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

GB/T 42124.3-2025

Replacing GB/T 6414-2017

**Geometrical product specifications (GPS) - Dimensional and
geometrical tolerances for moulded parts - Part 3: General dimensional
and geometrical tolerances and machining allowances for castings**

产品几何技术规范（GPS） 模制件的尺寸和几何公差 第3部分：铸件尺寸公差、
几何公差与机械加工余量

(English Translation)

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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 for standardization documents" Drafting.

This document is Part 3 of GB/T 42124 Geometrical Product Specifications (GPS) - Dimensions and geometrical tolerances of mouldings.

GB/T 42124 has published the following parts.

--- Part 1: Vocabulary;

--- Part 3: Dimensional tolerances, geometrical tolerances and machining allowances of castings.

This document replaces GB/T 6414-2017 "Dimensional tolerances, geometrical tolerances and machining allowances for castings" and GB/T 6414-Compared with 2017, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope of application has been changed (see Chapter 1, Chapter 1 of the 2017 edition);
- b) Added the terms and definitions of "external draft angle" and "internal draft angle" (see 3.2 and 3.3);
- c) The definitions of the terms "casting dimensional tolerance", "misalignment" and "machining allowance" have been changed (see 3.5, 3.6 and 3.7, 2017 edition).
3.2, 3.3 and 3.4);
- d) Dimensioning has been deleted (see Chapter 4 of the 2017 edition);
- e) The tilt element has been deleted (see Chapter 5 of the 2017 edition);
- f) The abbreviations have been changed (see Chapter 4, Chapter 6 of the 2017 edition);
- g) Added draft angle and draft angle value (see Chapter 5 and Chapter 6);
- h) The casting dimension tolerance grade has been changed (see 7.2, 7.2 of the 2017 edition);
- i) The geometric tolerance grade of castings has been changed (see 7.3, 7.3 of the 2017 edition);
- j) The provisions on wall thickness tolerance have been changed (see Chapter 9, Chapter 9 of the 2017 edition);
- k) Added rejection requirements (see Chapter 12).

This document is modified to adopt ISO 8062-3:2023 "Geometrical Product Specifications (GPS) Dimensional and geometrical tolerances of mouldings Part 3 Division. General dimensional tolerances and general geometrical tolerances and machining allowances of castings marked with /-dimensional tolerances.

Compared with ISO 8062-3:2023, this document has more structural adjustments. The structural number changes between the two documents are shown in the table below.

See Appendix A.

This document has many technical differences compared to ISO 8062-3:2023.

A single line (|) is used to indicate these technical differences. A list of these technical differences and their reasons is given in Appendix B.

The following editorial changes were made to this document.

- In order to coordinate with the existing standard name, the standard name is changed to "Product Geometric Specification (GPS) Dimensions and Geometry of Molded Parts Tolerances Part 3: Dimensional tolerances, geometrical tolerances and machining allowances for castings
- Changed the notes of 3.2 and 3.3 (merged into the notes of 3.3);
- Added the content of the note in Table 7;
- Added Appendix A (informative) Comparison table of structure numbers between this document and ISO 8062-3:2023, Appendix B (informative) the technical differences between the document and ISO 8062-3:2023 and their reasons;
- Deleted the informative Appendix C of ISO 8062-3:2023;
- Changed the data in Table C.1 and Table C.2 in Appendix C; the notes and footnotes in Table C.1, Table C.2 and Table C.3 were changed to clauses (see C.2.2, C.3.2, C.3.3, C.5.2 and C.5.3);
- Changed references.

Introduction

In order to make the geometric technical specifications of our country's molded parts dimensions and geometric tolerances better consistent with the latest ISO GPS, to promote foreign exchanges, cooperation and trade of my country's molded parts enterprises, this document is consistent with the name of the GB/T 42124 series of national standards.

GB/T 42124 "Geometric Product Specification (GPS) Dimensions and Geometric Tolerances of Moulded Parts" is intended to consist of four parts, each of which is related to They are interrelated yet independent and together constitute the dimensions and geometric tolerances of molded parts.

--- Part 1: Vocabulary. Aims to define the terms and definitions used to describe features, shapes and types of tolerances when tolerances are given on mouldings.
definition.

--- Part 2: Rules. Aims to give the geometric tolerance marking rules for final molded parts and machined molded parts.

--- Part 3: Dimensional tolerances, geometrical tolerances and machining allowances for castings. Aims to specify the general dimensions of castings delivered to the buyer and geometric tolerances, as well as machining allowance grades.

--- Part 4: General tolerances for castings using profile tolerances relative to a general reference system. This is intended to give A method of marking the general geometric tolerances of castings using profile tolerances while retaining the general datum system on the workpiece.

Intended to specify machining allowances and draft angles for castings of all foundry metals and their alloys formed by various manufacturing processes.

This document is modified to adopt ISO 8062-3:2023, in order to convert the ISO 8062 series standards into GB/T 42124 "Product Geometry Technology" the names and numbers of the series of national standards for the dimensions and geometric tolerances of molded parts (GPS) are consistent with those of the national product geometric technical standards.

The standard name "Casting Dimension Tolerance, Geometric Tolerance and Machining Allowance" was changed to "Product Geometrical specifications (GPS) Dimensional and geometrical tolerances of mouldings Part 3: Dimensional tolerances, geometrical tolerances and machining allowances for castings the standard number GB/T 6414 was changed to GB/T 42124.3.

Geometric Product Specifications (GPS) for molded parts Dimensional and geometrical tolerances Part 3: Dimensions of castings Tolerances, geometrical tolerances and machining allowances

1 Scope

This document specifies the draft angle, draft value, tolerance grade, misalignment, wall thickness tolerance, machining allowance, and Requirements for marking and rejection.

This document applies to castings produced by various casting processes using +/- dimensional tolerances.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 131 Product Geometry Specification (GPS) - Method of representation of surface structure in technical product documents (GB/T 131-2006, ISO 1302:2002, IDT) GB/T 1182 Product Geometric Specification (GPS) Geometric Tolerances Shape, Orientation, Position and Runout Tolerances (GB/T 1182-2018, ISO 1101:2017, MOD) GB/T 4458.4 Dimensioning Methods for Mechanical Drawings GB/T 5611 Casting Terminology GB/T 24744 Product