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

GB/T 46343.1-2025

**Aircraft - Nickel-chromium and nickel-aluminium thermocouple
extension cables - Part 1: Conductors general requirements and
tests**

飞机 镍铬-镍铝热电偶延长电缆 第1部分：导体通用要求和测试
(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 1 of GB/T 46343 "Extension Cables for Nickel-Chromium/Nickel-Aluminum Thermocouples for Aircraft". GB/T 46343 has been published.

The following section.

---Part 1: General Requirements and Tests for Conductors;

---Part 2: General Requirements and Testing for Termination Devices;

---Part 3: Dimensions of Crimped Ring Terminals;

---Part 4: Dimensions of Crimped Fittings this document is equivalent to ISO 8056-1:1985 "Extension cables for nickel-chromium and nickel-aluminum thermocouples for aircraft - Part 1: General requirements for conductors".

Summation test.

This document includes a new chapter on "Terms and Definitions".

The following minimal editorial changes have been made to this document.

---To harmonize with existing standards, the standard name has been changed to "Aircraft Nickel-Chromium/Nickel-Aluminum Thermocouple Extension Cables Part 1: General

Conductors" Requirements and Tests;

---Express the temperature coefficient of platinum resistance thermometer in the original text using scientific notation and add the unit /°C (see footnotes 3, 4, and 5).

For understanding and use;

---Add index numbers to the figures (see Figures A.1 and A.2) to make this document more in line with domestic cartographic requirements.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Aircraft Standardization Technical Committee (SAC/TC435).

Introduction

GB/T 46343 "Extension Cables for Nickel-Chromium-Nickel-Aluminum Thermocouples for Aircraft" is proposed to consist of four parts.

---Part 1: General Requirements and Testing for Conductors. The purpose is to specify the general requirements for conductors in aircraft nickel-chromium/nickel-aluminum thermocouple extension cables.

And testing, for the development of conductors for aircraft nickel-chromium-nickel-aluminum thermocouple extension cables.

---Part 2: General Requirements and Tests for Termination Components. The purpose is to specify the general requirements and tests for termination components used in aircraft nickel-chromium/nickel-aluminum thermocouple extension cables.

The requirements and tests were used to develop termination components for aircraft nickel-chromium-nickel-aluminum thermocouple extension cables.

---Part 3: Dimensions of Crimped Ring Terminals. The purpose is to specify the dimensions of crimped ring terminals for aircraft nickel-chromium/nickel-aluminum thermocouple extension cables.

The size requirements of the ring-shaped terminal block are specified for the development of crimp-type ring terminals used in aircraft nickel-chromium-nickel-aluminum thermocouple extension cables.

---Part 4: Crimping Joint Dimensions. The purpose is to specify the dimensions of crimping joints for aircraft nickel-chromium/nickel-aluminum thermocouple extension cables.

The goal is to develop a crimp connector for use in aircraft nickel-chromium/nickel-aluminum thermocouple extension cables.

Aircraft nickel-chromium-nickel-aluminum thermocouple extension cable Part 1: General Requirements and Tests for Conductors

1 Scope

This document specifies the design requirements and testing procedures for conductors of nickel-chromium/nickel-aluminum thermocouple extension cables used in aircraft temperature indication and control systems.

Appendix A provides a method for determining the thermoelectric potential of a conductor wire with respect to platinum.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

Note: GB/T 3930-2008 DC bridge for measuring resistance (IEC 60564:1997, IDT)

3 Terms and Definitions

This document does not contain any terms or definitions that need to be defined.

4 Conductor Materials

The conductor material for aircraft thermocouple extension cables should be bright annealed non-magnetic nickel-chromium wire and bright annealed magnetic nickel-aluminum wire.

Within the specified temperature range, the DC resistance and thermoelectric potential of the two conductors should meet the requirements of Table 1 and Table 2, respectively.

Table 1 Details of Nickel-Chromium and Nickel-Aluminum Conductors

Conductors. Nickel-chromium conductors (Ni-Cr), Nickel-aluminum conductors (Ni-Al) size mm² AWG Wire strand count and diameter mm DC resistance (20°C) Maximum value ohm/1000m Minimum value ohm/1000m Maximum value ohm/1000m Minimum value ohm/1000m Nominal conductor diameter mm

0.4	22	19/0.15	2364	1956	932	771	0.75	0.6
20	19/0.2	1330	1100	524	434	1.00	1.0	18
19/0.25	851	705	336	278	1.25	1.2	16	19/0.3
591	489	234	193	1.50	2.0	14	37/0.25	437
362	172	143	1.75					

1) Change IEC 564 to IEC 60564 and add a conformity correspondence with GB/T

3930-2008 to make this document consistent with the existing standard.

2) Replace the obsolete IPTS68 with IPTS90.