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

GB/T 2532-2014

Replacing GB/T 2532-2005

Brass strip for heat-exchanger water tank and header

散热器水室和主片用黄铜带

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2 Normative references

The following documents are indispensable for the application of this document. For dated references only the edition cited applies; for undated references the latest edition, including any amendments, applies.

The documents listed are GB/T 228.1-2010 on the tensile testing of metallic materials at room temperature, GB/T 4340.1 on the Vickers hardness test of metallic materials, GB/T 5121 (all parts) on methods of chemical analysis of copper and copper alloys, GB/T 5231 on the designations and chemical composition of wrought copper and copper alloys, GB/T 8888 on the packaging, marking, transport and storage of heavy non-ferrous metal

processed products, GB/T 26303.3 on the inspection of the dimensions of wrought copper and copper alloy products, part 3 covering plate and strip, YS/T 347 on the determination of the average grain size of copper and copper alloys, YS/T 482 on the analysis of copper and copper alloys by optical emission spectrometry, YS/T 483 on the analysis of copper and copper alloys by wavelength dispersive X-ray fluorescence spectrometry, YS/T 668 on sampling for the physical and chemical testing of copper and copper alloys, and YS/T 815 on the preparation of specimens for the mechanical and technological testing of copper and copper alloys.

3 Requirements

3.1.1 The grade, the temper and the size of the strip shall comply with Table 1. That table has five columns: grade, code, temper and, under size in millimetres, thickness and width. Six grades are listed with their codes: H70 (T26100), H68 (T26300), H66 (C26800), H65 (C27000), H63 (T27300) and H62 (T27600). The temper cell is merged over all six grades and gives softening annealed (O60) and fully softening annealed (O70). Thickness is 0.5 to 2.0 and width is 50 to 600 for the whole table.

3.1.2 Designation example. The strip is designated in the order product name, number of this standard, grade or code, temper, thickness and width. A strip made of H68 (T26300), in the softening annealed (O60) temper, 0.7 mm thick and 120 mm wide, is designated brass strip GB/T 2532-H68 O60-0.7x120, or brass strip GB/T 2532-T26300 O60-0.7x120.

3.2 The chemical composition of the strip shall conform to that laid down in GB/T 5231 for the corresponding grade.

3.3.1 The thickness of the strip and its permissible deviation shall comply with Table 2, in millimetres. For thickness 0.5 to 0.8 the deviation is ± 0.025 at width 50 to 200, ± 0.030 at width over 200 to 400 and ± 0.035 at width over 400 to 600. For thickness over 0.8 to 1.2 it is ± 0.030 , ± 0.035 and ± 0.040 for the same three width ranges. For thickness over 1.2 to 2.0 it is ± 0.040 , ± 0.045 and ± 0.050 . A footnote states that where the purchaser calls for a one-sided plus or minus deviation, its value is twice the figure in the table.

3.3.2 The width of the strip and its permissible deviation shall comply with Table 3, in millimetres: ± 0.3 for width 50 to 200, ± 0.4 for width over 200 to 300 and ± 0.6 for width over 300 to 600, with the same footnote on one-sided deviations.

3.3.3 The edge camber of the strip shall comply with Table 4. Camber values obtained at different gauge lengths L are converted on the basis that the ratio of two camber values equals the square of the ratio of the corresponding gauge lengths, as illustrated in Figure 1. Table 4 gives the camber in millimetres per 2 m of gauge length, not greater than 12 for width 50 to 100 and not greater than 8 for width over 100 to 600.

3.3.4 Both edges of the strip shall be trimmed square and free from split edges. The strip shall be supplied in coils.

3.4 The results of the tensile test and of the Vickers hardness test shall comply with Table 5. In that table the grade cell is merged over both data rows and lists all six grades, so the two rows differ only by temper. In the O60 temper the tensile strength R_m is 310 MPa to 380 MPa, the elongation after fracture $A_{11.3}$ is not less than 45 % and the Vickers hardness HV is 65 to 85. In the O70 temper R_m is 280 MPa to 350 MPa, $A_{11.3}$ is not less than 50 % and HV is 55 to 75.

3.5 The grain size of the strip shall comply with Table 6, in millimetres: for the O60 temper the minimum is 0.025 and the maximum 0.050; for the O70 temper the minimum is 0.040 and the maximum 0.075.

3.6 The surface of the strip shall be smooth and clean, with no defect that impairs its use.

4 Test methods

4.1 Chemical analysis of the strip is carried out according to GB/T 5121 (all parts), YS/T 482 and YS/T 483; the arbitration method for chemical composition is GB/T 5121 (all parts).

4.2 Dimensional inspection of the strip is carried out according to GB/T 26303.3.

4.3 The tensile test on the strip is carried out according to GB/T 228.1-2010; tensile specimens used for arbitration shall conform to specimen number P02 of Table B.1 in Annex B of GB/T 228.1-2010. The Vickers hardness test on the strip is carried out according to GB/T 4340.1.

4.4 The grain size of the strip is examined according to YS/T 347.

4.5 The surface quality of the strip is examined visually.

5 Inspection rules

5.1.1 The product shall be inspected by the technical supervision department of the supplier, who guarantees that its quality meets this standard and the order or contract, and who fills in the quality certificate.

5.1.2 The purchaser shall inspect the product received against this standard and the order or contract. Where the result does not agree with them, the purchaser shall put the matter to the supplier in writing and the two parties shall settle it by consultation. Objections concerning surface quality and dimensional deviation shall be raised within one month from the date on which the product is received; other quality objections shall be raised within three months from that date. Where arbitration is needed, sampling for arbitration shall be carried out jointly by the two parties at the purchaser's premises.

5.2 The product shall be presented for acceptance in batches, each batch being made up of product of the same grade, temper and size. The weight of a batch shall not be more than 3 500 kg; where the batch comes from a single melt, the batch quantity need not be limited.

5.3 Each batch of strip shall be inspected for chemical composition, Vickers hardness, grain size, dimensions and their permissible deviations, and surface quality. Where the purchaser calls for a tensile test, that test shall be carried out as well.

5.4 Sampling of the strip shall comply with Table 7; the sampling method follows YS/T 668 and mechanical property specimens are prepared according to YS/T 815. Table 7 has four columns: inspection item, sampling rule, clause number of the requirement and clause number of the test method. For chemical composition, the supplier takes one specimen per furnace during melting and casting and the purchaser takes one specimen at random from each batch; requirement 3.2, test method 4.1. For dimensions and their permissible deviations, coil by coil; requirement 3.3, test method 4.2. For tensile properties, two coils are taken at random from each batch and one specimen is taken from each coil along the rolling direction; requirement 3.4, test method 4.3. For Vickers hardness, two coils are taken at random from each batch and one specimen from each coil; requirement 3.4, test method 4.3. For grain size, two coils are taken at random from each batch and one specimen from each coil; requirement 3.5, test method 4.4. For surface quality, coil by coil; requirement 3.6, test method 4.5.

Relationship to previous standards

The foreword states that this standard replaces GB/T 2532-2005 and lists the earlier editions of the replaced standard as GB/T 2532-1981, GB/T 2532-1997 and GB/T 2532-2005.

The main changes with respect to GB/T 2532-2005 named in the foreword are: four grades, H66, H65, H63 and H62, were added; the temper designations were changed from M (soft) and TM (extra soft) to softening annealed (O60) and fully softening annealed (O70) in line with GB/T 29094-2012; the thickness range was widened from 0.5 mm to 1.2 mm to 0.5 mm to 2.0 mm; the requirement on thickness deviation was tightened; the gauge length for edge camber was changed from 1 m to 2 m and the requirement tightened, and a rule was added for converting camber values between gauge lengths; the tensile properties and Vickers hardness of the strip were adjusted; the grain size of the strip was adjusted; and provisions were added for chemical analysis according to YS/T 482 and YS/T 483, for dimensional inspection according to GB/T 26303.3, for sampling according to YS/T 668 and for specimen preparation according to YS/T 815.