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

GB/T 17590-2008

Replacing GB/T 17590-1998

Three-piece can with aluminum easy open end

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Foreword

This Standard replaces GB/T 17590-1998 "Three-piece can with easy open end". Compared with GB/T 17590-1998 "Three-piece can with easy open end", the main changes of this Standard are as follows: - Clarify that the applicable scope is non-carbonated can-beverage; - Delete the content related to tin-plating (chrome) thin steel-sheet easy open end; - Update and adjust the reference documents; - Add the definitions for easy open three-piece can, neck-in can, straight-body can, powder striped can, liquid striped can; delete the definition for welding-seam striped can; - For can-body, add the classification according to striped forms and spraying forms; - Add 3 can-body specifications and 1 aluminum easy open end specification; and specify the main dimensions and deviation requirements; - The lower limits of aluminum easy open end's breaking force and full-open force are slightly adjusted; - Printing quality requirements are executed in accordance with the provisions of QB/T 1877; - Delete the content related to coating amount in inner-outer coating film performance; the test temperature of solidifying performance of inner-outer coating films is determined according to sterilization process requirements; for normal pressure sterilization, it is 100°C; for high pressure sterilization, it is 121°C; - Dry sealant mass requirements of aluminum easy open end and bottom end are adjusted according to that the dry sealant's density is 1.3 mg/mm³; - Aluminum easy open end and bottom end's compression strength AND

sealing performance requirements' pressure values are increased to 180 kPa; - Add the hygienic requirements; - Specify the test condition of opening reliability. This Standard was proposed by China Packaging Federation. This Standard shall be under the jurisdiction of National Packaging Standardization Technical Committee. Three-piece can with aluminum easy open end

1 Scope

GB/T 17590-2008 is the Chinese national standard on three-piece can with aluminum easy open end, in the field of packaging and distribution of goods. 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 18 July 2008 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 January 2009. Classification: ICS 55.140, CCS A82. 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 requirements, testing methods, inspection regulation, symbols, packaging, transportation and storage for three-piece can with aluminum easy open end. This Standard is applicable to manufacturing, usage, circulating and supervision inspection of three-piece can with aluminum easy open end, filled with non-carbonated beverages, which is made of tinplate (chrome coated plate), aluminum alloy plate and meets commercial sterility requirements after sealed and sterilized. For other similar products, this Standard can be used as reference.

2 Normative references

The articles contained in the following documents have become part of this document when they are quoted herein. For the dated documents so quoted, all subsequent modifications (including all corrections) or revisions made thereafter do not apply to this Standard. However, the parties who reach an agreement according to this Standard are encouraged to study whether the latest versions of these documents may be used. For the undated documents so quoted, the latest versions (including all modification sheets) apply to this document.

GB/T 191 Packaging-Pictorial marking for handling of goods (GB/T 191-2008, ISO 780.1997, MOD)

GB/T 2520 Cold-reduced electrolytic tinplate (GB/T 2520-2000, eqv ISO 11949.1995)

GB/T 2828.1 Sampling procedures for inspection by attributes - Part 1. Sampling schemes

indexed by acceptance quality limit (AQL) for lot-by-lot inspection (GB/T 2828.1 2003, ISO 2859-1.1999, IDT)

GB 4805 Hygienic standard of epoxy phenolic resin coating for the internal lacquer of food cans

GB 4806.1 Hygienic standard for foodstuff rubber products

GB/T 13040 Packing terms. Metal containers

GB/T 14251 Technical specifications of round tin-plate container for canned foods QB/T 1877 Tinplate prints for the packing and decoration QB/T 2763 Coated tinplate (or ECCS)

3 Terms, definitions and symbols

3.1 Terms and definitions The following terms and definitions specified in GB/T 13040 are applicable to this Standard.

3.1.1 three-piece can with aluminum easy open end Metal can which is formed by rolling and sealing the aluminum easy open end, bottom end and can body.

3.1.2 necked-in can The can with necked cross section at one end or at two ends.

3.1.3 straight-body can Can with constant cross section from top end to bottom end without considering partial rolling rib.

3.1.4 liquid striped can The can of which the inner welding seam of the can body is striped by liquid coating.

3.1.5 powder striped can The can of which the inner welding seam of the can body is striped by powder coating.

3.1.6 sprayed can The striped can of which the inner wall is sprayed.

3.1.7 splash point Object that is formed by extruded and ejected melting metal which is caused by high temperature in the welding spot centre which is equal to or above iron melting point due to over welding temperature, when moving welding.

3.1.8 cold welding Welding when two plates to be welded have not reached plastic-welded state (only tin is melted) due to low welding temperature. It is commonly known as pseudo welding or false welding.

3.1.9 pin hole Table

3 The main property of can body Items Property indexes Performance of inner and outer coating film Inner and outer coating film solidifying After coating film solidifying test at 100°C or 121°C, the inner coating film shall have no phenomenon of being whitened, peeling and separation while the outer coating film shall have no phenomenon of chalkiness, peeling, separation and colour fading of printed graph. Corrosion resistance of

Inner coating According to content's characteristics and sterilization process requirements, after can body anti-corrosion test at 100°C or 121°C is carried out, the inner coating film shall have no phenomenon of peeling, separation and obvious corrosion. Completeness of outer stripe There shall be no filiform corrosion and concentrated corrosion spots. Completeness of inner coating film/mA Non sprayed can Liquid striped can Individual value ≤ 50 , average value ≤ 30 . Powder striped can Individual value ≤ 30 , average value ≤ 15 . Sprayed can Individual value ≤ 15 , average value ≤ 8 . Pressure withstand strength There shall be no permanent deformation at the pressure of 150kPa (180kPa for can when the can height is greater than 2 times of the can diameter), maintained for 1min. Tightness There shall be no leakage at the pressure of 150kPa (180kPa for can when the can height is greater than 2 times of the can diameter), maintained for 1min.

6.1.5 Compatibility Customer shall carry out compatibility test according to content in the can and verify the test result.

6.2 Aluminum easy open end and bottom end

6.2.1 Main dimension and deviation limits of aluminum easy open end and bottom end shall meet requirements of Table 4 and Table 5, as shown in Figure 5 and Figure 6. pressure

Note. Test solution shall be prepared with analytical reagent and distilled water.

7.5 Completeness test of outer stripe Immerse the outer stripe of welding seam into mixture solution of 20% (mass concentration) copper sulfate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) and 10% (volume concentration) hydrochloric acid. Get it out after 1min. Clean it with fresh water and dry it. Check it by visual inspection.

7.6.1.1 Completeness test instrument of inner stripe. DC voltage

6.3 V and the minimum reading value shall not be greater than 0.1mA.

7.6.1.2 Electrolytic solution. 2% (mass concentration) sodium sulfate solution, 1% (mass concentration) sodium chloride solution.

Note. Test solution shall be prepared with analytical reagent and distilled water.

7.6.2 Completeness test of inner coating film of can body Use completeness tester of inner coating film. Connect the can body to positive pole and add 2% (mass concentration) sodium sulfate solution until the liquid level is 3mm to the can mouth. Insert stainless steel bar and connect it to negative pole. Read the defect current value in the 4th second.