

Translated English of Chinese Standard: GB/T 31139-2014

www.ChineseStandard.net → Buy True-PDF → Auto-delivery.

Sales@ChineseStandard.net

GB

NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 27.180

F 19

GB/T 31139-2014

Safety Technical Regulations for Mobile Hydrogen Refueling Facility

移动式加氢设施安全技术规范

Issued on: September 3, 2014

Implemented on: January 1, 2015

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine;**

**Standardization Administration of the People's Republic of
China.**

Table of Contents

Foreword	3
1 Scope	4
2 Normative References.....	4
3 Terms and Definitions	4
4 Safety Technical Requirements	5
5 Operation Safety Management	9
6 Transportation and Long-term Storage	10

Safety Technical Regulations for Mobile Hydrogen Refueling Facility

1 Scope

This Standard specifies the terms, definitions, safety technical requirements, operation safety management, and requirements of transportation and long-terms storage of mobile hydrogen refueling facility.

This Standard is applicable to mobile hydrogen refueling facility, whose refueling pressure is within the range of 15 MPa ~ 70 MPa.

2 Normative References

The following documents are indispensable to the application of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 19773 *Specification of Hydrogen Purification System on Pressure Swing Adsorption*;

GB/T 19774 *Specification of Water Electrolyte System for Producing Hydrogen*;

GB 50057 *Design Code for Protection of Structures against Lightning*;

GB 50058 *Code for Design of Electrical Installations in Explosive Atmospheres*;

GB 50177 *Design Code for Hydrogen Station*;

GB 50516 *Technical Code for Hydrogen Fueling Station*;

JT 230 *Rubber Belt of Electrostatic Conductivity*;

JT 617 *Regulations Concerning Road Transportation of Dangerous Goods*;

JT 618 *Rules of Transportation Loading and Unloading of Dangerous Goods by Automobile*;

QC/T 816 *Specification of Mobile Hydrogen Refueling Vehicles*.

3 Terms and Definitions

What is defined in GB 50516, GB 50177 and QC/T 816, and the following terms and

4.2.2 Work area shall comply with the relevant stipulations of environmental protection and fire safety in GB 50516. The entry, exit, loading and transportation shall be convenient. The driving distance and turning radius of hydrogen refueling vehicles shall be thoroughly considered.

4.2.3 Hydrogen refueling vehicle should be equipped with steel fixed legs and put them into effective use, so as to guarantee the vehicle body can be steadily parked.

4.2.4 Portable hydrogen refueling device shall set up an effective fixing device to position it in the parking area.

4.2.5 The level definition of explosive dangerous zones in the work area of mobile hydrogen refueling facility shall comply with relevant stipulations in GB 50058. In terms of the division of explosive dangerous zones: the main body of the facility itself shall be Zone 1; take the outer contour line of the main body of the facility as the interface, ground area and headspace area with the radius of 4.5 m shall be Zone 2.

4.2.6 Work area shall set up lightning protection facilities and comply with relevant stipulations in GB 50057 and GB 50516.

4.2.7 When portable hydrogen refueling device adopts hydrogen long-tube trailer as the source of hydrogen, the safe operation separation between them shall be not less than 6 m. Channel or separation for overhauling shall be retained among the various equipment of portable hydrogen refueling device.

4.2.8 Safety protection fences or anti-collision columns shall be set up around portable hydrogen refueling device.

4.2.9 In work area, smoking or open flames are prohibited. Furthermore, safety warning signs or signages with the written words "No Smoking" shall be placed in obvious locations. The setting of marking for hydrogen refueling vehicle shall comply with relevant stipulations in QC/T 816.

4.2.10 Work area should be equipped with necessary lighting facilities, so as to make it convenient for nighttime (or when necessary) refueling and inspection operation. Lighting facilities installed in explosive dangerous zones shall comply with relevant stipulations in GB 50058.

4.2.11 The entry area and refueling device area in the work area shall set up electrostatic discharge column.

4.2.12 In the work area, grounding device shall be set up. Its grounding resistance shall adopt the minimum value requested by various groundings; and shall be not more than 10 Ω .

4.3 Fire Safety

4.6 Hydrogen Production Unit

4.6.1 The safety technical requirements of hydrogen production unit shall comply with relevant stipulations in GB 50177.

4.6.2 When hydrogen production unit adopts water electrolysis technology, it shall also comply with relevant stipulations in GB/T 19774.

4.6.3 When hydrogen production unit adopts pressure swing adsorption technology, it shall also comply with relevant stipulations in GB/T 19773.

4.7 Hydrogen Storage Unit

4.7.1 The working pressure of hydrogen storage unit shall be determined in accordance with the allowable refueling pressure of the object being refueled. It should be 1.25 ~ 1.5 times of the refueling pressure.

4.7.2 The design, manufacture and use management of pressure-bearing equipment adopted by hydrogen storage unit, for example, vessel or gas cylinder, shall comply with the requirements of relevant national laws and regulations.

4.7.3 Hydrogen storage unit in mobile hydrogen refueling facility shall set up the following safety measures:

- a) Safety pressure relief device;
- b) Pressure measuring instrument and pressure sensor;
- c) Nitrogen purging replacement interface.

4.7.4 Hydrogen storage unit shall be fixated on an independent support; effective vibration reduction measures shall be adopted.

4.8 Supercharging Unit

4.8.1 The setting of safety protection device of hydrogen compressor (or supercharger) shall comply with relevant stipulations in QC/T 816.

4.8.2 Hydrogen compressor (or supercharger) shall be fixated on an independent support. The suction and exhaust pipeline of the compressor (or supercharger) shall adopt effective vibration reduction measures.

4.9 Refueling Unit

4.9.1 The basic functions and safety technical requirements of hydrogen refueling unit shall comply with relevant stipulations in QC/T 816.

4.9.2 Hydrogen refueling unit shall base on the differences in refueling pressure and air refueling caliber; adopt matching functional allocations towards different refueling

training on gas cylinder refueling; obtain the post qualification certificate issued by the competent department, then, take employment with the certificate within its validity.

5.2.4 Mobile hydrogen refueling facility operation and maintenance personnel who enters the work area shall not wear chemical fiber clothes, caps and spiked shoes; they shall wear specialized anti-static overalls, safety helmets and specialized work shoes. It is strictly prohibited to bring kindling materials into the work area.

5.2.5 Operation personnel of hydrogen refueling vehicle, such as driving and escorting, shall receive professional training; obtain the post qualification certificate issued by the competent department, then, take employment with the certificate within its validity. Furthermore, they shall comply with the requirements of practitioners in JT 617.

5.3 Facility Maintenance Requirements

5.3.1 Hydrogen storage unit and safety accessories in mobile hydrogen refueling facility shall receive regular inspection in accordance with the stipulations of relevant national laws and regulations. In addition, relevant reports and records shall be preserved.

5.3.2 In terms of hydrogen equipment and pipelines, before putting them into operation, before overhauling of hot work, or, before and after long-term suspension, nitrogen shall be adopted for purging replacement. Moreover, sampling analysis shall also be adopted: after hydrogen content does not exceed 0.4%, or, after oxygen content does not exceed 0.5%, start the operation.

5.3.3 Hydrogen system maintenance personnel shall use copper instruments for overhauling operation; shall not arbitrarily knock on hydrogen equipment or pipelines.

5.3.4 After the overhauling of hydrogen equipment and pipelines, air tightness test shall be conducted, and shall comply with relevant stipulations in GB 50516.

5.3.5 Operation personnel shall regularly inspect hydrogen leakage of the entire facility. Particularly, pipeline connection parts in the facility shall receive regular inspection on time. Once leakage phenomenon is found, it shall be timely settled; inspection records shall be archived.

6 Transportation and Long-term Storage

6.1 Hydrogen refueling vehicle shall adopt specialized motor vehicle for towing. When hydrogen refueling vehicle carries hydrogen, it shall comply with relevant stipulations in JT 617 and JT 618; comply with relevant stipulations regarding the transportation of dangerous chemicals in Dangerous Chemicals Safety Management Regulations (No. 344 Decree) issued by the State Council.

6.2 Portable hydrogen refueling device shall not be transported with hydrogen. Before

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

----- The End -----