

A Spanish company offers an alveographic test on whole wheat flours

Summary

Profile type

Technology offer

Company's country

Spain

POD reference

TOES20230925008

Profile status

PUBLISHED

Type of partnership

**Commercial agreement with
technical assistance**

**Research and development
cooperation agreement**

Targeted countries

• World

Contact Person

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Term of validity

25 Sep 2023

24 Sep 2024

Last update

25 Sep 2023

General Information

Short summary

A Spanish technological center offers an alveographic test for whole wheat flours, providing useful information about the behavior of flour doughs with which products such as bread, cookies, biscuits are made. This test is used to determine the viscoelastic (rheological) properties of doughs formed from flour, hydration with salt water and kneading.

They are looking for commercial agreement with companies interested in their test or in this kind of technology.

Full description

The technological center, based in Palencia, Spain, has a research and development department, responsible of this test. In recent years there has been a growing interest in whole grain products. However, few studies have analysed the influence of whole wheat flour and its characteristics on the physicochemical properties and its impact on the quality of bread or other products.

Although numerous tests developed to characterize white flours and predict the dough behaviour on manufacturing lines, most of them are not applicable to whole wheat flours. This happens, for example, with one of the most important and most demanded tests in the characterization of flours in Spain: the alveographic test. The problem presented by the standardized method (ISO 27971) and developed for white flours is that, applied to whole wheat

flours, the doughs are very hard, poorly developed, they take minutes to extrude, the dough does not have extensibility and the graphs obtained are reduced, practically, to an ascending line. It has been necessary to introduce changes to analyse alveographically a dough with 100% whole wheat flour.

The technological behavior of refined wheat flours and whole wheat flours is totally different. The working protocol of the alveographic test has been adapted to be used in the analysis of whole wheat flours, introducing several changes such as sample preparation, pump pressure, dough hydration. These changes allow obtaining an extensible mass. Knowledge and control on technical sheets of raw materials allows:

- Obtention of a homogeneous product
- Preventing, managing, and effectively resolving problems

Predicting flours behavior in the factory is complex and for this reason, it is important to have different tests that complement each other to keep the manufacturing process under control.

They seek collaborations with companies in bakery/pastry manufacturing sector, interested in characterizing and controlling the quality of their whole wheat flours.

Advantages and innovations

The tests that currently exist for whole wheat flours allow the determination of physical and chemical parameters, such as the value of protein, gluten, or ash. But there are no analysis methods that allow rheological characterization that provides information about the behavior of the mass.

Flours with the same protein and gluten content can give rise to doughs with very different behavior. This is why it is so important to be able to offer a test on whole wheat flours, which is carried out on the dough.

The difficulty in testing doughs with 100% whole wheat flour lies in their physical characteristics:

- 1.- Some bran fractions and lipids can interact with the gluten network, delaying its formation and reducing the gelation process. This contributes to a decrease in the elasticity and stability of the dough and a reduction in gas retention.
- 2.- The particle size of the bran has a significant impact on the rheological behavior and performance of the final product.

The innovation lies in the expansion on the application field of the main test used in the characterization of flours: a protocol is developed that allows alveographic testing to be carried out on whole wheat flours.

Technical specification or expertise sought

Stage of development

Already on the market

Sustainable Development goals

- **Goal 3: Good Health and Well-being**
- **Goal 8: Decent Work and Economic Growth**
- **Goal 12: Responsible Consumption and Production**
- **Goal 4: Quality Education**

IPR Status

No IPR applied

Partner Sought

Expected role of the partner

The technology offer is focused to any company or research center that works with whole wheat flour, especially cereal processing companies (flour mills) and cereal-derived products industries (breads, cookies, biscuits, etc.).

The collaborator must provide the flours that they want to characterize rheologically, and it is recommended that they have information on the behaviour of the dough in order to be able to plot the results of the test and be able to determine the acceptable values in the different parameters obtained.

Type of partnership

Commercial agreement with technical assistance**Research and development cooperation agreement**

Type and size of the partner

- **Big company**
- **R&D Institution**
- **SME 50 - 249**
- **University**
- **SME <=10**
- **SME 11-49**

Dissemination

Technology keywords

- **08002001 - Detection and Analysis methods**
- **008003 - Nutrition and Health**
- **08001004 - Food Processing**
- **08001005 - Food Technology**

Targeted countries

- **World**

Market keywords

- **07003002 - Health food**
- **007003005 - General food products**
- **007003006 - Other food and beverages**

Sector groups involved

- **Agri-Food**