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Replacing GB 5585.1-1985, GB 5585.2-1985

Copper or Aluminium and its Alloy Bus Bars for Electrical Purposes - Part 1: Copper and Copper Alloy Bus Bars

电工用铜、铝及其合金母线 第 1 部分：铜和铜合金母线

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Issued by: General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ);

Standardization Administration (SAC) of the People's Republic of China.

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Foreword

GB/T 5585 *Copper or Aluminium and Its Alloy Bus Bars for Electrical Purposes* is divided into two parts:

— Part 1: Copper and Copper Alloy Bus Bars

— Part 2: Aluminium and Aluminium Alloy Bus Bars

This revision combines three parts of GB 5585-1985 into two parts - *Copper and Copper Alloy Bus Bars* and *Aluminium and Aluminium Alloy Bus Bars*. This is Part 1 of GB/T 5585.

This Part not only replaces GB 5585.2-1985 *Copper or Aluminium and Its Alloy Bus Bars for Electrical Purposes - Part 2: Copper Bus Bars*, but also integrates the relevant content about copper and copper alloy bus bars in GB 5585.1-1985 *Copper or Aluminium and Its Alloy Bus Bars for Electrical Purposes Part 1: General Requirements*.

Compared with GB 5585.2-1985, this Part has the following main changes:

— Structure and drafting of standards are adjusted according to GB/T 1.1-2000;

— Basic state symbol is deleted (3.2.1 in GB 5585.1-1985; no provision in this edition);

— Alloy composition and alloy content are clearly expressed by one digit Arabic number (3.3.1 in GB 5585.1-1985; 3.2.1.3 and 3.2.1.4 in this edition);

— Section shape code number is added (no provisions in GB 5585.1-1985; 3.2.2 in this edition);

— Scope of size for copper and copper alloy bus bars is expanded (Table 2 in GB 5585.1-1985; Table 2 in this edition);

— Chemical compositions for products of copper and copper alloy bus bars are supplemented (no such content in GB 5585.1-1985 and GB 5585.2-1985; Table 1 in this edition);

— For copper and copper alloy bus bars, their section shapes are added with round edge and all-round edge (no such content in GB 5585.1-1985 and GB 5585.2 - 1985; 4.1 in this edition);

— The definition of straightness is added; narrow-edge straightness supersedes straightness in former standard; broad-edge straightness for copper and

copper alloy bus bars is added (2.6 in GB 5585.1-1985; 3.1.2 in this edition).

This Part was proposed by the China Electrical Equipment Industry Association.

This Part shall be under the jurisdiction of the National Technical Committee 213 on Wire and Cables of Standardization Administration of China.

Drafting organizations of this Part: Shanghai Electric Cable Research Institute, second branch of Shanghai Copper Factory, Beijing North China Huatong Electric Co., Ltd., Jiangyin Electrical Alloy Co., Ltd., Chongqing Pigeon Electric Wire & Cable Co., Ltd. AND International Copper Association (China).

Chief drafting staffs of this Part: Xu Rui and Huang Guofei.

The previous editions replaced by this Part are as follows:

— GB 5585.1-1985;

— GB 5585.2-1985.

Copper or Aluminium and its Alloy Bus bars for Electrical Purposes - Part 1: Copper and Copper Alloy Bus Bars

1 Scope

This Part is applicable to copper and copper alloy bus bars (also known as copper and copper alloy bars) for electrical purposes.

2 Normative References

The following normative documents contain provisions which, through reference in this Part of GB/T 5585, constitute the provisions of this Part. For dated reference, the subsequent amendments (excluding corrigendum) or revisions of these publications do not apply. However, the parties who enter into an agreement according to this Part are encouraged to study whether the latest editions of these documents are applicable. For undated references, the latest edition of the normative document referred to applies.

GB/T 321 Preferred Numbers - Series of Preferred Numbers

GB/T 2900.10 Electrotechnical Vocabulary - Electric Cables (GB/T 2900.1-2001, idt IEC 60050 (461): 1984)

GB/T 3048.2 Test Methods for Determining Electrical Properties of Electric Cables And Wires - Measurement of Resistivity of Metallic Conductive Materials (GB/T 3048.2-1994, eqv IEC 468: 1974)

GB/T 4909.2 Test Methods for Bare Wires - Measurement of Dimensions (GB/T 4909.2-1985, neq IEC 60251: 1978)

GB/T 4909.3 Test Methods for Bare Wires - Tensile Test (GB/T 4909.3-1985, neq IEC 60207: 1966)

GB/T 4909.6 Test Methods for Bare Wires - Bend Test - Single Bend Test

GB/T 4909.8 Test Methods for Bare Wires – Hardness Test - Brinell Hardness Test

GB/T 5121.1 Chemical Analysis Methods of Copper and Copper Alloy - Determination of Copper Content

3 Terms, Code and Expression Method for Products

3.1 Terms

For the purpose of this Part, the terms and definitions established in GB/T 2900.10 AND the following terms and definitions apply.

3.1.1

Dimensions

The bus bar's size, expressed by nominal size of bus bar section, *a*×*b*.

3.1.2

Straightness

The maximum vertical distance, from any point on the reference plane, where the bus bars are placed, to the reference plane.

3.2 Code

3.2.1 Classification by material type

3.2.1.1 Copper bus bar ..... TM

3.2.1.2 Copper alloy bus bars ..... THM

3.2.1.3 Alloys of difference components are expressed by the first number after H:

Silver copper alloy 1

3.2.1.4 Alloys of difference components but the same content are expressed by the second number after H:

Class I silver copper alloy..... 1

Class II silver copper alloy 2

3.2.2 Classification by section shape

Round angel ..... not available

Round edge ..... B

Chemical compositions of copper and copper alloy bus bars shall meet those specified in Table 1.

Table 1 Chemical Compositions of Copper and Copper Alloy Bus Bars

Model	Name	Chemical composition, %	
		Copper + silver ≥	In which, containing silver
TM	Copper bus bars	99.90	—
TH11M	Category I silver-copper bus bars	99.90	0.08~0.15
TH12M	Category II silver-copper bus bars	99.90	0.16~0.25

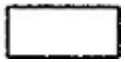
4.4 Size and dimension

4.4.1 Section size ranges of copper and copper alloy bus bars are as follows:

— 2.24≤*a*≤50.00 mm;

— 16.00≤*b*≤400.00 mm.

Dimensions series for copper and copper alloy bus bars are detailed in Table 2.

63.00°	 R20×R40 or R40×R20 (intermediate)  R40×R40 (not recommended)	○		○		○		○		○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
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200.00°										○		○	○	○	○	○	○		○		○									
250.00°										○					○		○													
315.00°																					○									
400.00°																														

		specified in 4.5.		
3	Straightness	In accordance with those specified in 4.7.	T, S	4.7.3
4	Tensile strength	In accordance with those specified in 4.8.1.	T, S	GB/T 4909.3
5	Elongation	In accordance with those specified in 4.8.1.	T, S	GB/T 4909.3
6	Hardness	In accordance with those specified in 4.8.1.	T, S	GB/T 4909.8
7	Bending	In accordance with those specified in 4.8.2.	T, S	GB/T 4909.6
8	Resistivity	In accordance with those specified in 4.9.	T, S	GB/T 3048.2
9	Surface quality	In accordance with those specified in 4.11.	T, S	Normal visual inspection
10	Chemical composition	In accordance with those specified in 4.3.	T	GB/T 5121.1
Note: Test method of resistivity may be superseded by other suitable measurement method; in case of any dispute, GB/T 3048.2 shall be adopted as reference test method.				

6 Delivery Length and Mass

6.1 Delivery length of each copper and copper alloy bus bar shall be in accordance with those specified in Table 12.

Table 12 Delivery Length

Product name	Delivery length	
	Standard	Short segment
Copper and copper alloy bus bars	(2~9)m	The length is not less than 1.5m and the mass is not greater than 10% of total mass in delivery.

6.2 Copper and copper alloy bus bars shall be in accordance with those specified in Table 13 in case of delivery according to weight.

Table 13 Delivery Mass

Product name	Delivery mass	
	Standard	Short segment
Copper and copper alloy bus bars	(40~100)kg	The minimum mass is not less than 15kg and the mass is not greater than 10% of total mass in delivery.

6.3 According to the negotiation between the supplier and purchaser, any length and mass of copper and copper alloy bus bars is permissible in delivery.

7 Inspection Rules

7.1 Classification of inspection

Inspections specified in this Part are classified into exit-factory inspection and type inspection.

7.1.1 Each batch of products, in case of delivery, must be subjected to exit-factory inspection, which is a sampling test (S as the code). Each batch of products shall be delivered after being qualified in the sampling test carried out by quality inspection department of the supplier.

7.1.2 The type inspection (T as the code) is to perform a comprehensive assessment on product mass, i.e. it is made on all items of technical requirements specified in this Standard.

7.1.3 The test items and test category shall be in accordance with those specified in Table 11.

7.2 Sampling rules

Sampling rules of the product are determined through negotiation between the supplier and purchaser. If not required by the purchaser, the rules are determined by the requirements of the supplier.

7.3 Qualification evaluation

Test results of all the test items shall be in accordance with those specified in Table 11.

If any item is unqualified in exit-factory inspection, double-sampling test shall be carried out for the unqualified test items. And if they are still unqualified, 100% inspection shall be carried out and the qualified products may be delivered.

8 Product Certificate, Packaging, Marking, Transportation and Storage

8.1 Product certificate

Every packaging and each batch of product shall be attached with product certificate and exit-factory inspection report issued by quality inspection department of the supplier respectively.

8.2 Packaging

Bales and boxes shall be adopted for the delivery according to length; reels, loops

and bales shall be adopted for the delivery according to mass. Each package shall be of same type and dimension and the product in coils or reels shall be a whole bar.

The product shall be properly packaged, at least 3 times shall be bundled up with hemp cloth or similar materials. The moisture-proof, anti-corrosion and anti-mechanical damage measures shall be provided.

8.3 Marking

Each package shall be accompanied with a label, indicating:

a) Manufacturer's name, trademark and address;

b) Product name;

c) Type/dimension of product;

d) Product batch number;

e) Gross weight, net weight, fixed length and number of pieces;

f) Exit-factory date: Y/M/D;

g) Number of this Part in GB/T 5585.

8.4 Transportation and storage

The product shall be paid attention to avoid damage during the normal handling, transportation and storage.

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