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

GB/T 45870.1-2025

**Springs - Measurement and test parameters - Part 1: Cold
formed cylindrical helical compression springs**

弹簧 测量和试验参数 第1部分：冷成形圆柱螺旋压缩弹簧

(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 1 of GB/T 45870 "Spring measurement and test parameters". GB/T

45870 has been published in the following parts.

--- Part 1: Cold-formed cylindrical helical compression springs;

--- Part 2: Cold formed cylindrical helical tension springs.

This document is modified to adopt ISO 22705-1:2021 "Spring measurement and test parameters Part 1: Cold-formed cylindrical helical compression springs reed".

This document has the following structural adjustments compared to ISO 22705-1:2021.

--- Chapter 3 of this document corresponds to Chapter 3.1 of ISO 22705-1:2021;

--- Chapter 4 of this document corresponds to Section 3.2 of ISO 22705-1:2021;

--- Chapter 5 of this document corresponds to Chapter 4 of ISO 22705-1:2021;

--- Chapter 6 of this document corresponds to Chapter 5 of ISO 22705-1:2021;

--- Chapter 7 of this document corresponds to Chapter 6 of ISO 22705-1:2021;

--- Chapter 8 of this document corresponds to Chapter 7 of ISO 22705-1:2021;

--- Chapter 9 of this document corresponds to Chapter 8 and Appendix A of ISO 22705-1:2021.

The technical differences between this document and ISO 22705-1:2021 and their reasons are as follows.

--- Changed the scope (see Chapter 1) to adapt to my country's technical conditions;

--- Changed the terms and definitions (see Chapter 3) and compiled them in accordance with GB/T 1805 to adapt to my country's technical conditions;

--- Figure 1 has been changed to adapt to my country's technical conditions;

--- Changed the environmental conditions (see Chapter 5) to better suit my country's actual conditions;

--- Changed the measuring and testing instruments (see Chapter 8) to better suit my country's actual conditions;

--- Changed the test method (see Chapter 9), and changed the content of Appendix A (informative) to normative content (9.8), which is more in line with my country's Actual situation.

Introduction

Cold-formed cylindrical coil spring is a commonly used elastic element, widely used in machinery, chemical industry, aviation, construction and other industries.

GB/T 45870 "Spring measurement and test parameters" is intended to consist of three

parts.

--- Part 1: Cold-formed cylindrical helical compression springs. The purpose is to give a cold-formed cylindrical helical compression spring in addition to the dynamic test the general characteristic parameters are given and their related measurement and test methods are described.

--- Part 2: Cold-formed cylindrical helical tension springs. The purpose is to give a cold-formed cylindrical helical tension spring in addition to the dynamic test the parameters of the general characteristics of the product are given and their related measurement and test methods are described.

--- Part 3: Cold-formed cylindrical helical torsion springs. The purpose is to give a cold-formed cylindrical helical torsion spring in addition to the dynamic test the parameters of the general characteristics of the product are given and their related measurement and test methods are described.

Spring measurement and testing parameters Part 1: Cold-formed cylindrical helical compression springs

1 Scope

This document specifies the measurement and test methods for the general characteristics of cold-formed cylindrical helical compression springs, in addition to dynamic testing.

This document is applicable to cold-formed cylindrical helical compression springs with round sections (such as. two ends of the coils are tightly ground, two ends of the coils are tightly ground and not ground, and two ends of the coils are tightly ground and not ground.

(Not tightened or ground). Cold-formed cylindrical helical compression springs of other cross-sections can be used for reference.

2 Normative references

The contents of the following documents constitute the 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 1216 Outside micrometer GB/T 21389 Vernier, dial and digital calipers

3 Terms and Definitions

The following terms and definitions apply to this document.

spring

A mechanical part (or device) that stores and releases energy through deformation.

[Source. GB/T 1805-2021, 3.1, modified] 3.2 compression spring A spring that bears axial pressure.

Note: In a narrow sense, compression spring refers to helical compression spring.

[Source. GB/T 1805-2021, 3.2, modified] 3.3 A compression spring made of a circular cross-section wire wound along its axis into a cylindrical shape with spacing between each coil.

[Source. GB/T 1805-2021, 5.2.1, modified] 3.4 Active coils the total number of laps excluding the non-valid laps. The total number of laps minus the number of non-valid laps.

NOTE: This is the number of turns used to calculate the total deflection of the spring.

[Source. GB/T 1805-2021, 7.78, with modifications]