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

GB/T 17729-2023

Replacing GB/T 17729-2009

**Hygienic standard and detect methods for the air quality inside
interurban bus**

长途客车内空气质量要求及检测方法

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1 Scope

GB/T 17729-2023 is the Chinese national standard on hygienic standard and detect methods for the air quality inside interurban bus, in the field of services and company organization. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 17 March 2023 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 October 2023. Classification: ICS 03.220.20, CCS T09. 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 document specifies the limits and detection methods for volatile organic compounds and carbonyl compound in new interurban buses, and the limits and detection methods for the main components of the air in in-service interurban buses. This document is applicable to Class B and Class III buses in Category-M2, Category-M3. Other types of buses may take this as a reference.

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 7258 Technical Specifications for Safety of Power-driven Vehicles Operating on Roads

GB/T 15089 Classification of Powder-driven Vehicles and Trailers HJ/T 400-2007

Determination of Volatile Organic Compounds and Carbonyl Compounds in Cabin of Vehicles

3 Terms and Definitions

What is defined in GB 7258 and GB/T 15089, as well as the following terms and definitions are applicable to this document.

3.1 interurban bus Interurban bus refers to a bus designed and manufactured for transporting passengers between cities (urban and rural areas) and specialized in passenger transport. [source: GB 7258-2017, 3.2.1.3.1.1, modified]

3.2 new interurban bus New interurban bus refers to a newly produced interurban bus whose off-line time is within (42 5) d and whose interior has not been changed.

3.3 in-service interurban bus In-service interurban bus refers to an interurban bus that has completed registration and is used for commercial road passenger transport.

3.4 volatile organic compounds Volatile organic compounds are a generic term for volatile compounds collected by absorbents like Tenex and separated by a gas chromatographic column with a polarity index less than 10, and whose retention time is between n-hexane and n-hexadecane. [source: HJ/T 400-2007, 3.2, modified]

3.5 carbonyl compound Carbonyl compound refers to a compound with carbonyl functional groups, collected by 2,4- dinitrophenylhydrazine (DNPH) and analyzed by high performance liquid chromatography. [source: ISO 12219-1:2021, 3.4]

3.6 total volatile organic compounds; TVOC Total volatile organic compounds refer to the sum of the values of volatile organic compounds collected by absorbents like Tenax and separated by a gas chromatographic column with a polarity index less than 10, and whose retention time is between n-hexane and n-hexadecane. [source: GB/T 18883-2022, 3.4, modified]

3.7 aerobic plate count Aerobic plate count refers to the number of microorganisms per cubic meter of vehicle interior space after the air in the vehicle is sampled by an air microbial sampler and cultured under certain conditions (such as: culture medium, temperature and time, etc.). NOTE: colony count is expressed in colony-forming units (CFU). [source: GB 4789.2-2022, 2.1, modified]

4 Limits of Volatile Organic Compounds and Carbonyl

Compound in New Interurban Bus Table 1 specifies the limits of volatile organic compounds, carbonyl compound and total volatile organic compounds (TVOC) in new interurban bus. domestic vehicles. Under special circumstances, the test time may be determined in accordance with the time of arrival in the Chinese market.

6.1.2 Sampling environment The sampling environment where the vehicle under inspection is located shall satisfy the following conditions.

- a) Ambient temperature: 25.0 ± 1.0 °C.
- b) Relative humidity: (50 $\pm$ 10) %.
- c) Airflow velocity is not greater than 0.3 m/s.
- d) Background concentration in the sampling environment chamber: for a single type of volatile organic compound and carbonyl compound, not greater than 0.02 mg/m³; for total volatile organic compounds (TVOC), not greater than 0.2 mg/m³.

6.1.3 Setting of sampling points The number of sampling points in the vehicle is determined by the effective volume of the passenger compartment of the vehicle under inspection and the specific conditions of the vehicle under inspection and shall be able to correctly reflect the air quality in the vehicle. The setting of sampling points shall satisfy the following requirements:

- a) For vehicles with a length of 9 m and below, there shall be at least two measurement points, which are evenly arranged along the longitudinal centerline of the compartment;
- b) For vehicles with a length of above 9 m, there shall be at least three measurement points, which are evenly arranged along the longitudinal centerline of the compartment;
- c) The height of the sampling points is 0.1 m from the plane height of the interior floor.

6.1.4 Sampling devices

6.1.4.1 Sampling environment chamber 6.1.4.1.1 The sampling environment chamber is mainly composed of main chamber, air conditioning system and filtration system, etc.

6.1.4.1.2 The inner surface of the sampling environment chamber shall be made of low-release, low-permeability and low-absorption materials. Materials and facilities that may affect the background concentration of environmental pollutants shall not be placed in the chamber. The space in the chamber shall be sufficient to accommodate the vehicle under

inspection, so as to facilitate the personnel in the testing and sampling of the vehicle under inspection. 6.1.4.1.3 The sampling environment chamber shall take technical measures to reduce the influence of airflow on the air exchange inside and outside the compartment of the vehicle under inspection. 6.1.4.1.4 The main chamber shall be provided with a main door and an auxiliary door. The main door shall ensure the normal entry and exit of the vehicle under inspection and shall not be opened during the entire sampling process; the auxiliary door is provided for the safe entry and exit of personnel. When the auxiliary door is opened throughout the sampling process, it shall be ensured that the sampling environment conditions at least within a space of

0.5 m from the outer surface of the vehicle under inspection satisfy the requirements of 6.1.2.

6.1.4.2 Sample collection device 6.1.4.2.1 The sample collection device is mainly composed of constant-flow gas sampler, sampling conduit and packed column sampling tube, etc. 6.1.4.2.2 The flow rate of the constant-flow gas sampler shall be adjustable and stable within the range of 50 mL/min ~ 1,000 mL/min. After connecting with the packed column sampling tube, adjust the gas flow rate and use a primary flowmeter (for example, primary soap film flowmeter) to calibrate the flow rate. The flow rate shall satisfy the requirement that the errors before and after sampling are less than 5%. 6.1.4.2.3 The sampling conduit shall use treated stainless steel tubes, polytetrafluoroethylene tubes or silicone rubber tubes. The air inlet shall be fixed at the specified sampling point in the passenger compartment of the vehicle under inspection, then, lead the sampling conduit from the passenger compartment, during which, the integrity and airtightness of the vehicle shall not be damaged; the air outlet shall be connected to the packed column sampling tube outside the passenger compartment. The end of the packed column sampling tube shall be connected to a constant-flow gas sampler. 6.1.4.2.4 The airtightness of the entire sample collection device shall be guaranteed, and there shall be no air leakage. 6.1.4.2.5 The packed column sampling tube shall comply with the relevant stipulations of Appendix B and Appendix C in HJ/T 400-2007.

6.1.5 Sample collection procedures

6.1.5.1 Pre-treatment stage of vehicle under inspection Put the vehicle under inspection into the sampling environment chamber, remove the surface coverings used to temporarily protect the internal components of the vehicle, such as: the protective film of seats and interior trim parts, etc. Completely open the doors and windows of the vehicle under inspection, so that the vehicle can thoroughly communicate with the outside air. In accordance with the requirements of 6.1.3, arrange the sampling points in the vehicle and monitor the temperature of the sampling points inside the vehicle under inspection. After the temperature reaches 25.0 C 1.0 C, the vehicle under inspection shall be put into the closed

6.1.9 Sample transportation and storage The sampling tube shall be sealed with a sealing