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

GB/T 37322-2026

Replacing GB/T 37322-2019

**Evaluation of gasoline cleanliness - Simulation test method for
intake valve deposits in gasoline engines**

汽油清净性评价 汽油机进气阀沉积物模拟试验法

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1 Scope

GB/T 37322-2026 is the Chinese national standard covering the bench test that measures how much deposit a petrol leaves on the intake valves - the reason detergent is required in the fuel at all, and the test a fuel or an additive package has to pass. It replaces GB/T 37322-2019 and has been in force since 1 October 2026, with the detergent detection standard GB/T 47373-2026. It was issued on 31 March 2026 and takes effect on 1 October 2026, replacing GB/T 37322-2019. The document is under the responsibility of the Standardization Administration of China. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes a simulation test method using a port-fuel-injected gasoline engine setup to evaluate the intake valve deposit-forming tendency of gasoline engine. This document is applicable to the evaluation of the cleanliness of automotive gasoline and gasoline detergents.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through normative references in the text. 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 503 Determination of the gasoline octane number - Test method for motor octane number

GB/T 1884 Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method

GB/T 1885 Petroleum measurement tables

GB/T 4756 Method for manual sampling of petroleum liquids

GB/T 5487 Determination of the gasoline octane number - Test method for research octane number

GB/T 6536 Standard test method for distillation of petroleum products at atmospheric pressure

GB/T 8017 Standard test method for vapor pressure of petroleum products - Reid method

GB/T 8019 Determination of gum content in fuels - Jet evaporation

GB/T 11132 Test method for hydrocarbon types in liquid petroleum products - Fluorescent indicator adsorption

GB 17930 Gasoline for motor vehicles

GB/T 19230.6 Test method for evaluating gasoline detergent in use - Part

6.Engine dynamometer test method for influence of intake valve and combustion chamber deposit tendencies of gasoline detergent (M111 method)

GB 19592 Detergent additive for motor gasoline

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 Intake Valve Deposit All substances deposited on the surface of the intake valve. NOTE.

It includes substances generated from fuel, lubricating oil, and additives, as well as those drawn in from the outside.

3.2 Calibration Reference Detergent A gasoline detergent added to a test base oil at a specified dosage to generate a certain mass of deposits. NOTE. It is used for the calibration of deposit accelerant dosage.

3.3 Deposit Accelerant Substances that, under high-temperature and oxygen-rich conditions, rapidly cause the formation of deposits on metallic surfaces-similar to the deposits found on intake valves after prolonged engine operation.

4 Method Summary

Under specified test conditions, a measured quantity of the specimen is mixed with air and sprayed through a nozzle onto a heated deposit collector to simulate the formation of intake valve deposits on gasoline engines; the resulting insoluble deposits are then weighed and photographed after being soaked separately in the test base oil and petroleum ether.

5 Test Conditions

The ambient temperature ranges from 20°C to 25°C, and the relative humidity does not exceed 70%.

6 Instruments and Equipment

6.1 Gasoline engine intake valve deposit simulation test apparatus. The technical requirements shall comply with the requirements of Appendix A.

6.2 Analytical balance. with a readability of

0.1 mg.

6.3 Desiccator. Containing desiccant.

6.4 Drying oven. The temperature is controllable between 20°C and 200°C, with an accuracy of $\pm 2^\circ\text{C}$.

6.5 Microsyringe. 1 000 μL .

6.6 Graduated cylinder. 500 mL.

6.7 Tweezers. Wooden.

6.8 Gloves. Antistatic material.

6.9 Sample cup. 500 mL, amber glass.

6.10 Digital camera. Resolution of at least 16 megapixels.

7.1.1 Washing solution. Prepared by mixing n-heptane and xylene in a

2.1 volume ratio.

7.1.2 Petroleum ether. Boiling range. 60°C to 90°C, analytical grade.

7.1.3 Anhydrous ethanol. Purity. >99.5%.

7.2 Materials

7.2.1 Scouring pad. Grit size. 240# to 280#.

7.2.2 Wet-or-dry abrasive paper. 62 µm.

7.2.3 Deposit accelerant. The main component is dicyclopentadiene, with a mass fraction of not less than 90%.

7.2.4 Calibration reference detergent. It complies with the requirements of GB 19592.

7.2.5 Test base oil. It complies with the requirements for test indicators in Table B.1 of Appendix B and the requirements for other test indicators of Grade 95 gasoline (Stage VI) in GB 17930; it contains no gasoline detergent, and yields a simulated intake valve deposit mass of 7 mg to 9 mg after the addition of a calibrated amount of deposit accelerant.

7.2.6 Cleaning agent. Commercially available detergent.

8.1 Preparation of the Deposit Collector

8.1.1 Using a scouring pad moistened with water and a cleaning agent, scrub the surface of the deposit collector plate in a straight line along its length until the surface of the deposit collector is shiny and free of stains. For deposit collectors with significant residual deposits, first polish the surface with wet-or-dry abrasive paper moistened with water until it is shiny and free of stains. Then, using a new scouring pad, scrub the surface of the deposit collector plate in a straight, unidirectional motion along its length under running tap water and clean it thoroughly, ensuring a uniform surface finish on the working face of the deposit collector.

8.1.2 If there are oil stains on the corners of the deposit collector, treat them according to the procedures in 8.1.1.

8.1.3 Immerse the deposit collector in an anhydrous ethanol solution for approximately 5 min; using tweezers, transfer the deposit collector to a drying oven and bake it at 100°C for no less than 2 h.

8.1.4 After removing the deposit collector from the drying oven and allowing it to cool to room temperature, insert a prepared paper swab into the thermocouple hole of the deposit collector to ensure that no residual material remains inside; then, place the deposit collector in a desiccator for at least 4 h. NOTE. Place the desiccator and the analytical balance in the