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

GB/T 22184-2025

Replacing GB/T 22184-2008

**Cereals and pulses - Guidance on measurement of the
temperature of grain stored in bulk**

谷物和豆类 散存粮食温度测定指南

(English Translation)

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Table of Contents

- Foreword
- Introduction
- 1 Scope
- 2 Normative references
- 3 Terms and Definitions
- 4 Principles

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 supersedes GB/T 22184-2008 "Guidelines for Temperature Determination of Bulk Grains and Legumes", and is consistent with GB/T 22184-2008.

Aside from structural adjustments and editorial changes, the main technical changes are as follows.

---The scope of this document has been changed (see Chapter 1, Chapter 1 of the 2008 edition);

---The terms and definitions for "short-term storage" and "grain storage temperature monitoring system" have been added (see 3.2 and 3.3), while the term and definition for "grain" have been removed.

(See 2.1 in the 2008 edition);

---Change "flat warehouse" to "room-style warehouse" in the entire text;

---Added content on short-term and long-term grain storage temperature monitoring systems (see 5.1);

---The temperature detector was replaced with a temperature sensing cable, and the corresponding content was changed (see 5.2, 4.1 of the 2008 version);

---The contents of the temperature display device have been changed (see 5.3, 4.2 in the 2008 version);

---Temperature detection functionality has been added (see 5.4);

---The layout of the temperature monitoring system has been modified (see 6.1.1.1~6.1.1.3,

5.1 in the 2008 version), adding details regarding the internal structure of short-term bulk grain storage piles.

(See 6.1.1.4);

---Added information on the layout of warehouse temperature and air temperature monitoring points (see 6.1.2);

---The detection steps have been modified (see 6.2, 5.2 in the 2008 version);

---Added system maintenance content (see 6.3);

---Changes have been made to the requirements regarding the format of temperature recording data and reports obtained using temperature measurement systems (see Chapter 7, 2008 edition).

Chapter 6).

This document is modified to adopt ISO 4112:2025, "Guideline for the determination of temperature of bulk grains and legumes".

This document has undergone significant structural adjustments compared to ISO 4112:2025. A comparison of the structural numbering changes between the two documents can be found here.

Appendix A.

The technical differences between this document and ISO 4112:2025, and the reasons therefor, are as follows.

---Added normative references to GB/T 29890 (see Chapter 3, 6.2.2.2, 6.2.4.1) and LS/T 1813 (see 5.2.3).

GB/T 26882.1 (see 5.2.4, 5.4, 6.1), GB/T 26882.2 (see 5.4, 6.1.2), LS/T 1217 (see 6.1.1.4), GB/T 26882.3 (see 6.2.1.1, 6.2.3, 7.1.2) and GB/T 26882.4 (see 6.2.1.2) are used to adapt to my country's technical conditions.

Improve operability;

---The definition of the term "temperature measurement system" has been changed, the term and definition of "short-term storage" have been added (see Chapter 3), and "grain" has been removed.

The terminology and definition of "warehouse" (see Chapter 3 of ISO 4112:2025) should be adapted to my country's technical conditions;

---Change "Apparatus and Systems" to "Temperature Measurement System" (see Chapter 5) to suit my country's technological conditions;

---Changed "flat warehouse" to "room-type warehouse", modified the room-type warehouse

system equipment (see 5.1), and deleted the equipment (system) composition content (see Chapter 5 of ISO 4112:2025, to adapt to my country's technical conditions;

---Changed "temperature measuring cable (probe)" to "temperature measuring cable and temperature sensor", and added relevant content on room-type warehouses and shallow circular warehouses (see...).

5.2), to adapt to my country's technological conditions;

---The term "temperature measuring instrument" has been changed to "temperature display device," and the temperature display content has been modified (see 5.3) to adapt to my country's technical conditions;

---The term "temperature detection system" has been changed to "temperature detection," and the temperature detection performance and temperature measurement unit conditions have been modified (see 5.4) to adapt to...

my country's technological conditions;

---Added content related to thermometers (see 5.5) to correspond to the common domestic applications of warehouse temperature and external temperature detection;

---The "Temperature Measurement Procedure" has been changed to "Temperature Measurement System Arrangement and Testing Procedure" (see Chapter 6) to adapt to my country's technical conditions;

---The "Temperature Measurement Point Layout" was changed to "Grain Pile Temperature Monitoring Point Layout," which modified the temperature sensor layout, warehouse temperature, and air temperature measurement system.

The relevant content (see 6.1) has been revised, and the content on short-term grain storage temperature monitoring arrangements (see 6.1.1 of ISO 4112:2025) has been removed to adapt to my country's specific circumstances.

Technical conditions;

---Change "temperature reading" to "testing procedure" (see 6.2) to suit my country's technical conditions;

---Added content to the temperature detection software (see 6.2.1), changed "Reading Frequency" to "Detection Cycle", and modified the detection cycle.

The content (see 6.2.2) has been revised, and the content on the sorting of detection points (see 6.2.3) has been added to adapt to my country's technical conditions;

---The phrase "special requirements" has been changed to "special treatment," and relevant content for room-type warehouses and shallow round warehouses has been added (see 6.2.4) to adapt to my country's situation.

Technical conditions;

---The system preparation and maintenance work has been modified (see 6.3) to adapt to my country's technical conditions;

---The "Recording Requirements" section has been changed to "General Rules" (see 7.1), and the content of temperature recordings has been modified (see 7.1.2) to adapt to our country's technology.

condition;

---The temperature calibration content has been modified (see 7.2) to adapt to my country's technical conditions.

The following editorial changes have been made to this document.

---The URLs for the ISO and IEC terminology databases have been removed from the introduction to Chapter 3;

---The footnotes to clauses 3.1, 5.2, and 6.2.2 have been deleted;

---Note added in 6.2.4.3;

---The scale and index number descriptions for Figures C.1 and C.2 have been deleted.

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 by the National Food and Strategic Reserves Administration.

This document is under the jurisdiction of the National Technical Committee on Standardization of Grain and Oil (SAC/TC270).

Introduction

Large quantities of bulk grain will generate heat due to biological and physiological activities during storage. This heat will accumulate within the grain pile to a certain extent.

Excessive temperature can lead to abnormally high grain temperatures, even causing grain deterioration and affecting its commercial value, processing quality, and edible quality. Timely inspection is necessary.

Monitoring changes in the temperature of stored grain is beneficial for taking timely measures to avoid and reduce problems, such as implementing ventilation and cooling measures to reduce temperature fluctuations.

Grain temperature.

The initial stage of heat generation in loosely stored grain is usually limited to a localized area of the grain pile, affecting only a small portion of the grain. If detection or handling is