

HJ

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Measurement Methods for Non-Regulated Emissions From Methanol Fuelled Vehicles (English Translation)

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Foreword

To implement the "Environmental Protection Law of the People's Republic of China" and "The Air Pollution Prevention Law of the People's Republic of China" to prevent and control motor vehicles to discharge pollutants, improve the environmental air quality, formulate this standard.

This standard specifies light-duty vehicles, heavy-duty engines and vehicles (including diesel/methanol dual-fuel engines and Automobile) Measuring method of formaldehyde and methanol in exhaust gas.

Appendix A to Appendix C of this standard are normative appendices.

This standard is issued for the first time.

This standard was formulated by the Department of Atmospheric Environment and the Department of Regulations and Standards of the Ministry of Ecology and Environment.

Drafting organizations of this standard. Beijing Institute of Technology, Chinese Academy of Environmental Sciences, Xiamen Environmental Protection Motor Vehicle Pollution Control Technology Technology Center, Guangzhou Guangdian Metrology and Testing Co., Ltd.

This standard was approved by the Ministry of Ecology and Environment on November 10, 2020.

This standard shall be implemented from the date of issuance.

This standard is interpreted by the Ministry of Ecology and Environment.

Measurement method of unconventional pollutant emissions from methanol fuel vehicles

1 Scope of application

This standard specifies light-duty vehicles, heavy-duty vehicles and engines that use methanol fuel, including methanol single fuel and diesel/Measurement method of formaldehyde and methanol in exhaust gas of methanol dual-fuel vehicles and engines.

Other unconventional pollutants emitted by automobiles and engines related to the use of methanol fuel can be measured with reference to this standard method.

2 Normative references

This standard quotes the following documents or their clauses. For undated references, the latest version is applicable to this standard.

GB 14763 Limits and measurement methods of fuel evaporative pollutants emission from heavy-duty vehicles with ignition engines (collection method) GB 17691-2018 Pollutant emission limits and measurement methods for heavy-duty diesel vehicles (China Phase 6) GB 18352.6-2016 Light-duty vehicle pollutant emission limits and measurement methods (China Phase 6) GB/T 15089-2001 Classification of motor vehicles and trailers GB/T 23510-2009 Vehicle fuel methanol

3 Terms and definitions

The following terms and definitions apply to this standard.

Vehicle of category M1, M2, M3, N1, N2, N3 vehicle of category M1, M2, M3, N1, N2 and N3 According to GB/T 15089-2001.

Type M1 vehicles refer to passenger vehicles with no more than nine seats including the driver's seat;

M2 category vehicles refer to passenger vehicles with more than nine seats, including the driver's seat, and the maximum design total mass not exceeding 5000kg;

M3 category vehicles refer to passenger vehicles with more than nine seats including the driver's seat, and with a maximum designed total mass exceeding 5000kg;

Category N1 vehicles refer to cargo vehicles whose maximum designed total mass does not exceed 3500kg;

N2 category vehicles refer to the cargo vehicles whose maximum design total mass exceeds 3,500kg but does not exceed 12,000kg;

N3 category vehicles refer to cargo vehicles with a maximum design total mass exceeding

12000kg.

Non-regulated emissions Pollutants emitted by automobiles other than CO, THC, NO_x and particulate matter. In this standard, unconventional pollutants refer to formaldehyde and methanol.

Light-duty vehicle

M1, M2 and N1 cars with a maximum design total mass not exceeding 3500kg.

Heavy-duty vehicle

M1, M2, M3, N2 and N3 cars with a maximum design total mass greater than 3500kg.

Methanol fuel vehicle M and N category vehicles equipped with methanol single fuel engine or diesel/methanol dual fuel engine.

Methanol mono-fuel vehicle A car equipped with a methanol mono-fuel engine.

Diesel/methanol dual-fuel vehicle A car equipped with a diesel/methanol dual fuel engine.

Methanol mono-fuel engine for engines that use vehicle fuel methanol as fuel, gasoline can be used as an auxiliary fuel for engine starting.

Diesel/methanol dual-fuel engine it has two fuel supply systems, diesel and vehicle fuel methanol, and the two fuels are separately controlled by the engine electronic control unit.

The injection works by compression ignition of diesel fuel to ignite methanol, and mixed combustion in the cylinder.

4.1.1 Exhaust unconventional pollutant emission test

4.1.1.1

The test cycle should be carried out in accordance with the requirements of Appendix C of GB 18352.6-2016. It is recommended to use a dilution air purification system to the dilution air entering the dilution channel is fully purified to control the THC concentration in the dilution air below 1 ppm.

4.1.1.2

According to the requirements of Appendix A of this standard, collect the diluted exhaust gas in each sampling bag (or in the dilution channel) with a sampling pipe.

In formaldehyde and methanol.

4.1.1.3

Deterioration correction shall be made to the calculation results of the test. The degradation coefficient of unconventional pollutants can be in accordance with GB 18352.6-2016 the procedures described in Appendix G are determined by the actual durability test on the chassis dynamometer or in the test field, or according to GB 18352.6-2016 the engine

bench aging test method described in Appendix G.3 is determined by the actual durability test, or the GB 18352.6-2016 is selected.

The recommended degradation factor for the specified THC.

4.1.2 Evaporative pollutant discharge test

4.1.2.1

The fuel evaporation test should be carried out in accordance with the requirements of Appendix F in GB 18352.6-2016, and the methanol and gasoline tests should be carried out at the same time.

Evaporation test. The results of the evaporative pollutant emission test are the evaporation of methanol fuel and the evaporated hydrocarbons in other links except methanol fuel.

The sum of the evaporated compounds. Sampling and analyzing the methanol concentration in the closed room according to the methods specified in Appendix A and Appendix C, press the following formula calculates the evaporative emissions of each stage.

4.1.2.3

When using a silica gel sampling tube to determine the methanol vapor concentration in a closed room, the sampling of the initial reading shall be performed during the evaporation test.

Before starting, make sure that the end of sampling is consistent with the beginning of the hot soak test; the end of the reading (including the day and night ventilation test) Two 24-hour readings) should be taken after the evaporation test, and make sure that the start of sampling is consistent with the end of the corresponding test.

The beam time is the same; the first 24-hour reading of the day and night ventilation test should be sampled from the test to the 23rd hour (60-t/2) it is carried out between 20 minutes and 24 hours t/2 minutes (t is the sampling time of methanol).

4.1.2.4

Deterioration correction should be made to the test results, and the degradation correction value shall be the type IV test determined in 5.3.5 of GB 18352.6-2016.

Check the deterioration correction value.

4.1.3 Refueling pollutant discharge test

4.1.3.1

The test method shall be carried out in accordance with the requirements of Appendix I in GB 18352.6-2016, only measuring the pollutants discharged by methanol refueling.