ICS 55.200
CCS J 83

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 47556-2026

Packaging machinery - Technical specification for the carbon emission reduction of PET bottles - Low pressure blowing systems

包装机械 PET瓶碳减排技术规范 低压吹瓶系统

Issued on: April 30, 2026 **Implemented on: November 1, 2026**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

Table of Contents

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Packaging Machinery Standardization Technical Committee (SAC/TC436). This document was drafted by: Guangdong Xinglian Precision Machinery Co., Ltd., Jiangsu Xinmeixing Industrial Research Institute Co., Ltd., and Krones Machinery (Taicang). Limited Liability Company, Hefei Zhongchen Light Industry Machinery Co., Ltd., Nanjing Baolilong Packaging Machinery Co., Ltd., Sidel Machinery (Shanghai) Co., Ltd. Langfang Baiguan Packaging Machinery Co., Ltd., Shanghai Zijang Enterprise Group Co., Ltd., Guangzhou Huayan Precision Machinery Co., Ltd., Danone (China) Food & Beverage Co., Ltd., China Resources Yibao Beverage (China) Co., Ltd., University of Chinese Academy of Sciences Hangzhou Institute for Advanced Study, Guangzhou Libai Enterprise Group Limited Liability Company, Hefei General Machinery Research Institute Co., Ltd., Hongsheng Beverage Group Co., Ltd., COFCO Coca-Cola Supply Chain (Tianjin) Co., Ltd. Swire Coca-Cola (China) Ltd., Guangdong Swire Coca-Cola Ltd., Guangzhou Blue Moon Industrial Co., Ltd., Inner Mongolia Mengniu Dairy (Group) Co., Ltd., Nestlé (China) Ltd., KKIS Intelligent Equipment Co., Ltd., Zhejiang Xindebao Machinery Co., Ltd. Hefei General Machinery & Electrical Products Testing Institute Co., Ltd., South China University of Technology. The main drafters of this document are. Jiang Xiaoping, Lu Jia, Wu Shupeng,

Ruan Chunhui, He Sheng, Huang Dongning, Dong Shusheng, Xie Hua, Zhang Jiu'an, and Wang Zhenhui. Yang Peng, Dong Hailong, Zhang Ke, Chen Xiaoping, Luo Xinxi, Shi Junjie, Lin Yongbo, Jin Guoxing, Hu Chao, Yin Xiongfei, Jiang Jin, Chen Runjie, Liang Yanjun Yin Gang, Xiang Xinglong, Liu Zhixiong, Ruan Changbai, Miao Jiale, Zhou Lianjun, Yao Shanwu, Qu Jianwei, Jian Qiugui, Gao Anping, Qu Yun, Li Wentao, Dai Daojin Yang Jianzhuo, Zhang Xueliang, Ji Rong, Wu Xiaowen, Su Wencong, Tang Weiqiang, Li Chuwen, Lu Min, Wang Shili, Gao Haining, Cui Haibo, Chen Weidong.

The rapid development of industries such as food and beverage and daily chemicals is inseparable from packaging. PET bottles are lightweight, easy to mold, have good performance, and are convenient to transport. With its advantages, low-pressure blow molding has been widely used. Promoting carbon reduction in PET bottles is a crucial means for the packaging industry to achieve carbon peaking and carbon reduction, and low-pressure blow molding... Bottle technology is one of the effective ways to reduce carbon emissions from PET bottles. Low-pressure blow molding systems for PET bottles reduce energy consumption by lowering the blowing pressure, thereby reducing the overall energy consumption of the PET bottle production process. The goal is to reduce carbon emissions. The development of technical specifications for low-pressure blow molding systems will drive the development of blow molding dies and machines for PET bottles within the blow molding system. Improvements in mechanical technology will further reduce carbon emissions from blow molding systems. Standardization will lay the foundation for upgrading packaging machinery technology and establish standardized practices. It contributes to the healthy, green, and sustainable development of the industry. Low-pressure blow molding systems are mainly used in the following scenarios. blow molding systems for daily chemical products, blow molding systems for hot-fill beverages, and blow molding systems for edible oils. Systems include blown bottle systems for condiments, carbonated beverages, aseptic beverages, and packaged drinking water. Packaging Machinery PET Bottle Carbon Emission Reduction Technical Specification Low-pressure blow molding system

1.Scope This document specifies the composition, basic parameters, and operating conditions of the low-pressure blow molding system used in the PET bottle blowing process, as well as the technical requirements. This paper describes the test methods for low-pressure blow molding systems and provides a method for evaluating energy-saving and emission-reduction effects. This document applies to the design, manufacture, and inspection of low-pressure blow molding systems for PET bottles.

4.Composition, basic parameters and operating conditions of low-pressure blow molding systems for PET bottles

4.1 Composition and Basic Parameters

4.1.1 Composition The components of a low-pressure blow molding system for PET bottles

include.

a) Bottle preform;

b) Blow molding die;

c) Blow molding machines and their auxiliary equipment.

4.1.2 Basic Parameters The names and units of the basic parameters of the PET bottle low-pressure blow molding system are as follows:

a) Blow-blowing pressure. The unit is megapascals (MPa);

b) Mass of the preform. in grams (g);

c) Linear dimensions of the preform. in millimeters (mm);

d) Dimensions of blow molding die. in millimeters (mm);

e) Operating temperature of blow molding die. in degrees Celsius (°C);

f) Rated production capacity of blow molding machine. unit is bottles per hour (bottles/h);

g) Number of blow molding stations for bottle blowing machines. in units.

4.2 Working Conditions

4.2.1 The work area should be free from external airflow and heat radiation that could affect the blow molding quality, and the air cleanliness should meet the requirements of Table

3.0.1 of GB 50073-2013. The regulations for Level N5 in China.

4.2.2 The operating ambient temperature is 15°C~35°C, with a fluctuation range of ±3°C; the relative humidity should not exceed 85%, and the altitude should not exceed 1000m.

4.2.3 The deviation between the external power supply voltage and the rated voltage shall comply with the provisions of

4.3 in GB/T 12325-2008.

4.2.4 The requirements for compressed air are as follows:

a) The compressed air supply pressure of the pneumatic system shall be 0.7MPa~1.0MPa, and the quality of the compressed air shall comply with GB/T 13277.1- The standard grades specified in 2023 are as follows: particulate matter grade not lower than grade 4, moisture and liquid water grade not lower than grade 4, and total oil content grade not lower than grade 4. No lower than level 2;

b) The compressed air supply pressure of the low-pressure blow molding system should meet the requirements of the blow molding machine for producing finished bottles, and the pressure fluctuation value should be less than [value missing]. The compressed air quality should meet the standard grade specified in GB/T 13277.1-2023, with a particle size not

lower than

0.08 MPa. Level 1, with humidity and liquid water levels no lower than Level 4, and total oil content no lower than Level 1.

4.2.5 Cooling water requirements are as follows:

a) Temperature, pressure, and flow rate should meet the operating requirements of the blow molding machine;

b) pH value is 7~8;

c) Total hardness (as CaCO3) is less than 140 mg/L;

d) The size of the pollutant particles is no greater than

5 Technical Requirements

5.1 Main blow pressure requirements for low-pressure blow molding systems for PET bottles Depending on the application scenario, the main blowing pressure of the PET bottle low-pressure blow molding system should meet the requirements of Table 1 while ensuring production capacity and quality. The main blow pressure for a general blow molding system for PET bottles is specified in Table A.1 of Appendix A.

5.2 Preform Technical Requirements

5.2.1 Preform quality deviation The quality deviation of the preform should meet the requirements of Table 2.

5.2.2 Preform wall thickness difference The wall thickness difference of the preform should meet the requirements of Table 3.

5.2.3 Preform wall thickness deviation The deviation of the preform wall thickness should meet the requirements of Table 4.

5.2.4 Preform Verticality Deviation The verticality deviation of the preform should meet the requirements of Table 5.

5.2.5 Ovality of the preform The ellipticity of the preform should not exceed

0.25 mm.

5.2.6 Preform moisture content The moisture content of preforms for hot-fill beverage bottles should not exceed 0.2%, and the moisture content of preforms for non-hot-fill beverage bottles should not exceed 0.3%.

5.2.7 Other requirements for preforms Other requirements for preforms should comply with BB/T 0060.