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## **Cereals and cereal products — Common wheat (*Triticum aestivum* L.) — Determination of alveograph properties of dough at constant hydration from commercial or test flours and test milling methodology**

*Céréales et produits céréaliers — Blé tendre (*Triticum aestivum* L.) — Détermination des propriétés alvéographiques d'une pâte à hydratation constante de farine industrielle ou d'essai et méthodologie pour la mouture d'essai*



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## Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 34, *Food products*, Subcommittee SC 4, *Cereals and pulse*.

This second edition cancels and replaces the first edition (ISO 27971:2008), which has been technically revised.

## Introduction

The end-use value of wheat is determined by a number of properties that are useful in the manufacture of baked products such as bread, rusks, and biscuits.

Such properties include the important viscoelastic (rheological) properties of dough formed as a result of flour hydration and kneading. An alveograph is used to study the main parameters by subjecting a dough test piece to biaxial extension (producing a dough bubble) by inflating it with air, which is similar to the deformation to which it is subjected during panary fermentation.

Recording the pressure generated inside the bubble throughout the deformation of the dough test piece until it ruptures provides information on the following:

- a) the resistance of the dough to deformation, or its strength. It is expressed by the maximum pressure parameter,  $P$ ;
- b) the extensibility or the possibility of inflating the dough to form a bubble; It is expressed by the parameters of extensibility,  $L$ , or swelling,  $G$ ;
- c) the elasticity of the dough during biaxial extension. It is expressed by the elasticity index,  $I_e$ ;
- d) the work required to deform the dough bubble until it ruptures, which is proportional to the area of the alveogram (sum of the pressures throughout the deformation process). It is expressed by the parameter,  $W$ .

The  $P/L$  ratio is a measurement of the balance between strength and extensibility.

Alveographs are commonly used throughout the wheat and flour industry, for the following purposes:

- selecting and assessing different varieties of wheat and marketing batches of wheat;
- blending different batches of wheat or flour to produce a batch with given values for the alveographic criteria ( $W$ ,  $P$ , and  $L$ ) complying with the proportional laws of blending.

Alveographs are used both on the upstream side of the industry for marketing, selecting and assessing the different wheat varieties and on the downstream side throughout the baking industries (see Bibliography).