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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 34425-2023

Replacing GB/T 34425-2017

Fuel cell electric vehicles hydrogen refueling nozzle

燃料电池电动汽车加氢枪

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1 Scope

This document defines the hydrogen refueling nozzle for fuel cell electric vehicles, specifies the technical requirements and test requirements for the hydrogen refueling nozzle, describes the test methods for the hydrogen refueling nozzle and its connecting components.

This document applies to fuel cell electric vehicle hydrogen refueling nozzles, that use compressed hydrogen as the working medium, has a nominal working pressure not more than 70 MPa and a medium temperature of -40 °C ~ 85 °C.

2 Normative references

GB/T 1690-2010

GB/T 7762-2014

GB/T 10125

GB/T 24548

GB/T 26779-2021

3 Terms and definitions

The terms and definitions as defined in GB/T 24548 and GB/T 26779-2021, as well as the following terms and definitions, apply to this document.

3.1 Hydrogen refueling nozzle

A refueling nozzle, which is installed at the end of the hydrogenation hose of the hydrogen refueling machine, to connect the hydrogen refueling machine and the vehicle.

3.2 Receptacle

When refueling, the sum of components connecting the vehicle to the hydrogen refueling nozzle.

[Source: GB/T 26779-2021, 3.1, with modifications]

3.3 Connector

A receptacle and hydrogen refueling nozzle assembly, that can be quickly connected and disconnected to refuel fuel cell electric vehicles or storage systems.

3.4 Cycle

A whole process including the connecting the hydrogen refueling nozzle and the receptacle, pressurizing to the design pressure, depressurizing, disconnecting.

4 Models

The hydrogen refueling nozzle's model consists of the following parts.

5.1.4 The hydrogen refueling nozzle should have filters and other protective measures,

to prevent upstream solid matter from entering.

5.1.5 The hydrogen refueling nozzle shall be able to work normally in the ambient temperature range of $-40\text{ }^{\circ}\text{C} \sim 60\text{ }^{\circ}\text{C}$ and the medium temperature range of $-40\text{ }^{\circ}\text{C} \sim 85\text{ }^{\circ}\text{C}$.

5.1.6 For the hydrogen refueling nozzle, it is not allowed to open the one-way valve of the receptacle through mechanical means.

5.1.7 When the internal pressure is greater than 1 MPa, the hydrogen refueling nozzle shall not be removed.

5.2.1 Air tightness

Carry out the air tightness test according to the method specified in 6.3. If no bubbles are detected within the specified time, the sample passes the test. If bubbles are detected, use a vacuum test (overall cumulative test) to measure the leakage rate, OR use other equivalent methods to confirm that the hydrogen leakage rate is less than 20 cm³/h at 20 °C and 101 kPa.

5.2.2 Drop

After testing according to the method specified in 6.4, the hydrogen refueling nozzle can be connected normally to the receptacle and the tight fit test equipment specified in

5.2.6.1 Hydrogen refueling nozzle

After testing according to the method specified in 6.8.1, the hydrogen refueling nozzle meets the requirements in 5.2.1, 5.2.5 (only $-40\text{ }^{\circ}\text{C}$ related content) and 5.2.10. of 5.2.9.

During the test, according to the requirements in Table 3, replace the loose and tight fit test

equipment every 15000 times and check their wear. The wear and tear of test equipment shall comply with the requirements of Appendix D.

5.2.7.1 Oxygen aging resistance

Conduct an oxygen aging resistance test on the hydrogen refueling nozzle seal, according to the method specified in 6.9.1. There shall be no obvious deformation, deterioration, spots, cracks, etc.

5.2.9 Resistance

According to the method specified in 6.11, the resistance of the connector shall not be greater than 1000 ohm under pressure and non-pressure conditions. Conduct resistance tests before and after the life cycle test.

5.2.10 Hydrostatic strength

Carry out the test according to the method specified in 6.12. There is no leakage in the hydrogen refueling nozzle and connector during the test.

The hydrostatic strength test is the final test. The sample shall not be used for any other tests after this test.

6.1.1 Test conditions

Unless otherwise specified, the test shall be carried out under the following conditions.

6.1.2 Measurement parameters, their units, accuracy

The measurement parameters, their units, accuracy requirements are as shown in Table 2.

6.2 Appearance inspection

Visually inspect the hydrogen refueling nozzle.

6.3 Air tightness

When the hydrogen refueling nozzle is connected to the receptacle and the receptacle is in a closed state, OR when the hydrogen refueling nozzle is not connected to the receptacle and the hydrogen refueling nozzle is in a closed state, leak detection gas is passed through to carry out the test at 0.5 MPa and 1.5 times the nominal working pressure, respectively.

6.4 Drop

Place the hydrogen refueling nozzle in an environment of -40 °C for 24 hours. Then connect it to a filling hose which has a length of 5 m.