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

GB/T 10361-2024

Replacing GB/T 10361-2008

**Wheat, rye and their flours, durum wheat and durum wheat
semolina - Determination of the falling number according to
Hagberg-Perten**

小麦、黑麦及其面粉和杜伦麦及其粗粒粉 Hagberg-Perten法测定降落数值
(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 replaces GB/T 10361-2008 "Determination of falling number of wheat, rye and their flour, durum wheat and its coarse meal" Compared with GB/T 10361-2008, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- Added inapplicable altitude (see Chapter 1);
- Deleted the relevant content of liquefaction value LN (see 3.2 and 9.4.2 of the 2008 edition);
- Added the instrument "horizontal arm" and "oscillator" (see 6.1.6, 6.6);
- Added sample weight calculation formula (see 9.2);
- Changed the repeatability and reproducibility limits of flour/wheat Hagberg falling number in Tables 3 and 4 (see 10.2, 2008 10.2 of the year);
- Changed the altitude correction formula for falling number (see Appendix A, Appendix A of the 2008 edition).

This document is modified to adopt ISO 3093:2009 "Wheat, rye and their flour, durum wheat and its semolina by Hagberg-Perten method" Determining Falling Number.

The technical differences between this document and ISO 3093:2009 and their reasons are as follows.

- Added inapplicable altitude in "Scope" (see Chapter 1) to make this document more rigorous;
- The normative reference GB/T 6682 replaces ISO 3696 (see Chapter 5), and GB/T

6003.1 replaces ISO 3310 (see 6.5), GB/T 6005 replaces ISO 565 (see 6.5), GB/T 5491 replaces ISO 13690 (see Chapter 7);

GB 5009.3 replaces ISO 712 (see 9.1) to adapt to my country's technical conditions;

--- Deleted the relevant content of liquefaction value LN, which is more in line with the actual application in my country;

--- Added "horizontal arm" and "oscillator" (see 6.1.6, 6.6), which is more conducive to the use of this document;

--- Changed the relevant requirements for sampling (see Chapter 7) to adapt to my country's technical conditions;

--- Changed the requirements for impurity removal (see 8.1.1) and added sieve hole models (see 8.1.3), which is more conducive to the use of this document;

--- Added the sample weight calculation formula (see 9.2) to meet the determination of samples with a moisture content of less than 9.0% and greater than 18.0%;

--- Changed the relevant content of "precision" (see Chapter 10) to determine the precision requirements of my country;

--- Changed the repeatability limit and reproducibility limit of flour/wheat Hagberg falling number in Table 3 and Table 4 (see 10.2);

--- Changed the altitude correction formula for falling number (see A.1 and A.2).

The following editorial changes were made to this document.

--- Changed Appendix B (informative) "Inter-laboratory precision verification results".

1 Scope

This document describes a method for determining alpha-amylase activity in cereals by measuring the falling number of the cereals using the Hagberg-Perten method.

This document applies to the determination of falling numbers for wheat, rye and their flour, durum wheat and its semolina, and other cereals and their flour.

The value is determined for reference.

This document is not applicable to the falling number determination of grains with low alpha-amylase activity and areas with an altitude exceeding 3048m.

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 5009.3 National Food Safety Standard Determination of Water Content in Food GB/T 5491 Sampling and subsampling methods for grain and oilseed inspection GB/T 6003.1 Technical requirements and inspection of test sieves Part 1: Metal wire mesh test sieves (GB/T 6003.1-2022,ISO 3310-1:2016,MOD) GB/T 6005 Basic dimensions of mesh openings for test sieves, wire mesh, perforated plate and electroformed sheet (GB/T 6005-2008,ISO 565:1990,MOD) GB/T 6682 Specifications and test methods for water used in analytical laboratories (GB/T 6682-2008, ISO 3696:1987, MOD)

3 Terms and definitions

The following terms and definitions apply to this document.

Falling number; FN

A certain amount of wheat flour or other cereal flour and water mixture is placed in a specific viscosity tube and immersed in a boiling water bath.

The viscosity stirrer is dropped downwards, and the time required from the time when the viscosity tube is immersed in the boiling water bath to the time when the stirrer falls freely is a specific distance.

All the time.

Note: The unit is second (s).

4 Principle

alpha-Amylase activity is estimated using the starch present in the sample as substrate. A suspension of wheat flour or other cereal flour is Rapid gelatinization, due to the different activities of alpha-amylase, the starch in it is liquefied to different degrees, causing the agitator to descend in the gelatinization Therefore, the high and low falling numbers indicate the corresponding differences in alpha-amylase activity. A high falling number indicates that the activity of alpha-amylase is on the contrary, it indicates that the alpha-amylase activity is high.