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

GB/T 2520-2017

Replacing GB/T 2520-2008

Cold-reduced electrolytic tinplate

冷轧电镀锡钢板及钢带

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1 Application Scope

China's national standard for cold-reduced electrolytic tinplate. It specifies the classification and designation, the order content, the dimensions, the technical requirements, the test methods, the inspection rules and the packaging and marking of electrolytically tinned cold-rolled steel sheet and strip. Tinplate is the material of the food can, and it exists because tin is one of the few metals that is both non-toxic in contact with food and passive enough not to affect the taste. The steel gives the strength and the cost; the tin gives the corrosion resistance and the solderability; and a lacquer over the tin handles the products the tin alone cannot. The coating is extraordinarily thin - a fraction of a micrometre, measured in grams per square metre - and it is applied electrolytically rather than by

dipping precisely because it can be controlled that finely and because the two faces can be coated differently, which matters since the inside of a can faces the food and the outside faces the printing. That difference is one of the things the designation must carry. The standard therefore specifies the coating mass on each surface and its designation, the steel grade and temper, which govern whether the material can be drawn into a can body or must be formed as a three-piece can, the surface finish, the passivation and the oiling, the mechanical properties, and the dimensional tolerances. The tin coating mass itself is determined by the coulometric method of GB/T 1838. Issued on 7 September 2017 and in force since 1 June 2018, it replaced GB/T 2520-2008 and has since been superseded by GB/T 2520-2026.

This Standard specifies the classification and codes, ordering content, dimensions, shapes, weights and tolerances, technical requirements, test methods, inspection rules, packaging, marking and quality certification of cold-reduced electrolytic tinplate. This Standard applies to single cold-reduced electrolytic tinplate of nominal thickness

0.14 mm ~

0.80 mm and double cold-reduced electrolytic tinplate of nominal thickness

0.12 mm ~

0.36 mm (hereinafter referred to as tinplate).

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition dated applies to this document. For undated references, the latest edition of the referenced documents (including all amendments) applies to this Standard.

GB/T 222, Permissible Tolerances for Chemical Composition of Steel Products

GB/T 223.4, Iron, Steel and Alloy - Determination of Manganese Content - Potentiometric or Visual Titration Method

GB/T 223.5, Steel and Iron - Determination of Acid-soluble Silicon and Total Silicon Content - Reduced Molybdsilicate Spectrophotometric Method

GB/T 223.9, Iron, Steel and Alloy - Determination of Aluminium Content - Chrom Azurol S Photometric Method

2.5 CA, L T-3 BA, MR DR-8 BA

4.2.3 For the tinplate used for manufacturing plain surface (coating weight more than 5.6/2.8 g/m²) food cans for acidic contents, i.e. K plate, the black plate steel grade is usually

steel grade L. Its designation consists of black plate steel grade L, temper degree code, annealing method code and code K.

4.2.4 For tinplate used for manufacturing food cans for mushroom and others which require low-chromium passivation treatment, the black plate steel grade is usually steel grade MR or L.

3 Terms and Definitions

3.1 electrolytic tinplate Cold-reduced low-carbon steel plate or strip which is tinplated on both sides through continuous electrolytic tinning.

3.2 differentially coated electrolytic tinplate Electrolytic tinplate of different tin coating weights on the two sides.

3.3 single cold-reduced; SR Steel baseplate is cold-reduced to obtain the required thickness, and then annealed and skin-passed.

3.4 double cold-reduced; DR Reduction in which steel baseplate goes through first cold-reducing and annealing, and then cold-reduced with large rolling reduction.

3.5 box annealing; BA The process in which cold-reduced steel strip is annealed in the wind-up state and the controlled atmosphere, in accordance with the set cycles of time and temperature.

3.6 continuous annealing; CA The process in which cold-reduced steel strip is annealed in the unfolding state and controlled atmosphere, in accordance with the set cycles of time and temperature.

4 Classification and Codes

4.1 The classification and codes of tinplate shall be as specified in Table 1.

4.2 Designation

4.2.1 For tinplate of general purposes, its designation consists of black plate steel grade code, temper degree code and annealing method code. EXAMPLE MR T-

5 Ordering Content

The contract or order placed in accordance with this Standard shall include the following content.

6.1 Dimensions

6.1.1 When the nominal thickness of tinplate is less than

0.50 mm, the increment of

0.01 mm is used for advancement.

6.1.2 If the marking of rolling width direction is required, the letter W may be added behind the number showing rolling width. EXAMPLE 0.26 x 832W x 760

6.1.3 The inner diameters of steel rolls are 406 mm, 420 mm, 450 mm or 508 mm.

6.2 Tolerances for dimensions

6.2.1 Tolerance for thickness The tolerance for thickness of tinplate shall not be greater than $\pm 7\%$ of nominal thickness.

6.3 Shapes

6.3.1 Skewness The skewness shall not be greater than 0.15% of the width of tinplate. The skewness is the vertical projection length of the wide side of tinplate (width) to the longitudinal side of tinplate (length), as shown in Figure 1.

6.4 Tolerances for edge shapes and dimensions and shapes of WL tinplate The tolerances for edge shapes, dimensions and shapes of WL tinplate shall be as agreed on by the supplier and the purchaser during ordering.

6.5 Others Other dimensions, shapes, weights and tolerances shall be as specified in GB/T 708.

6.6 Welding lines in steel strips

6.6.1 In each roll of steel strips, the total number of welding lines on any 10 000 mm length shall not be greater than 3.

7.1 Types and chemical compositions of black plate steels

7.1.1 The types and chemical compositions (ladle analysis) of black plate steel shall be as specified in Table 2.

7.1.2 Other black plate steel grades and chemical compositions may be used as agreed on by the supplier and the purchaser, which shall be stated in the contract.

7.2 Mechanical properties

7.2.1 The temper degree of tinplate is expressed by the value of Rockwell hardness (HR30Tm).

7.2.2 The hardness (HR30Tm) of SR tinplate shall be as specified in Table 3. Table 3

7.2.3 The hardness (HR30Tm) of DR tinplate shall be as specified in Table 4. Table 4