

**BELIZE:**

**National Metrology (Liquefied Petroleum Gas) Bylaws, 2011**

**S.I. No. 12 of 2011**

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## BELIZE:

## STATUTORY INSTRUMENT

No. 12 of 2011

*REGULATIONS made by the Minister responsible for National Metrology, in exercise of the powers conferred upon him by section 56 of the National Metrology Act, No. 23 of 2003 and all other powers thereunto him enabling.*

(Gazetted 5<sup>th</sup> March, 2011.)

1. These Regulations may be cited as the

Citation.

**NATIONAL METROLOGY (LIQUEFIED  
PETROLEUM GAS) REGULATIONS, 2011.**

2. In these Regulations

Interpretation.

“**discrimination**” means the ability of a weighing instrument to react to small variations of load specified in Regulation 10;

“**error of a weighing machine**” means the difference, when the machine is loaded with a standard weight, between the indicated mass and the mass value assigned to that standard weight;

“**load receptor**” means the part of a weighing instrument on which goods being weighed are placed;

“**nonautomatic weighing instrument**” means an instrument that

- (a) requires the intervention of an operator during the weighing process to deposit on or remove from the receptor the load to be measured and also to obtain the result,
- (b) permits direct observation of the weighing results;

“**sensitivity**” in relation to a weighing instrument not equipped with digital indication means the displacement of the index produced by a small change of load specified in Regulation 10;

“**weight**” means a body of determinate mass for use within a weighing instrument;

“**verification scale interval**” means the value, expressed in units of mass, used for the classification and verification of a weighing instrument.

Application for verification, etc.  
First Schedule.

3. (1) A person who intends to trade liquefied petroleum gas shall apply to the Bureau in the form set out in the *First Schedule*, for the following:

- (a) initial verification of measuring instrument
- (b) prescribe mark of verification
- (c) pattern approval in accordance with the Act

(2) An application under sub regulation (1) shall consist of the following:

- (a) the completed application form;
- (b) the non-refundable application fee specified in the *Second Schedule*;
- (c) the measuring instrument;

Second Schedule.

- (d) any other necessary documentation as the Director may require.

(3) Where a person under subregulation (1) is not in possession of the measuring instrument, that person may request from the Director an approval to submit the following information relating to the measuring instrument instead of the measuring instrument:

- (a) details of the manufacturer;
- (b) model number;
- (c) serial number;
- (d) capacity;
- (e) scale interval;
- (f) evidence of international pattern approval;

4. Subject to the requirements of these Regulations, the Director may grant the verification upon payment of the appropriate fee specified in the *Second Schedule*.

Grant of  
verification  
etc.  
Second  
Schedule.

5. (1) Weights for liquefied petroleum gas trade shall be

Requirements  
for weights.

- (a) of a denomination specified in Table 1 or Table 2 of the *Third Schedule* and have that denomination marked on its top surface;

Third  
Schedule.

- (b) in accordance with section 6(1) of the Act and contains the information specified in the *Fourth Schedule* relating to contents of the calibration certificate.

(2) (a) No weight shall be adjusted otherwise than by means of an adjustment hole, subject to the following conditions

- (i) no weight of 10 grams or less shall have an adjusting hole;
- (ii) no other weight shall have more than one adjusting hole.

(b) The adjustment hole shall be

- (i) partly filled with lead or similar dense metallic material permitting future adjustment;
- (iii) tapered so as to prevent the lead or similar material from being dislodged by shock and wear, or closed by a plug or disc made of brass or steel;

(3) The error of a weight for liquefied petroleum gas trade shall not be greater than the limit of error corresponding to the respective denomination specified in Table 1 or Table 2 of the

Third Schedule.

***Third Schedule.***

(4) Adjusting mechanism under sub regulation (2) shall be secured and protected so that it cannot be readily tampered with.

**General  
requirements  
for weighing  
instrument.**

6. A weighing instrument for use in accordance with the Act shall be one of the following if it complies with Regulation 5:

- (a) a precision balance,
- (b) platform machine,

- (c) a self-indicating weighing instrument (including a price computing or printing electronic weighing machine),
- (d) nonautomatic weighing machine.

7. (1) The classification of weighing instruments into different classes of accuracy is based on:

Classification of weighing instrument.

- (a) the value of the verification scale interval as defined in Table 3 of the *Third Schedule*, which fixes a value of the minimum verification scale interval for each class;
- (b) the number of verification scale intervals as defined in Table 4 of the *Third Schedule* and a minimum number of verification scale intervals are specified for each class;
- (c) the minimum capacity, which fixes a lower limit to the permissible range of weighing.

Third Schedule.

Third Schedule.

(2) In accordance with subregulation (1) nonautomatic weighing instruments shall be classified into classes of accuracy given below and shall have the following corresponding symbols:

No.	Accuracy	Class	Symbol
(a)	Special	1	I
(b)	High	2	II
(c)	Medium	3	III
(d)	Ordinary	4	IIII

Verification  
scale interval,  
etc.

8. The verification scale interval, number of verification scale intervals and minimum capacity, in relation to the accuracy class of an instrument shall be as given in Table 3 and Table 4 of the *Third Schedule*.

Third  
Schedule.

Maximum  
permissible  
error.  
Third  
Schedule.

9. (1) The maximum permissible error of a weighing instrument at initial verification is as given in Table 5 of the *Third Schedule*.

(2) The maximum permissible error of a weighing instrument at in-service verification shall be twice the maximum permissible error on initial verification.

Mandatory  
requirements.

10. A person who is selling liquefied petroleum gas shall ensure that the weighing instrument used to weigh the liquefied petroleum gas cylinder meets the following requirements at each verification:

(a) Discrimination

(i) A weighing instrument not equipped with digital indication shall show a clearly visible change of indication, when a load equal to half the maximum permissible error specified in Regulation 9 is applied at no load and at full load to the load receptor without shock;

(ii) A weighing instrument equipped with digital indication shall change its indication at no load and at full load when an extra load of not more than one and half scale intervals is applied on the load receptor without shock.

(b) Sensitivity

A nonautomatic weighing instrument shall have sensitivity such that, for any load, a change of

load equal to the maximum permissible error specified in regulation 9 shows a permanent displacement of the index of at least

- (i) 2 millimeter for weighing instruments of class III or IIII with a maximum capacity of 30 kilograms or less;
- (ii) 5 millimeter for a weighing instrument of class III or IIII with a maximum capacity greater than 30 kilograms.

(c) Repeatability

When the same load is weighed 3 or more times, the difference between the indications of any two weighings shall not exceed the absolute value of the maximum permissible error specified in regulation 9.

(d) Eccentricity

When a load of one-third of the maximum capacity of the instrument is displaced from the centre of the load receptor to the extreme off-centre position on the load receptor, the indicated mass shall remain within the maximum permissible error specified in regulation 9.

(e) Interchangeability

When, for a balanced equal-armed weighing instrument, the load and working standard weights are interchanged on the load receptors, the indicated weight shall not change by more than twice the absolute value of the maximum permissible error specified in regulation 9.



**Markings**

11. (1) A weighing instrument shall carry the following markings:

- (a) the manufacturer's name written in full;
- (b) Maximum capacity in the form "Max.....";
- (c) Minimum capacity in the form "Min.....";
- (d) Verification scale interval in the form "e=".

(2) The following information shall also be marked on electronically or electrically operated weighing instrument

- (a) the limits of temperature between which the instrument functions properly
- (b) the potential of the electricity supply

(3) The markings shall be indelible and of a size, shape and clarity allowing easy reading.

(4) The markings shall be grouped together in a clearly visible position either on a descriptive plate fixed to an instrument or on a part of the instrument itself.

(5) All weighing instruments shall have a permanent place for the application of verification marks which shall be such that

- (a) the part on which it is located cannot be removed from the machine without destroying the impressions;
- (b) the easy application of the mark is possible without altering the metrological qualities of the instrument;

- (c) it is easily visible to any person who wishes to check the verification marks.

(6) A weighing instrument shall not have bearings or knife-edges which are loose, not aligned, worn out or otherwise defective for the intended operation of the instrument.

12. (1) No person shall use a weighing instrument which is

**Prohibitions.**

- (a) erected on a loose, weak or unstable base;
- (b) not levelled as its construction requires;
- (c) exposed to wind or draught which affects the indication.

(2) No person shall use a weighing instrument for a load greater than its maximum capacity.

(3) No person shall use a weighing instrument for liquefied petroleum gas trade in the presence of a purchaser unless it is constructed and sited so that the weighing of the liquefied petroleum gas cylinder and the indicated mass are simultaneously clearly visible to the purchaser.

13. No person shall sell liquefied petroleum gas from a motor vehicle unless that vehicle is equipped with a measuring instrument to weigh the liquefied petroleum gas cylinder prior to and after the filling of the cylinder.

**Delivery from motor vehicle.**

14. The fees at the rates specified in the *Second Schedule* are payable for testing, verification and stamping of weights, measures, and weighing and measuring instruments.

**Fees. Second Schedule.**

Stamping etc.  
of weighing  
instrument.

Fourth Schedule.

15. Every weight, measure, weighing or measuring instrument which complies with such regulations as applicable to it as the case may be and is correct shall be stamped or marked with the prescribed mark of verification as set out in the **Fourth Schedule**.

Testing of  
weights.

Third  
Schedule.

16. (1) A weight shall be tested by comparison with the equivalent working standard weight or group of working standard weights having errors less than one third of the limit of error specified in Table 6 or Table 7 of the **Third Schedule** as applicable, by direct comparison on a class II or higher class balance.

(2) If a weight does not conform to this regulation it shall not be passed as correct at verification.

(3) Where a weight for trade in liquefied petroleum gas has been passed as correct at verification, the Weights and Measures Inspector shall stamp with the prescribed verification mark as set out in the **Fourth Schedule** the weighing instrument

Fourth  
Schedule.

(a) if the weight has an adjusting hole, on the lead or similar material in that hole; or

(b) in any other case, on the base surface of the weight.

Testing of  
weighing  
instruments.

17. (1) The following tests shall be carried out on a new or repaired weighing instrument at verification:

(a) A visual inspection of all parts of the instrument including those which may be dismantled and re-assembled without changing the correct operation of the instrument;

(b) The applicable tests as specified in regulation 10;

- (c) Any other test which is considered necessary for the intended use of the instrument may.

(2) At in-service inspection of a weighing instrument the applicable parts of inspection and testing as specified in this regulation shall be carried out and in addition any stamps, seals and markings of the instrument or verification certificates shall be examined.

(3) A weighing instrument shall be inspected at the site of its intended use:

Provided that a portable instrument may be verified in accordance with section 22 of the Act.

(4) The limit of error of a weighing instrument shall be tested with working standard weights having errors of not more than one-third of the limit of error for that instrument.

(5) Except where otherwise provided in these regulations tests shall be carried out for all weighing instruments at the following loads

- (a) at no load;
- (b) at half maximum capacity;
- (c) at maximum capacity, including if applicable maximum additive tare;
- (d) at loads at which the method of balancing is modified by addition or subtraction of a unit weight.

18. A person who contravenes these Regulations commits an offence and is liable on summary conviction to a fine not exceeding five thousand dollars or to imprisonment not exceeding one year, or to both such fine and imprisonment.

**Penalty.**

**Transition.**

19. A person who is selling liquefied petroleum gas prior to the commencement of these Regulations shall comply with these Regulations within thirty days of the date of commencement.

**Commencement.**

20. These Regulations come into force on 18<sup>th</sup> day of February, 2011.

**FIRST SCHEDULE**  
**[Reg. 3(1)]**  
**NATIONAL METROLOGY**  
**(Belize Bureau of Standards)**  
**Application Form for Verification**

**ID No.: BBS/MET** \_\_\_\_\_

**DATE:** \_\_\_\_\_

TO: Director

I/We hereby apply to use the following weighing instrument in accordance with section 19 of the National Metrology Act.

Type of Measuring Instrument: \_\_\_\_\_

Brand: \_\_\_\_\_ Country of Origin: \_\_\_\_\_

Model: \_\_\_\_\_ Serial No: \_\_\_\_\_

Capacity of Scale: \_\_\_\_\_ Scale Interval: \_\_\_\_\_

Accuracy Class: \_\_\_\_\_

Application for:

- (a) initial verification of measuring instrument
- (b) prescribe mark of verification
- (c) pattern approval in accordance with the Act

Name of Applicant: \_\_\_\_\_

Importer/Manufacturer: \_\_\_\_\_

Office Address: \_\_\_\_\_

Contact Details: \_\_\_\_\_

Signature of applicant: \_\_\_\_\_

Official comments:

**Approved:**

**Rejected:**

\_\_\_\_\_  
Director

**SECOND SCHEDULE****[Regs. 3(2)(b), 4]****Fees**

No.	Activity	\$
1	Application	100
2	Prescribed mark of verification	10
3	Initial verification	300
4	In-service verification	150
5	Verification after repair	150
6	Periodical examination of weights, measures and instruments	25

**THIRD SCHEDULE****[Regs. 5(1)(a), 5(11), 7(1), 8, 9, and 16]****TABLES****Table 1**

Limits of error for weights for trade in Liquefied Petroleum Gas (Metric System)

Denomination	Limit of error, $\pm$ mg	
	Initial verification	In-Service verification
1 g	10	20
2 g	12	24
5 g	16	32
10 g	20	40
20 g	25	50
50 g	30	60
100 g	50	100
200 g	100	200
500 g	250	500

Denomination	Limit of error, $\pm$ mg	
	Initial verification	In-Service verification
1 kg	500	1000
2 kg	1000	2000
5 kg	2500	5000
10 kg	5000	10000
20 kg	10000	20000
50 kg	25000	50000

**Table 2**

Limits of error for weights for trade in Liquefied Petroleum Gas (British Imperial System)

Denomination	Limit of error, $\pm$ grains	
	Initial verification	In-Service verification
1 drams	0.08	0.16
2 drams	0.16	0.32
4 drams	0.32	0.64
8 drams	0.32	0.64
1 ounce	0.5	1
2 ounces	0.5	1
4 ounces	1.5	3
8 ounces	1.5	3
1 pound	4	8
2 pounds	8	16
4 pounds	15	30
5 pounds	20	40
7 pounds	24	48
7 pounds	35	70
14 pounds	50	100
20 pounds	95	190
28 pounds	100	200
50 pounds	175	350
56 pounds	195	<b>390</b>

Note: 1 grain = 64.79891 mg



## Accuracy Classes and limits of error of weighing instrument

Table 3

## Definition of the verification scale interval (e)

Type of Instrument	Accuracy Class	Maximum Load "max"	Value of the verification scale interval (e)
Graduated	Classes I, II, III, & IIII	-	Shall be equal to the scale interval (d)*
Non-graduated	Class I Special	From 100 mg to 1 g both inclusive	1 mg
		From 1 g to 10 g inclusive	Max/1000
	Class II High	Above 100 g	Max/10 000
		From 1 g inclusive to 5 g exclusive	Max/1 000
		From 5 g to 100 g both inclusive	5 mg Max/20 000
	Class III Medium	From 100 g to 200 g both exclusive	Max/20 000
		Above 200 g	
		From 20 g to 100 g both inclusive	0.1 g
	Class III Ordinary	From 100 g to 1 kg both exclusive	Max/1 000
		From 1 kg to 2 kg both inclusive	1 g
		Above 2 kg	Max/2 000
	Class III Ordinary	From 1 kg to 2 kg both inclusive	5 g
		Above 2 kg	Max/400

\*scale interval, expressed as (d) means the value expressed in units of mass of (a) the difference between the values corresponding to two consecutive scale marks, for analogue indication; (b) the difference between two consecutive indicated values, for digital indication;

Table 4

### Definition of the number of verification scale intervals (e) and minimum capacity of weighing instrument

Accuracy Class	Verification Scale Interval (e)	Number of Verification Scale Intervals (n), min	Minimum Capacity - Min
Special Class I	$e \geq 0.001 \text{ g}$	50 000	100 e
High Class II	$0.05 \text{ g} \geq e \geq 0.001 \text{ g}$	100	20 e
Medium Class III	$e \geq 0.1 \text{ g}$	5000	50 e
Ordinary Class III	$2 \text{ g} \geq e \geq 0.1 \text{ g}$	100	20 e
		500	20 e
	$e \geq 5 \text{ g}$	100	10 e

Note - Number of verification scale intervals =  $\frac{\text{Max capacity}}{e}$

**Table 5**  
**Limits of Error in Weighing Instrument**

Maximum permissible error on initial verification	Load range			
	Class I	Class II	Class III	Class IIII
$\pm 0.5 e$	0 to 50 000 e both inclusive	0 to 5000 e both inclusive	0 to 500 both inclusive	0 to 50 e both inclusive
$\pm 1 e$	50 000 e to 200 000 e inclusive	5000 e to 20 000 e inclusive	500 e to 2000 e inclusive	50e to 200e inclusive
$\pm 1.5 e$	over 200 000 e	20 000 e to 100 000e inclusive	2000 e to 10 000 e inclusive	200 e to 1000 e inclusive

e – verification scale interval in mass units

**Table 6**

Limits of Error of volume measures for liquefied petroleum gas trade – metric system

Denomination	Limit of error, milliliters (ml)	
	Initial verification	In-Service verification
20 ml	± 1	+ 2 - 1
50 ml	± 2	+ 4 - 2
100 ml	± 3	+ 6 - 3
200 ml	± 5	+ 10 - 5
250 ml	± 5	+ 10 - 5
500 ml	± 10	+ 20 - 10
1 l	± 15	+ 30 - 15
2 l	± 25	+ 50 - 25
5 l	± 50	+ 100 - 50
10 l	± 80	+ 160 - 80
20 l or more	± 0.5 percent	+ 1 percent - 0.5 percent

**Table 7**

Limits of Error of volume measures for liquefied petroleum gas trade – British Imperial system

Denomination	Maximum permissible error	
	Initial verification	In-Service verification
1 fluid ounce	± 24 minims	+ 48 minims - 24
2 fluid ounces	± 38 minims	+ 76 minims - 38
4 fluid ounces	± 57 minims	+ 114 minims - 57
6 fluid ounces	± 70 minims	+ 140 minims - 70
8 fluid ounces	± 70 minims	+ 140 minims - 70

½ pint	± 95 minims	+ 190 minims - 95
1 pint	± 190 minims	+ 380 minims - 190
1 quart	± 285 minims	+ 570 minims - 285
½ gallon	± 475 minims	+ 950 minims - 475
1 gallon	± 760 minims	+ 1520 minims - 760
2 gallon	± 2.5 fluid ounce	+ 5 fluid ounce - 2.5
3 gallon	± 3.8 fluid ounce	+ 7.6 fluid ounce - 3.8
4 gallon	± 5 fluid ounce	+ 10 fluid ounce - 5
5 gallon or more	± 0.5 percent	+ 1 percent - 0.5 percent

**FOURTH SCHEDULE**  
**Contents of Calibration Certificate**

[Regs. 5(1)(c)]

1. Specified calibration body name and address
2. Calibration Certificate number
3. Client's name and address
4. Statement of the Method used for calibration of weight
5. Identification of the weight
6. Date of calibration and a stated period for which calibration is valid
7. The calibration tests and results
8. Environmental conditions in which calibration was performed
9. Uncertainty of measurement
10. Traceability statement

