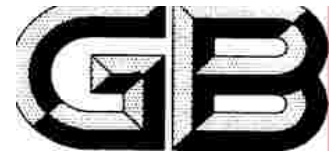


ICS



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**Safety Code for Inspection of Hazardous Properties of Dangerous Liquefied
Petroleum Gas Goods**

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of the People's Republic of China**

Preface

Chapters 5 and 6 of this standard are mandatory while the rest are recommended.

This standard and UN Recommendations on the Transport of Dangerous Goods – Model Regulations (14th revision) are non-equivalent. The technical content of this standard is consistent with the above model regulations but the format has been revised according to GB/T1. 1-2000.

This standard was proposed by and is under the jurisdiction of the National Hazardous Chemicals Management Technical Committee (SAT/TC251).

The organisation in charge of drafting this standard was the Hazardous Goods Central Laboratory of the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China.

The organisation that participated in the drafting of this standard was the Tianjin Entry-Exit Inspection and Quarantine Bureau.

The main drafters of this standard included Yu Yanjun, Li Xiuping, Lu Gang, Liu Jun, Du Yu and Ma Jun.

This is the first version of this standard.

Safety Code for Inspection of Hazardous Properties of Dangerous Liquefied Petroleum Gas Goods

1 Scope

This standard sets the requirements, tests and inspection rules for the inspection of the hazardous properties of dangerous liquefied petroleum gas goods.

This standard applies to the inspection of the hazardous properties of dangerous liquefied petroleum gas goods.

2 Normative References

The provisions of the following documents become provisions of this standard after being referenced. For dated reference documents, all later amendments (excluding corrigenda) and versions do not apply to this standard; however, the parties to the agreement are encouraged to study whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this standard.

GB19458: Safety Regulations for Inspection of Hazardous properties of Dangerous goods – General

GB19521.3-2004: Safety Regulations for Inspection of Hazardous Properties of Flammable Gas

GB19521.8: Safety Regulations for Inspection of Hazardous Properties of Toxic Gas
UN Recommendations on the Transport of Dangerous Goods – Test and Standard Manual (4th revision)

International Regulations for Shipping of Dangerous Materials by Sea

International Regulations for Shipping of Dangerous Materials by Rail

International Regulations for Shipping of Dangerous Materials by Road

3 Terms and Definitions

The following terms and definitions defined in UN Recommendations on the Transport of Dangerous Goods – Test and Standard Manual (4th revision) apply to this standard.

3.1 Liquefied petroleum gas (LPG)

Liquefied petroleum gas products consisting primarily of propane and butane, which are usually in the form of commercial propane, commercial butane or commercial propane and butane mixture.

3.2 Flammable gas

A gas which can be ignited in air under atmospheric pressure at 20°C

3.3 LC₅₀ for acute toxicity on inhalation

The vapour, smoke or powder density that can ultimately lead to the deaths of half a set of male or female mature laboratory mice in 14 days by inhaling it for 24 hours (or less).

4 Requirements

4.1 The embossed, printed or adhesive labels or tags on the flammable gas packaging should conform to the relevant regulatory requirements of GB 19458.

4.2 Liquefied petroleum gas should be stored in tanks for liquefied petroleum gas or special steel cylinders for liquefied petroleum gas.

4.3 Liquefied petroleum gas tanks should be placed in a storage area. The storage tanks should have labels or nameplates according to the regulation. The storage site should be marked clearly with warning notices such as Flammable Substances and No Smoking.

5 Testing

5.1 General test requirements

5.1.1 The water content of the liquefied petroleum gas during the test should not exceed 10 g/m^3 .

5.1.2 The compressed air used for the flammability test should not contain any water.

5.1.3 Before the test the gas should be fully mixed and chromatography or an oxygen analyser should be used to accurately analyse the composition of the mixed gas.

5.1.4 The reaction tube for the flammability test should be made of Pyrex glass with a wall thickness of no less than 5 mm, an inner diameter of no less than 50 mm and a length of at least five times the inner diameter. During the test the reaction tube must be kept clean to avoid contamination by foreign substances, notably water.

5.1.5 During the flammability test, the ignition device (15 kV electrode voltage can be used) should supply 10J per spark (an electrode gap of 5 mm is recommended).

5.2 Flammability test

The flammability test should be carried out according to the test procedure in GB19521.3-2004.

5.3 Toxicity test

The toxicity test should be carried out according to the test procedure in GB19521.8-2004.

5.4 Classifying determinations

5.4.1 Determination of flammability of liquefied petroleum gas

5.4.1.1 Determination by test

The determination should be carried out according to Article 5.4.1 of GB19521.3-2004.

5.4.1.2 Determination by calculation

The determination should be carried out according to Article 5.4.2 of GB19521.3-2004.

5.4.2 Determination of toxicity of liquefied petroleum gas

5.4.2.1 Determination by test

The toxicity of the liquefied gas should be determined according to the test result. See the determination procedure in GB 19521.8.

5.4.2.2 Determination by calculation

The LC₅₀ value of the liquefied petroleum gas can be calculated using the following formula (1):

$$LC_{50} = \frac{1}{\sum_i \frac{C_i}{LC_{50i}}} \dots\dots\dots (1)$$

Where:

C_i is the Moore fraction of the i toxic component in the liquid petroleum gas
LC_{50*i*} is the 50% lethality density of the i toxic component in the liquid petroleum gas

According to the above formula calculate LC₅₀. If LC₅₀ is higher than 5000 ml/m³, the liquefied petroleum gas is classified as toxic.

5.4.3 According to the result of the above calculation categorise the liquefied petroleum gas as Category 2.1, flammable gas, or Category 2.3, toxic gas. Category 2.3, toxic gas, has priority over Category 2.1, flammable gas.

6. Inspection rules

6.1 Inspection items: the test is carried out according to the requirements in Articles 4 and 5 of this standard.

6.2 Inspection circumstances:

The hazardous property inspection should be carried out under any of the following circumstances:

- When a new product comes into production;
- During normal production – once a year;

- After production has stopped for a long time and then resumed;
- When the national quality inspection bureau requests a hazardous property test.

6.3 Determination rules:

Carry out tests and calculations according to Articles 5.2-5.4 of this standard.
Determine the hazardous properties of liquefied petroleum gas according to the results of the test and calculation.
