

ICS 29.060.10

CCS K 11



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

GB/T 12971.2-2008

**Trolley and contact wires for electric traction -- Part 2:
Aluminium and steel composite trolley and contact wires
(English Translation)**

Issued on: June 30, 2008

Implemented on: April 1, 2009

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Foreword...	3
1 Scope..	4
2 Normative References...	4
3 Models...	5
4 Specification...	5
5 Materials...	8
6 Test...	8
7 Package and Marking...	10
8 Storage and Transportation...	11

Foreword

GB/T 12971 Trolley and Contact Wires for Electric Traction can be divided into the following two parts.

--- Part 1.Copper and Copper-Alloy Contact Wires;

--- Part 2.Aluminum and Steel Composite Trolley and Contact Wires.

This Part belongs to Part 2 of GB/T 12971.

This Part replaced GB 12971.3-1991 Trolley and Contact Wires for Electric Traction - Part 3.Aluminum and Steel Composite Trolley and Contact Wires; and enroll relevant contents of GB 12971.1-1991 into this Part.

Compared with GB 12971.3-1991, this Part has the major changes as follows.

--- Add the normative references (Clause 2 of this edition);

--- Modify the test requirements (Clause 4 of previous edition; Clause 6 of this edition);

--- Add the requirements for package and marking (Clause 7 of this edition);

--- Add the requirements for transportation and storage (Clause 8 of this edition);

The Appendix A, B, C in this Part are normative.

This Part was proposed by China Electrical Equipment Industrial Association.

This Part shall be under the jurisdiction of National Technical Committee for Standardization of Wires and Cables (SAC/TC 213).

Drafting organizations of this Part. Shanghai Electric Cable Research Institute.

Participating drafting organizations of this Part. Tai'an Electric Trolley Wire Factory, Tai'an Huaxun Electric Trolley Wire Co., Ltd., Hebei Xingtai Cable Co., Ltd., Shanghai Cable Works Co., Ltd., and Liaoning Fushi Copper Co., Ltd.

Chief drafting staffs of this Part. Liu Bin, Duan Pengzheng, Zhang Xiuqin, Meng Guangji, Xie Qilin, and Wang Daxin.

The historical editions replaced by this Standard are as follows.

--- GB 12971.1-1991;

--- GB 12971.3-1991.

Trolley and Contact Wires for Electric Traction - Part 2.

Aluminum and Steel Composite Trolley and Contact Wires

1 Scope

This Part of GB/T 12971 specifies the product models, specifications, materials, test, package and marking, transportation and storage, etc. of aluminum and steel composite trolley and contact wires.

This Part is applicable to the aluminum and steel composite trolley and contact wires used for electric transport, lifting system in the railways, mining, urban traffic, etc.

2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Part of GB/T 12971. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 1196-2002 Unalloyed Aluminum Ingots for Re-melting

GB/T 3048.2-2007 Test Methods for Electrical Properties of Electric Cables and

Wires - Part 2. Test of Electrical Resistivity of Metallic Materials (IEC 60648.1974, MOD)

GB/T 4909.2-1985 Test Methods for Bare Wires - Part 2. Measurement of Dimensions

GB/T 4909.3-1985 Test Methods for Bare Wires - Part 3. Tensile Test

GB/T 4909.4-1985 Test Methods for Bare Wires - Part 4. Torsion Test

JB/T 8137.2-1999 Delivery Drums for Electric Wires and Cables - Part 2. Wood Delivery Drums

JB/T 8137.4-1999 Delivery Drums for Electric Wires and Cables - Part 4. Steel Shapes Composite Delivery Drums

5 Materials

The materials of aluminum and steel composite contact wires shall conform to the following provisions.

Steel shall conform to the provisions of Appendix A in this Part.

Aluminum shall conform to the provisions of Appendix B in this Part.

6.1 Test classification

The test can be divided into type test and routine test.

The type test is mainly used for inspecting the major performance of contact wires; its performance mainly depends on the design of contact wires. For the newly-designed contact wires or the contact wires produced by new production processes, the test is only carried out once; and the test can only be repeated when the design and production process change.

The type test can only be carried out on the contact wires that meet all the requirements for routine test.

The routine test is carried out for ensuring the quality of contact wires, and meeting the requirements of this Part.

6.2.1 Comprehensive breaking force

The comprehensive breaking force of contact wires shall pull the tensile tester which is fixed on a proper position, with accuracy of $\pm 1\%$; the effective gauge length is 250mm; the comprehensive breaking force test shall be carried out as per the GB/T 4909.3-1985; the test results shall meet the requirements of Table 3.

6.2.2 Binding force

The binding force test of contact wires shall be carried out as per the specified method of Appendix C; the effective gauge length for the specimen of binding force test shall be 100mm; the test results shall meet the requirements of Table 3.

6.2.3 Torsion

The torsion test shall be carried out as per the GB/T 4909.4-1985; the test speed is 15r/min ~ 20r/min; 180° repeated torsion; the effective gauge length of specimen is contact wire.

7.2.1 Each coil of the contact wire shall have the firm mark that is easy to find; and

the following contents shall be indicated.

- a) The name of the manufacturer;
- b) Product name;
- c) Product model;
- d) Manufacturing standard;
- e) Length;
- f) Gross weight and net weight (kg);
- g) Exit-factory No. and production date (year, month, day);
- h) The arrow for wire-placing direction of the contact wires.

7.2.2 Each coil of contact wires shall be attached the following accompanying documents.

- a) Product certification;