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Replacing GB 14193-1993

Rules for filling of liquefied gas cylinders

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Foreword

All the technical contents of this standard are mandatory.

This standard replaces GB 14193-1993 “Rules for filling of liquefied gas cylinders”.

As compared with GB 14193-1993, the main differences of this standard are as follows:

- MODIFY the standard structures in accordance with GB/T 1.1-2000;
- ADD the filling factor of some liquefied gas (including high pressure liquefied gas and low pressure liquefied gas);
- ADD that this standard does not apply to the filling of liquefied petroleum gas cylinders for motor vehicles.

Appendix A to this standard is an informative appendix.

This standard was proposed by AND shall be under the jurisdiction of the National Gas Standardization Technical Committee (SAC/TC 31).

The drafting organizations of this standard: Capital University of Economics and Environmental Engineering, Beijing Praxair Practical Gas Co., Ltd.

The main drafters of this standard: Wu Yueqian, Hao Cheng, Song Lansheng.

This Standard replaces the standard previously issued as follows:

- GB 14193-1993.

Rules for filling of liquefied gas cylinders

1 Scope

This standard specifies the basic principles and safety technical requirements for the filling of liquefied gas cylinders (hereinafter referred to as cylinders).

This standard applies to the filling of the high pressure liquefied gas cylinders and the low pressure liquefied gas cylinders for which the saturated vapor pressure at the maximum using temperature is not less than 0.1 MPa (gauge pressure, same as below).

This standard does not apply to the filling of liquefied petroleum gas cylinders for motor vehicles.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 7144 Colored cylinder mark for gases

GB/T 13005 Terminology of gas cylinders

GB 15383 Connection types and dimensions for gas cylinder valve outlets

GB 16804 Precautionary labels for gas cylinders (GB/T 16804-1997, eqv ISO 7225:1994)

3 Terms and definitions

The terms and definitions as established in GB/T 13005 AND the following terms and definitions apply to this standard.

3.1

Filling ratio

It refers to the mass of the liquefied gas which is filled in the unit volume of the cylinder.

3.2

gas, except for rejecting filling, it shall also check out the reasons AND report to the higher authorities and local quality supervision departments, for handling.

4.6 As for the gas cylinders which have no residual pressure, it shall remove the valve before filling to perform internal inspection to ensure that there is no foreign matter in the cylinder; AND it can only be filled after being treated in accordance with the requirements of clause 4.7.

4.7 As for the gas cylinders which are newly used OR the gas cylinders which are firstly filled after internal inspection, before filling, it shall replace the air from the cylinder as specified AND it shall pass the analysis.

4.8 As for the gas cylinder which are beyond the inspection period OR the gas cylinders which are found of serious appearance defects or suspected of internal state, it shall be sent to the detection and inspection unit to be subjected to the technical inspection and assessment as specified.

4.9 As for the gas cylinders imported AND the gas cylinder used on the foreign aircraft, trains and ships, if they are required to be filled in our country, it shall be inspected by the inspection institute as approved or designated by the quality supervision institute.

4.10 The gas cylinders failing to pass the inspection (including those to be treated) shall be separated from the qualified gas cylinders AND clearly identified, in order to avoid misuse.

5 Filling

5.1 The filling metering device shall be kept accurate AND its maximum weighing value shall neither exceed 3 times of the actual mass of the gas cylinder (including the mass of the cylinder and the filling liquid) nor less than 1.5 times. Weighing device shall be regularly calibrated in accordance with the relevant provisions, AND it shall be calibrated at least once every shift before use. Weighing device shall be equipped with a cylinder over-filling alarming device or the interlock device which can automatically cut off the gas source.

5.2 It is prohibited for filling when the oxygen content in the inflammable liquefied gas is more than 2% (volume fraction).

5.3 When the gas cylinder is being filled with the liquefied gases, it must strictly follow the requirements below:

- a) Before filling, it must check it to ensure it is checked and qualified;
- b) When filling with a clamp connection to substitute thread connection, it must carefully check the cylinder valve gas outlet thread to ensure it is consistent with the thread type as specified for the filled gas;

difference between the actual mass of the gas cylinder after being filled and the mass of the empty gas cylinder.

5.9 It is forbidden to determine the filling amount in the following ways:

- a) The gas cylinder is filled in a collection, which is weighed together AND averagely metered; OR only one cylinder of gas is metered in a bus system by only one weighing device, AND the other gas cylinders make are metered with reference to this cylinder;
- b) Metered by the mass difference as actually measured before and after the filling of the gas cylinder;
- c) Metered by the liquid storage amount difference of the storage tank before and after the filling of the gas cylinder;
- d) Metered by the gas cylinder volume loading rate.

5.10 The liquefied gas filling amount must be strictly controlled, AND if any cylinders are found of over-filling, it must appropriately drain out the over-filled liquid.

5.11 After filling the cylinder, the filling unit must attach the warning sign and the filling sign which comply with the requirements of the national standard GB 16804 onto the gas cylinders in accordance with the requirements.

5.12 The filled gas cylinders must be under the custody of the special persons AND checked one by one; AND any nonconformance must be appropriately treated. The inspection items shall include:

- a) Whether the filling amount is within the specified range;
- b) Whether the seal of the connection between the cylinder valve and mouth is intact;
- c) Whether the cylinders have serious defects such as swelling, deformation, or leakage;
- d) Whether the temperature of the cylinder is abnormally elevated;
- e) Whether the cylinder is affixed with a warning sign and a filling sign.

6 Filling records

6.1 The filling unit shall arrange a special person to be responsible for filling the cylinder filling records. The contents of the record shall include at least the filling date, cylinder number, room temperature, cylinder indicated volume, mass, total mass after filling, presence or absence of abnormal conditions, filling operator, and inspector code.

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