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

GB/T 18404-2022

Replacing GB/T 18404-2001

**Mineral insulated metal-sheathed thermocouple cables and
thermocouples**

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foreword

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

drafted.

This document replaces GB/T 18404-2001 "Armored Thermocouple Cables and Armored Thermocouples". Compared with GB/T 18404-2001, except for the junction

In addition to structural adjustments and editorial changes, the main technical changes are as follows.

- Added double-branched and three-branched armored thermocouples (see 4.3.2);
- Changed the requirements for insulation resistance, so that users can choose the best product according to their needs (see 5.2.2.5, 5.2.2.6, 5.3.2.4, 5.3.2.5, 4.2.2.2, 5.2.2 of the 2001 edition);
- "Recommended maximum operating temperature" adds casing material and moves to Appendix C (see Table C.1, 4.2.1.1 of the 2001 edition);
- Added Table 4 "Inspection Items and Inspection Methods" for ease of use (see 5.1).

This document is equivalent to IEC 61515:2016 "Armored thermocouple cables and sheathed thermocouples".

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

- Added informative appendix NA "Sleeve material grade comparison".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

1 Scope

This document specifies the general industrial single-branch, double-branch and

three-branch mineral insulated metal sheathed thermocouple cables (hereinafter referred to as "armoured"

Thermocouple cables") and mineral insulated metal sleeve thermocouples (hereinafter referred to as "armoured thermocouples").

This document applies to T, J, E, K, N type low-cost metal armored thermocouple cables and armored thermocouples. This document applies to

Newly made sheathed thermocouple cables and sheathed thermocouples are not suitable for products that have been put into service.

This document does not cover requirements for external sealing, terminals, connectors and other accessories.

This document does not apply to precious metal sheathed thermocouple cables and sheathed thermocouples. The special requirements for the main circuit of nuclear power plants are determined by other standards

Regulation.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations

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

ISO 1302 Geometrical Product Specifications (GPS) Representation of Surface Structures in Technical Product Documents (GeometricalProduct

Note. Representation of surface structure in GB/T 131-2006 Product Geometry Specification (GPS) Technical Product Document (ISO 1302.2002, IDT)

Note. GB/T 2423.10-2019 Environmental Testing Part 2.Test Method Test Fc. Vibration (Sinusoidal) (IEC 60068-2-6.2007, IDT)

IEC 60584-1 Thermocouples Part 1.Electromotive force specifications and tolerances (Thermocouples-Part 1.EMFspecificationsand

Note. GB/T 16839.1-2018 Thermocouple Part 1.Electromotive force specification and tolerance (IEC 60584-1.2013, IDT)

3 Terms and Definitions

The terms and definitions defined in IEC 60584-1 and the following terms and definitions

apply to this document.

3.1

A flexible and solid assembly made by insulating one or more pairs of thermocouple wires with mineral insulating materials and placing them in a metal sleeve by compaction.

Note. Mineral insulated metal sleeve is abbreviated as armored (MIMS).

3.2

Armored Thermocouple MIMSthermocouple

Thermocouple made of sheathed thermocouple cable (3.1).

3.3

single thermocouple simplexthermocouple

A thermocouple made from a pair of thermocouple wires.