

ISO 27971:2023-06 (E)

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

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Principle	1
5	Reagents	2
6	Apparatus	2
7	Sampling	6
8	Preparation of the wheat for laboratory milling	6
8.1	Cleaning the laboratory sample	6
8.2	Test portion	6
8.3	Wheat moisture content determination	6
8.4	Wheat preparation	6
8.4.1	General	6
8.4.2	Wheat with initial moisture content between 13 % and 15 % (one-stage moistening)	7
8.4.3	Wheat with a moisture content less than 13 % (two-stage moistening)	7
8.4.4	Wheat with a moisture content greater than 15 % (preliminary drying followed by moistening, as described above)	7
9	Laboratory milling	7
9.1	General	7
9.2	Milling procedure	8
9.2.1	Breaking	8
9.2.2	Reduction	8
9.2.3	Flour homogenization	8
9.2.4	Storage of the flour	9
9.3	Expression of milling results	9
10	Preparation and Alveograph test	9
10.1	Preliminary checks	9
10.2	Preliminary operations	10
10.3	Kneading	12
10.4	Preparation of dough test pieces	14
10.5	Alveograph test	15
10.5.1	Initial preparation	15
10.5.2	First operation: placing the patty on the lower plate	15
10.5.3	Second operation: biaxial extension	17
10.6	Expression of Alveograph test results	17
10.6.1	General	17
10.6.2	Maximum pressure parameter, <i>P</i>	18
10.6.3	Mean abscissa at rupture, <i>L</i>	18
10.6.4	Swelling index, <i>G</i>	18
10.6.5	Elasticity index, <i>I_e</i>	19
10.6.6	Curve configuration ratio, <i>P/L</i>	19
10.6.7	Deformation work, <i>W</i>	19

11	Precision	19
11.1	Interlaboratory tests.....	19
11.1.1	Commercial flour.....	19
11.1.2	Flour obtained from laboratory milling.....	19
11.2	Repeatability limits.....	20
11.2.1	General.....	20
11.2.2	Commercial flour — Limits established by the interlaboratory test.....	20
11.2.3	Flour obtained from laboratory milling.....	20
11.3	Reproducibility limits.....	21
11.3.1	General.....	21
11.3.2	Commercial flour — Limits established by the proficiency tests.....	21
11.3.3	Flour obtained from laboratory milling.....	22
11.4	Uncertainty.....	22
12	Test report	22
Annex A (informative)	Characteristics of the mill suitable for obtaining a laboratory milled flour	23
Annex B (normative)	Quantity of water to be added to wheat for conditioning	25
Annex C (informative)	Sample milling sheet	26
Annex D (informative)	Conversion table from <i>L</i> to <i>G</i>	28
Annex E (informative)	Interlaboratory and proficiency test data for commercial flours	30
Annex F (informative)	Interlaboratory data for laboratory milled flour	40
Annex G (informative)	Routine maintenance instructions for the Alveograph	52
Annex H (informative)	Assessment of proteolytic activity in wheat (<i>T. aestivum</i> L.) or flour	54
	Bibliography	56