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**NATIONAL STANDARD OF THE
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GB 18296-2019

**Safety property requirements and test methods for automobile
fuel tank and its installation**

汽车燃油箱及其安装的安全性能要求和试验方法

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Foreword

All technical contents in this Standard are mandatory. This Standard was drafted as per the rules specified in GB/T 1.1-2009. This Standard replaced GB 18296-2001 Safety Property Requirements and Test Methods for Automobile Fuel Tank. Compared with GB 18296-2001, this Standard has the major differences as follows:

--- Modify the standard name into Safety Property Requirements and Test Methods for Automobile Fuel Tank and Its Installation.

--- Modify the scope of application of the standard from "this Standard specifies the safety property requirements and test methods for automobile fuel tank with gasoline and diesel as the fuel" to "this Standard specifies the safety property requirements and test methods for automobile fuel tank filled with liquid fuel; and the safety requirements for installation on the automobile"; meanwhile, add the application of the Class-O automobile (see Clause 1 of this Edition; Clause 1 of 2001 Edition);

- Add the requirements and test methods for fuel tank overturn test (see 4.1.7, 5.2 of this Edition);
- Add fuel permeability requirements and test methods for plastic fuel tank (see 4.1.10, 5.5 of this Edition);
- Add fuel resistance requirements and test methods of plastic fuel tank (see 4.1.11, 5.6 of this Edition);
- Modify the fire resistance test method of the plastic fuel tank (see 4.1.12 of this Edition; 3.10 of 2001 Edition);
- Add the safety requirements for fuel tank installation (see 4.2 of this Edition);

1 Scope

GB 18296-2019 is the Chinese national standard on safety property requirements and test methods for automobile fuel tank and its installation, in the field of road vehicles engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 17 December 2019 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 July 2020. Classification: ICS 43.060.40, CCS T16. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Standard specifies the safety performance requirements and test methods of automobile fuel tank containing liquid fuel. This Standard also specifies the safety requirements for the installation of automobile fuel tank on the vehicles. This Standard is applicable to the metal and plastic fuel tank of the Type-M, Type-N, and Type-O automobiles.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB 18352.6-2016 Limits and Measurement Methods for Emissions from Light- Duty Vehicles (CHINA 6)

3 Terms and Definitions

For the purpose of this document, the following terms and definitions apply.

3.1 Automobile fuel tank An independent tank assembly fixed on an automobile for storing fuel; is assembled by a fuel tank, a filler pipe, a filler port, a fuel tank cover, a pipe joint, and other auxiliary devices.

3.2 Capacity of the fuel tank In the fuel tank design parameters, the fuel filling volume specified by the manufacturer.

3.3 Liquid fuel The fuel that is liquid under normal temperature and pressure conditions.

3.4 Leakage of fuel The fuel drops in a linear or drip form from the fuel tank.

3.5 Fuel permeability The fuel is lost due to molecular diffusion in the fuel tank.

3.6 Automatic compensating pressure device The device for automatically compensating the working pressure or safety pressure of the fuel tank.

3.7 Working pressure of the fuel tank The pressure above the liquid level in the fuel tank under normal automobile use conditions.

4.1 Fuel tank

4.1.1 The fuel tank shall be resistant to corrosion.

4.1.2 The fuel tank shall be made of fire-resistant metal material, or it may be made of plastic that meets the requirements of this Standard.

4.1.3 The fuel tank shall be equipped with automatic compensating pressure device (such as vent valves, safety valves, etc.).

4.1.4 The fuel tank cover shall be able to fix onto the filler pipe. In the case of the fuel tank cover is lost, if there are measures to prevent excessive evaporation of the fuel and fuel overflow, then it is considered to meet the requirements of this Clause. Specifically, the following methods can be used.

4.1.5 The seal between the fuel tank cover and the filter port shall be firm and reliable. When locked, the fuel tank cover shall press the gasket onto the filler pipe tightly.

4.1.6 When the metal fuel tank is performed pressure-proof test according to 5.1, there shall be no cracks or leakage; but the permanent deformation is allowed.

4.1.7 During the normal use of the vehicle, the fuel shall not overflow from the fuel tank cover; neither overflow from the automatic compensating pressure device. When performing

the flip test according to 5.2, the fuel tank cover is allowed for the leakage of the fuel; however, the leakage speed shall not exceed 30g/min; gasoline fuel tank cover shall not have the leakage of the fuel.

4.1.8 When the plastic fuel tank is performed impact resistant test at low temperature as per 5.3, there shall be no leakage of fuel.

4.2 Installation of the fuel tank

4.2.1 All parts of the fuel tank shall be properly protected by the vehicle body or frame parts to prevent contact with obstacles on the ground. If the clearance BETWEEN the vehicle body or frame parts installed in front of the fuel tank AND the ground is less than the clearance BETWEEN fuel tank part AND the group, it can be regarded as a protective measure.

4.2.2 The pipeline and other components of the fuel tank shall be installed in the vehicle as securely as possible. Any torsion, bending, vibration of the vehicle structural parts or driving parts shall not cause friction, crushing or any other abnormal stress on the fuel tank parts.

4.2.8 There shall be a partition between the fuel tank and the passenger compartment. The partition may have apertures (for instance for wiring harnesses); its arrangement shall ensure that the fuel not flow from the fuel tank to the passenger compartment or other compartment during the normal use.

4.2.9 The installation of the fuel tank shall be firm and reliable to ensure that the fuel leaked from the fuel tank or its accessories flow to the ground during the normal use; and shall not flow to the passenger compartment.

4.2.10 There shall be no protrusions, sharp edges, etc. near the fuel tank.

4.2.11 The fuel tank and its accessories shall be designed and installed to avoid any fire caused by static electricity. For fuel tanks containing fuel with a flash point of 55°C below, it is necessary to take discharge measures.

5 Test Methods

5.1 Pressure-proof test of metal fuel tank The fuel tank shall be installed with all accessories under normal use. Fill the fuel tank with a non-flammable liquid (for instance, water). Block all the ports of the fuel tank to the outside; pressurize it slowly through the fuel pipe of fuel tank till it reaches twice the working pressure; it shall be no less than 80kPa under any case; maintain the pressure for 30s.

5.2 Flip test

5.2.1 Fix the fuel tank body and all its accessories including the automatic compensating pressure device onto the test bench according to its installation method on the vehicle.