall be installed within the vicinity of all gas appliances, taking into account the operating range of the gas detectors, and in any case shall not exceed three (3) meters.

(f) All gas detectors shall be connected to a safety alarm located in an area assigned to be frequented by the public and linked to an automatic shut-off device.

(g) The design must also follow any further requirements as issued by the Commission from time to time.

6.2 **Piping Requirements**

(a) These requirements shall be fulfilled by a Gas Contractor, save for requirement 6.2(j) which must be fulfilled by the owner of the piping system.

(b) The material used for any piping shall be of carbon steel complying with the ASTM A 106 or API 5L Grade B standards.

(c) The piping shall be of a seamless type.

(d) The minimum grade of the pipes shall be Schedule 40 of API 5L Grade B.

(e) Any equipment such as valves or regulators connected to the piping shall not be installed higher than two (2) meters above the finished floor level.

(f) A pressure gauge shall be installed after each regulator to indicate the pressure of the gas in the piping system. This is to enable the determination of whether the pressure is in compliance with the maximum operating pressure allowed by the Commission as stated in the ATO.

(g) Any changes in the direction of the piping shall use standard gas fittings. The use of non-standard gas fittings or manually welded parts are strictly prohibited

(h) Piping shall be adequately supported in order to ensure that it is securely fixed at the installed position. The support shall be able to withstand the load of the pipes and any vibrations created during the transportation of gas.

(i) Hoses used to connect pipes to any appliances such as water heater or dryer shall not exceed 1.5 meters in length.

(j) All piping shall not be in contact with electrical cables, metal parts or any substance or material which may create sparks.

(k) All piping systems and installations shall comply with Table 13 in Section 14 of Malaysian Standard MS 830:2013 as amended or revised from time to time. For reference purposes, the current applicable Table 13 is attached as Attachment 1 to these Guidelines.

(l) No other items shall be placed on any piping at any time.

## 6.3 LPG Storage Requirements

These requirements shall be fulfilled by a Gas Contractor and/or the owner of the piping system, as applicable.

(a) General Storage Requirements

(i) The LPG storage **shall not:**

(aa) be located at the main entrance of the launderette premises;

(ab) be located in an area where the safety of the public might be jeopardized;

(ac) be located at the basement of any building;

(ad) be located under any staircase or ramp;

(ae) store any unused LPG cylinders;

(af) contain any mechanical ventilation system unless the ventilation system is a certified explosion-proof type; and

(ag) be installed with any electrical wiring or equipment, unless such wiring or equipment is a certified explosion-proof type and suitable for a Zone 2 area.

(ii) The LPG storage shall:

(aa) be located at an area with adequate ventilation;

(ab) have adequate leg room for the safe loading and unloading of LPG cylinders;

(ac) have emergency shut-off valves equipped with pullout cables installed at appropriate locations where the pullout cables to activate the shut-off valves shall be placed in suitable conduits;

(ad) be a Zone 2 area;

(ae) have standard safety signage installed in accordance with Malaysian Standards MS 830:2013; and

(af) at all times comply with Malaysian Standards MS 830:2013.

(iii) Pigtails connected to any manifold shall be fitted with a check valve.

(iv) The space in the opposite direction of the LPG storage shall be clear from obstruction so as to allow easy access to the LPG storage.

(v) The public shall not be given access or be able to access the area within the vicinity of the LPG storage area.

(b) Specific Requirements for LPG Storage Located Within Launderette Premises

(i) The LPG storage area shall be protected with a 4-hour fire-rated wall, in accordance with Malaysian Standards MS 830:2013.

## 6.4 Maintenance Requirements

(a) These requirements shall be fulfilled by the owner of the piping system.

(b) The piping system or installation shall be maintained in good condition according to standards prescribed by the Commission, or, if not prescribed by the Commission, according to acceptable industry standards.

(c) A responsible person shall be assigned to the piping system or installation who shall conduct regular inspections and ensure that the piping system or installation is free from any gas leakage.

(d) The piping system or installation shall be inspected, tested and certified by a competent person every two (2) years or for such periods as may be determined by the Commission.

## 6.5 Other Requirements

(a) These requirements shall be fulfilled by the owner of the piping system.

(b) All LPG storage cylinders must be those assigned for commercial use by the Ministry of Domestic Trade and Consumer Affairs. The use of LPG storage cylinders for domestic purposes is strictly prohibited.

(c) Adequate warning and evacuation signs shall be displayed at the premises to facilitate the public in the event of any emergencies.

(d) "No Smoking" signs shall be placed at appropriate locations within the premises.

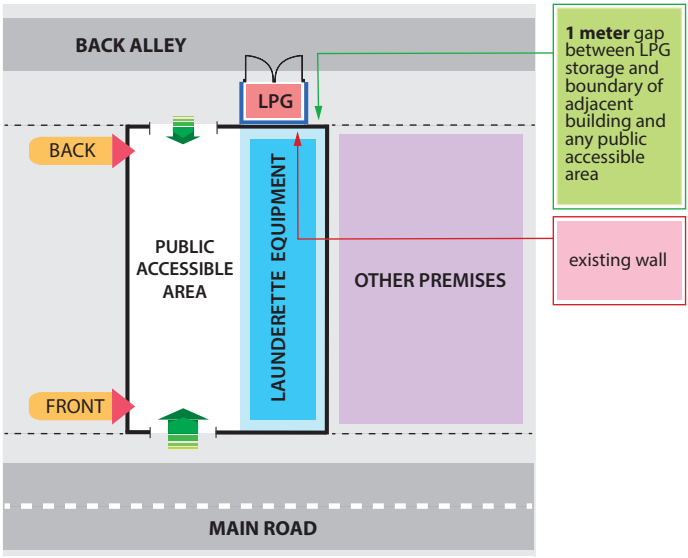
(e) For premises operating on a 24-hour basis, the contact number of the responsible person and other emergency contact numbers such as the police, fire department and the like shall be displayed at the area frequented by customers.



## 7.0 TYPICAL LAYOUT DIAGRAMS FOR LAUNDERETTES

7.1 The following is an example of a layout diagram for launderettes where the LPG storage is located outside and at the back of the launderette premises[1] ("Type A"):

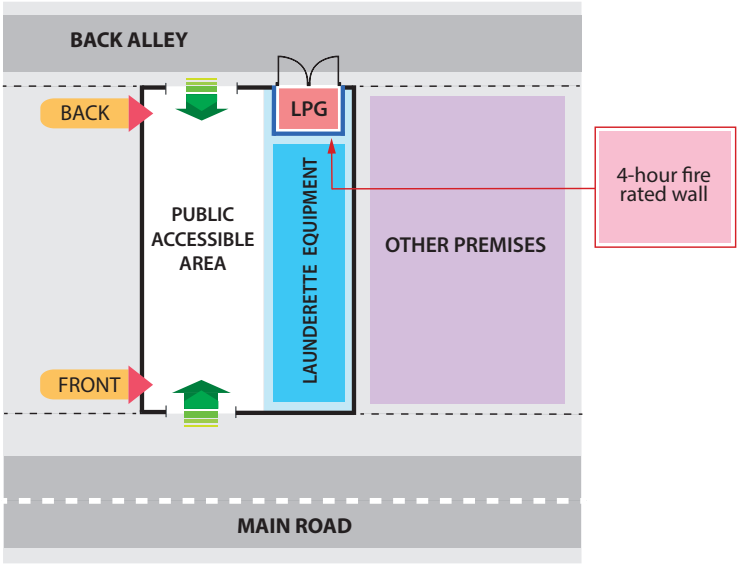
**TYPE A -** LPG STORAGE PLACED OUTSIDE OF LAUNDERETTE PREMISES




[1] Provided that the owner or occupier of the launderette or premises using similar installations has obtained all the necessary approvals, permits, etc. to build the LPG storage at the said location

7.2 The following is an example of a layout diagram for launderettes where the LPG storage is located within and at the back of the launderette premises[2] ("Type B"):

**TYPE B -** LPG STORAGE PLACED INSIDE OF LAUNDERETTE PREMISES




7.3 For both Type A and Type B layouts:

(a) The public accessible area shall be equipped with a safety alarm, in accordance with paragraph 6.1(f) of these Guidelines;

(b) Gas detectors approved by the Commission shall be installed within the vicinity of all gas appliances, in accordance with paragraph 6.1(e) of these Guidelines;

(c) The contact number of the responsible person and other emergency contact numbers and adequate warning and evacuation signs shall be displayed at public accessible area, in accordance with paragraphs 6.5(c) and 6.5(e) of these Guidelines; and

[2] Provided that the owner or occupier of the launderette or premises using similar installations has obtained all the necessary approvals, permits, etc. to build the LPG storage at the said location

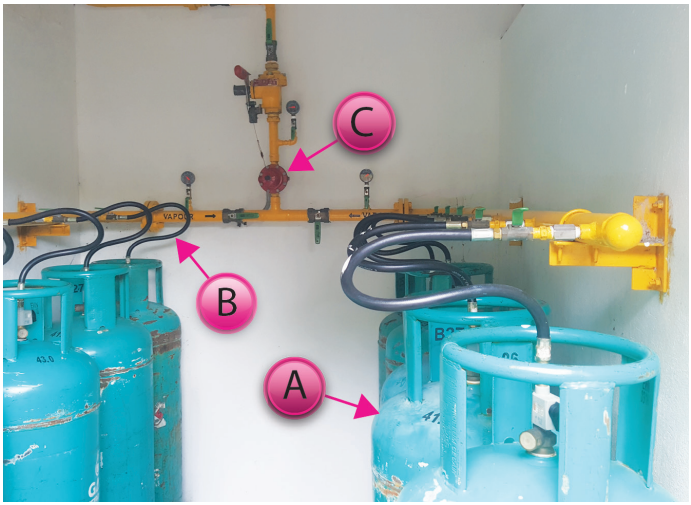
(d) There shall be a one (1) meter gap between the LPG storage and the boundary of any adjacent buildings, and between the LPG storage and any public accessible area inside the launderette or premises using similar installation.

7.4 In addition, for Type B layout, a 4-hour fire-rated wall shall be installed in accordance with paragraph 6.3(b)(i) of these Guidelines.

# 8.0 COMPLIANT AND NON-COMPLIANT INSTALLATIONS

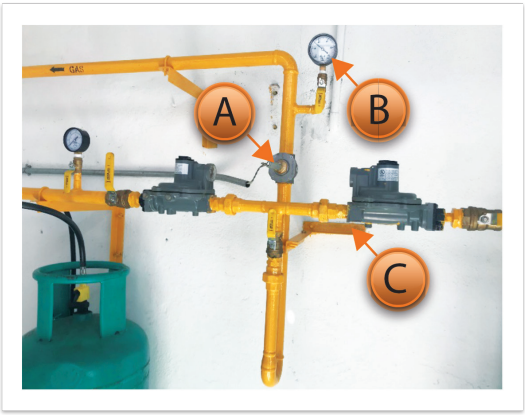
## 8.1 Examples of Compliant Installations

### (a) Example 1




A. 50kg LPG cylinders for commercial use [paragraph 6.5(b)].
B. Pigtail connecting a 50kg LPG cylinder to the manifold is fitted with a check valve [paragraph 6.3(a)(iii)].
C. Emergency shut-off valve installed at an appropriate location and pullout cable placed in a suitable conduit [paragraph 6.3(a)(ii)(ac)].

**(b) Example 2**




A. Emergency shut-off valve installed at an appropriate location and pullout cable placed in a suitable conduit [paragraph 6.3(a)(ii)(ac)].
B. Pressure gauge installed to indicate the pressure of the gas in the piping system [paragraph 6.2(f)].
C. Regulator installed not higher than two (2) meters above finished floor level [paragraph 6.2(e)].

**(c) Example 3**

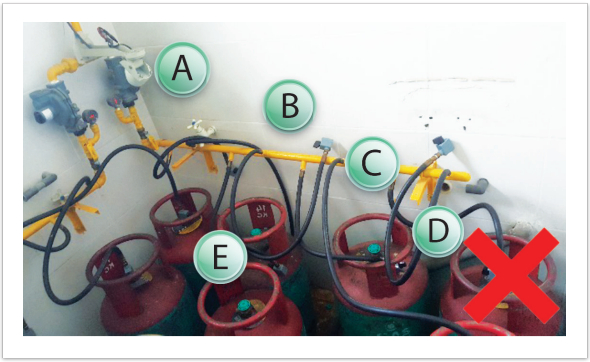

A. Standard safety signage [paragraph 6.3(a)(ii)(ae)].
B. LPG storage containing not more than 12 units of 50kg LPG cylinders [paragraph 6.1(d)].
C. Emergency shut-off valve installed at an appropriate location and pullout cable placed in a suitable conduit [paragraph 6.3(a)(ii)(ac)].

## 8.2 Examples of Non-Compliant Installations

### (a) Example 1


A. 14kg LPG cylinders for domestic use [paragraph 6.5(b)].
B. No emergency shut-off valves installed [paragraph 6.3(a)(ii)(ac)].
C. Pigtail connecting LPG cylinder to the manifold is not fitted with check valve [paragraph 6.3(a)(iii)].

### b) Example 2




A. Surveillance camera (electrical equipment) not of explosion-proof type [paragraph 6.3(a)(i)(ag)].
B. LPG storage area not protected with a 4-hour fire-rated wall [paragraph 6.3(b)(i)].
C. No emergency shut-off valve installed [paragraph 6.3(a)(ii)(ac)].
D. Pigtail connecting LPG cylinder to the manifold not fitted with check valve [paragraph 6.3(a)(iii)].
E. Unused LPG cylinder stored at LPG storage [paragraph 6.3(a)(i)(ae)].

### (c) Example 3


A. Electrical wiring in contact with piping is not of explosion-proof type and suitable for a Zone 2 area [paragraph 6.3(a)(i)(ag)].
B. Gas detector not installed [paragraph 6.1(e)].

### (d) Example 4


A. Electrical wiring and equipment not of explosion-proof type [paragraph 6.3(a)(i)(ag)].
B. Electrical equipment not of explosion-proof type [paragraph 6.3(a)(i)(ag)].
C. No emergency shut-off valve installed [paragraph 6.3(a)(ii)(ac)].
D. Pigtail connecting LPG cylinder to the manifold not fitted with check valve [paragraph 6.3(a)(iii)].
E. LPG storage area not protected with a 4-hour fire-rated wall [paragraph 6.3(b)(i)].

# 9.0 EFFECTS OF CONTRAVENTION OR NON-COMPLIANCE

9.1 All parties concerned should note that any person who carries out activity of use of gas through a piping system at a launderette or premises using similar installations requires a licence to be issued by the Commission. In addition, any licensee, competent person or any person subject to these Guidelines must comply with it.

9.2 It is an offence under subsection 30(1) of the Act if any person carries out any activity of retail or use of gas through a piping system without any licence. On conviction, the offender will be liable to a fine not exceeding one hundred thousand ringgit (RM100,000.00) or to imprisonment for a term not exceeding three (3) years or to both and to a further fine not exceeding one thousand ringgit (RM1,000.00) for every day or part of a day during which the offence continues after conviction, and any piping system or part thereof used or intended to be used in the commission of the offence shall be liable to forfeiture.

9.3 It is an offence under subsection 37C(6) of the Act if any licensee, competent person or any person fails to comply with these Guidelines. For this offence, section 31 of the Act provides that on conviction, the offender will be liable to a fine not exceeding one hundred thousand ringgit (RM100,000.00) and, in the case of a continuing offence, to a fine not exceeding two thousand ringgit (RM2,000.00) for every day or part of a day during which the offence continues after conviction.

# 10.0 CONTACT INFORMATION

## 10.1 HEADQUARTERS

**SURUHANJAYA TENAGA**
No.12, Jalan Tun Hussein,
Precinct 2,
62100, Putrajaya.

Toll Free No : 1-800-2222-78 (ST)
Phone : (603) 8870 8500
Fax : (603) 8888 8637
Web : www.st.gov.my

## 10.2 REGIONAL OFFICES

| Address | Phone No. & Fax |
|---|---|
| **SELANGOR, W.P KUALA LUMPUR & PUTRAJAYA**<br>Tingkat 10, Menara PKNS, No 17,<br>Jalan Yong Shook Lin,<br>46050 Petaling Jaya,<br>Selangor. | Tel : 03 7955 8930<br>Fax : 03 7955 8939 |
| **PULAU PINANG, KEDAH & PERLIS**<br>Tingkat 10, Bangunan KWSP,<br>13700 Seberang Jaya, Butterworth<br>Pulau Pinang. | Tel : 04 398 8255<br>Fax : 04 390 0255 |
| **PERAK**<br>Tingkat 1, Bangunan KWSP,<br>Jalan Greentown,<br>30450 Ipoh,<br>Perak. | Tel : 05 253 5413<br>Fax : 05 255 3525 |
| **KELANTAN & TERENGGANU**<br>Tingkat 6, Bangunan KWSP,<br>Jalan Padang Garong,<br>15000 Kota Bharu,<br>Kelantan. | Tel : 09 748 7390<br>Fax : 09 744 5498 |

| Address | Phone No. & Fax |
|---|---|
| **PAHANG**<br>Tingkat 7, Menara Zenith,<br>Jalan Putra Square 6,<br>25000 Kuantan,<br>Pahang. | Tel : 09 514 2803<br>Fax : 09 514 2804 |
| **JOHOR**<br>Suite 18A, Aras 18,<br>Menara ANSAR 65,<br>Jalan Trus,<br>80000 Johor Bahru,<br>Johor. | Tel : 07 224 8861<br>Fax : 07 224 9410 |
| **PANTAI BARAT NEGERI SABAH**<br>Tingkat 7, Bangunan BSN,<br>Jalan Kemajuan,<br>88000 Kota Kinabalu,<br>Sabah. | Tel : 088 232 447<br>Fax : 088 232 444 |
| **PANTAI TIMUR NEGERI SABAH**<br>Tingkat 3, Wisma Sabah KM12,<br>W.D.T. No. 25,<br>90500 Sandakan,<br>Sabah. | Tel : 089 666 695<br>Fax : 089 660 279 |
| **NEGERI SEMBILAN & MELAKA**<br>Tingkat 4, Wisma Perkeso,<br>Jalan Persekutuan, MITC,<br>75450 Ayer Keroh,<br>Melaka. | Tel : 06 231 9594<br>Fax : 06 231-9620 |

# ATTACHMENT 1

**Table 13. Electrical Equipment Classified Areas**

| Location | Burning Velocity, (m/s) | Area Classification |
|---|---|---|
| Storage containers other than cylinders | a) Within 1.5 m in all directions from the container connections or shell.<br><br>b) Beyond 1.5 m but within 4.5 m in all directions from the container connections or shell. | Zone 1<br><br>Zone 2 |
| Relief valve discharge | a) Within direct path of discharge<br><br>b) Within 1.5 m in all directions from point of discharge.<br><br>c) Beyond 1.5 m but within 4.5 m in all directions from point of discharge | Fixed electrical equipment shall not be installed<br><br>Zone 1<br><br>Zone 2 |
| Gauge vent openings | a) Within 1.5 m in all directions from point of discharge<br><br>b) Beyond 1.5 m within 4.5 m in all directions from point of discharge | Zone 1<br><br>Zone 2 |
| Tank vehicle loading and unloading (see note 1) | a) Within 1.5 m in all directions from a point where connections are regularly made or disconnected for product transfer.<br><br>b) Beyond 1.5 m but within 4.5 m in all directions from a point where connections are regularly made or disconnected and within the cylindrical volume between the horizontal equator of the sphere and ground (see Figure 11) | Zone 1<br><br>Zone 2 |
| Pumps, compressors, gas-air mixers and vaporisers (other than direct fired):<br><br>i) Outdoors in open air, at or aboveground level | a) Within 1.5 m in all directions.<br><br>b) Beyond 1.5 m but within 4.5 m in all directions from the equipment and within the cylindrical volume between the horizontal equator of the sphere and ground (see Figure 11) | Zone 1<br><br>Zone 2 |

| Location | Burning Velocity, (m/s) | Area Classcification |
|---|---|---|
| ii) Indoors with adequate ventilation (see note 2 ) | Entire room and any adjacent room not separated by a vapour-tight partition | Zone 1 |
| iii) Indoors without ventilation | a) Entire room and any adjacent room not separated by a vapour-tight partition<br><br>b) Within 4.5 m of the exterior side of any exterior wall or roof that is not vapour tight or within 4.5 m of any exterior opening. | Zone 1<br><br>Zone 2 |
| Automotive LPG dispensing station dispensing units | a) Entire space within dispenser enclosure and 450 mm horizontally from enclosure exterior up to height of 1.5 m above dispenser base. Entire pit or open space beneath dispenser.<br><br>b) Up to 450 mm aboveground level within 6 m horizontally from any edge of enclosure. For pits within this area, see the requirements for 'pits or trenches' below. | Zone 1<br><br>Zone 2 |
| Pits or trenches containing or located beneath LPG valves, pumps, compressors, regulators and similar equipment<br><br>i) Without mechanical ventilation | a) Entire pit or trench.<br><br>b) Entire room and any adjacent room not separated by a vapour-tight partition.<br><br>c) Within 4.5 m in all directions from pit or trench when located outdoors. | Zone 1<br><br>Zone 2<br><br>Zone 2 |
| ii) With adequate mechanical ventilation | a) Entire pit or trench.<br><br>b) Entire room and any adjacent room not separated by a vapour-tight partition.<br><br>c) Within 4.5 m in all directions from pit or trench when located outdoors. | Zone 2<br><br>Zone 2<br><br>Zone 2 |

| Location | Burning Velocity, (m/s) | Area Classcification |
|---|---|---|
| Special compartments or rooms for storage of cylinders | Entire room | Zone 2 |
| Pipelines and connections containing operational bleeds, drips, vent or drain | a) Within 1.5 m in all directions from point of discharge.<br><br>b) Beyond 1.5 m from point of discharge:<br>Same as for sites i), ii) and iii) of 'pumps, compressors, gas-airs mixers and vaporisers'. | Zone 1 |
| Container filling<br><br>i) Indoors with adequate ventilation (see note 2)<br><br>ii) Outdoors in open air | <br><br>a) Within 1.5 m in all directions from a point where connections are regularly made or disconnected for product transfer.<br><br>b) Beyond 1.5 m and entire room.<br><br>a) Within 1.5 m in all directions from a point where connections are regularly made or disconnected for product transfer.<br><br>b) Beyond 1.5 m but within 4.5 m in all directions from a point where connections are regularly made or disconnected and within the cylindrical volume between the horizontal equator of the sphere and ground (see Figure 11). | <br><br>Zone 1<br><br>Zone 2<br><br>Zone 1<br><br>Zone 2 |

NOTES:

1. When classifying extent of hazardous area, consideration shall be given to possible variations in the spotting of tank vehicles at the unloading points and the effect these variations of actual spotting point may have on the point of connection.

2. Where specified for the prevention of fire or explosion during normal operation, ventilation is considered adequate where provided in accordance with the requirements of this standard.

**SURUHANJAYA TENAGA (ENERGY COMMISSION)**
No.12 Jalan Tun Hussein,
Precinct 2, 62100 Putrajaya

Tel : 03-8870 8500
Fax : 03-8888 8637
Tollfree Number : 1 800 2222 78

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