

Falling Number[®]

FN 1000



Falling Number 250



Flour



Grain Intake



Whole Grain

The Only Validated Instruments for the Approved Methods

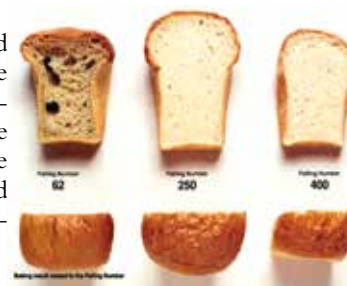


Official Methods:
AACCI/No. 56-81.03
ICC/No. 107/1
ISO/No. 3093

Perten
INSTRUMENTS
a PerkinElmer company

Falling Number

Alpha-amylase activity has great influence upon the quality of baked goods, pasta and noodles. Sprout damage is caused by alpha-amylase – a naturally occurring enzyme in grain that increases in concentration during wet harvests. Perten Falling Number instruments are the only validated instruments capable of running the World Wide Standard method for measuring alpha-amylase activity in flour and meals of wheat, durum, rye, barley, other grains and malted cereals. The Falling Number method is a fast and easy test to help protect your organization from the effects of sprout damage.



Falling Number® 1000 instrument

The Falling Number 1000 is an automatic dual sample analysis system designed for simple operation. The system includes functions for automatic water level control, automatic start and automatic stop at operator set FN target. It also includes functions for registration of sample ID, calculation of moisture corrected sample weight, mean value calculation, moisture corrected results, altitude correction and calculation of blends and malt addition. The user can also select the optional Fungal Falling Number method. With its 5.7" touch screen, operation is simple and intuitive – including local language options. The FN 1000 has USB and Ethernet ports for printer and bar code reader and results can be readily copied to a memory stick or sent for external collection in e.g. a central LIMS system.

Features & Benefits

Faster: User set min FN result auto-stop option for time saving during high sample load periods.

Safer: Isolated water bath and stirring mechanism, and reduced steam.

Easy to Use: Auto-start, automated water level control, temperature and atmospheric pressure sensing. Confidently used by non-technical operators.

Reliable: Simple, robust design provides exceptional instrument life and low cost of ownership.

Calibration-Free: Saving users time and ensuring correct, reliable measurements.

Altitude Correction: Automatic re-calculation of FN results. Built-in atmospheric pressure sensor alerts operator if altitude correction is required.

World Standard: Uniform reporting for grain growers, traders and processors.

The Only Approved Instruments: Use for trade and export purposes. The Perten Falling Number models are the only validated instruments covered by the approved International standards: AACCI/No. 56-81.03, ICC/No. 107/1, ISO/DIS 3093.

Uses

Segregation: Save money by avoiding mixing sound and sprouted grain.

Blend Optimization: Blend grains or flours to create a product with specific characteristics.

Quality Assurance: Ensure deliveries meet end-user specifications and purchase agreements.

Fungal FN: Verify total enzymatic activity in flours supplemented with Fungal enzymes.

Recommended Accessories

Water Dispenser: Easily and accurately dispenses 25 ml of water.

Cooling Tower: Saves water and environment by re-circulating cooling water.

Shakematic: Automatic shaker for fast and uniform sample mixing.

Spolett 1010: Rapid Falling Number tube cleaner.

Laboratory Mill 120 or 3100: Approved hammer mills for preparation of grain.

Printer: Compact USB printer for hard copy results.

Specifications

Power Requirements: 115 or 230 V, 50 or 60 Hz (specify on order).

Power Consumption: Heat-up 1050 VA, Running 500 VA

Cooling Water Consumption: 25 l/h

Size (HxDxW): 515 x 390 x 290 mm

Net Weight: 19 kg

Interfaces: 4 x USB ports, 1 x Ethernet port (RJ45)

Display: 5.7" color touch screen

Falling Number

FN 1310



Falling Number 250



Flour



Grain Intake



Whole Grain

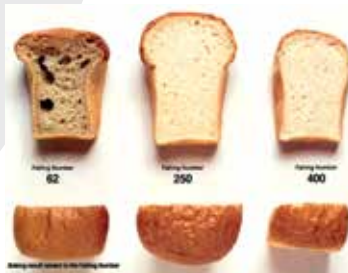
The World Standard for Detection of Sprout Damage



Official Methods:
AACC/No. 56-81.03
ICC/No. 107/1
ISO/No. 3093

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Falling Number



Alpha-amylase activity has great influence upon the quality of baked goods, pasta, and noodles. Sprout damage is caused by alpha-amylase, which is a naturally occurring enzyme in grain that increases in concentration during wet harvests. The Falling Number (FN) method is a fast and easy test to determine alpha-amylase activity in order to detect sprout damage. The Perten Instruments FN method is the World Wide Standard for measuring alpha-amylase activity in both flour and meal of wheat, durum, rye, barley, other grains and malted cereals.

Falling Number 1310

The Falling Number 1310 System is an automatic single analysis system designed for fast and convenient operation of the Falling Number test. The high quality standards to which the FN 1310 is built offer high return on your investment through many years of trouble-free operation.

Features & Benefits

Quality Assurance: Ensure the delivery meets the end-user specifications.

Blend Optimization: Blend grains or flours to create a product with specific characteristics.

Segregation: Save money by avoiding costly mistakes of mixing sound and sprouted grain.

Optimize the Use of Additives: Calculate malt or fungal additives.

Easy to Use: Confidently used by non-technical operators.

Reliable: Non-complex, robust design provides exceptional instrument life.

Calibration-Free: The measured property is time (seconds), and no calibration is required. This saves the user time and ensures correct and reliable measurements.

Low Cost of Ownership: No consumables or chemicals required.

World Standard: Uniform and established reporting for growers, traders and processors.

Official Approvals: International standards and recommendations such as AACC International Method 56-81.03, ICC Standard No. 107/1, ISO 3093.

Recommended Accessories

Water Dispenser: Easily and accurately dispenses 25 ml of water.

Cooling Tower: Saves water and environment by re-circulating cooling water.

Shakematic: Automatic shaker for fast and uniform sample mixing.

Spolett 1010: Rapid Falling Number tube cleaner.

Laboratory Mill 120 or 3100: Approved hammer mills for preparation of grain.

Falling Number Tubes: Calibrated viscometer tubes (10 per box).

Falling Number Stirrer: Perten Instruments Falling Number Stirrer.

Moisture Meter: To determine moisture content of meal and flour.

Balance: With an accuracy of ± 0.05 g.

Specifications

Power Requirements: 115 or 230V, 50 or 60 Hz (specify on order)

Power Consumption: Heat-up 1100 VA, Running 500 VA

Dimensions (HxDxW): 525x370x223 mm

Net Weight: 8 kg

Cooling Water Consumption: 25 l/h

Parameters: Alpha-amylase activity/starch properties

Products: Flour and meal of wheat, durum, rye, barley, other grains and malted cereals.



Falling Number

FN 1500



Falling Number 250



Flour



Grain Intake



Whole Grain

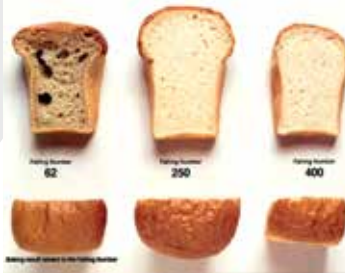
The World Standard for Detection of Sprout Damage



Official Methods:
AACC/No. 56-81.03
ICC/No. 107/1
ISO/No. 3093

Perten
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Falling Number



Alpha-amylase activity has great influence upon the quality of baked goods, pasta, and noodles. Sprout damage is caused by alpha-amylase, which is a naturally occurring enzyme in grain that increases in concentration during wet harvests. The Falling Number (FN) method is a fast and easy test to determine alpha-amylase activity in order to detect sprout damage. The Perten Instruments FN method is the World Wide Standard for measuring alpha-amylase activity in both flour and meal of wheat, durum, rye, barley, other grains and malted cereals.

Falling Number 1500

The Falling Number 1500 System is a microprocessor controlled automatic single analysis system designed for simple operation. The control unit with printer and display can be set for local language. The system includes sample ID registration via keyboard or bar code reader, serial data output, altitude correction and calculation for mixing and malt addition.

Features & Benefits

- Segregation:** Save money by avoiding of mixing sound and sprouted grain.
- Blend Optimization:** Blend grains or flours to create a product with specific characteristics.
- Easy to Use:** Confidently used by non-technical operators.
- Reliable:** Non-complex, robust design provides exceptional instrument life.
- Low Cost of Ownership:** No consumables or chemicals required.
- Altitude Correction:** Automatic recalculation of FN results.
- Calibration-Free:** The measured property is time (seconds), and no calibration is required. This saves the user time and ensures correct and reliable measurements.
- Quality Assurance:** Ensure the delivery meets the end-user specifications.
- World Standard:** Uniform reporting for grain growers, traders and processors.
- Official Approvals:** International standards and recommendations such as AACC/No. 56-81.03, ICC/No. 107/1, ISO/DIS 3093.

Recommended Accessories

- Optional FN 1500 Fungal Version:** The Falling Number 1500 System is also available in a Fungal version that can be operate also the Fungal Falling Number method. The Fungal FN method detects fungal amylase enzymes added to flour.
- Water Dispenser:** Easily and accurately dispenses 25 ml of water.
- Cooling Tower:** Saves water and environment by re-circulating cooling water.
- Shakematic:** Automatic shaker for fast and uniform sample mixing.
- Spolett 1010:** Rapid Falling Number tube cleaner.
- Laboratory Mill 120 or 3100:** Approved hammer mills for preparation of grain.
- Falling Number Tubes:** Calibrated viscometer tubes (10 per box).
- Falling Number Stirrer:** Perten Instruments Falling Number Stirrer.
- Moisture Meter:** To determine moisture content of meal and flour.
- Balance:** With an accuracy of ± 0.05 g.

Specifications

- Power Requirements:** 115 or 230 V, 50 or 60 Hz (specify on order)
- Power Consumption:** Heat-up 1050 VA, Running 500 VA
- Dimensions (HxDxW):** Stirrer Unit 500x290x360 mm
- Net Weight:** 12 kg
- Cooling Water Consumption:** 25 l/h
- Parameters:** Alpha-amylase activity/starch properties
- Products:** Flour and meal of wheat, durum, rye, barley, other grains and malted cereals.



Falling Number

Dispenser



Falling Number 250



Flour



Grain Intake



Whole Grain

Fast Dosing Saves Time



Official Methods:
AACC/No. 56-81.03
ICC/No. 107/1
ISO/No. 3093

Perten Falling Number – The World Standard

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Falling Number Dispenser

Falling Number analysis requires accuracy in the amount of distilled water added to the sample. The volume of distilled water used in the international Falling Number Standard Method is 25 ± 0.2 ml. With the Falling Number Dispenser you can be certain of precise addition ensuring accurate, repeatable analysis.

The Falling Number Dispenser easily adds the water to the Falling Number test tube in just a few seconds. Simply lift the knob of the dispenser to fill the system and push down the knob to dispense the set amount of water.

The Falling Number Dispenser is adjustable. It can be set both to 25 ml as required by the Falling Number International Standard Method and to 30 ml for dispensing of the buffered solution used in the modified Fungal Falling Number Method.

Specifications

Dispenser adjustable between 5 and 30 ml.

Precision of setting is ± 0.15 ml.

The Dispenser is delivered with a 2-litre glass bottle

Dimensions (HxDW): 475x130x130 mm

Net Weight (empty): 1.4 kg

Other Falling Number Accessories

Shakematic 1095: Mixes the samples in exactly the same manner each time

FN 1700 Printer: Prints date and results of analysis

Spolett 1010 Tube Cleaner: Easy cleaning of Falling Number tubes

Recirculation Cooler: Re-circulate and save cooling water

Lab Mill: Approved FN Lab Mill

Falling Number Tubes: Calibrated viscometer tubes (10 per box)



Shakematic 1095



FN 1700 Printer



Spolett 1010
Tube Cleaner



Recirculating
Cooler



Lab Mill 3100

Falling Number

1700 Printer



Falling Number 250



Flour



Grain Intake



Whole Grain

Time Stamped Records



Official Methods:
AACC/No. 56-81.03
ICC/No. 107/1
ISO/No. 3093

Perten Falling Number – The World Standard

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Falling Number 1700 Printer

The Falling Number Printer time stamps and documents Falling Number results for storage or transfer to a log book. The printer is both fast and quiet. Simply plug the printer into the back of the FN 1700, plug in the power plug and results will be automatically printed.

Printer includes:

- Connection cable to back of Falling Number instrument.
- Power cable.
- One roll of printer paper.



Reduce Transcription Errors

A major source of errors in laboratories result from operators mis-reading results and displays on equipment. The FN printer provides a permanent record that can be directly transcribed to a log book or database. Reduction of errors of this type result in significant savings and improvement in laboratory operations.

Specifications

Thermal Printer with real-time clock for Falling Number 1700 instrument.

Power Requirement: 100-240 V, 50 / 60 Hz, 1,5 A

Dimensions (HxDxW): 145x195x155 mm

Net Weight: 1,6 kg

Other Falling Number Accessories

Shakematic 1095: Mixes the samples in exactly the same manner each time

Water Dispenser: Easily and accurately dispenses 25 ml of water

Spolett 1010 Tube Cleaner: Easy cleaning of Falling Number tubes

Recirculating Cooler: Re-circulate and save cooling water

Lab Mill: Approved FN Lab Mill

Falling Number Tubes: Calibrated viscometer tubes (10 per box)



Shakematic 1095



Water Dispenser



Spolett 1010
Tube Cleaner



Recirculating
Cooler



Lab Mill 3100

Falling Number

Recirculating Cooler



Falling Number 250



Flour



Grain Intake



Whole Grain

Saves cooling water



Official Methods:
AACC/No. 56-81.03
ICC/No. 107/1
ISO/No. 3093

Perten Falling Number – The World Standard

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Recirculating Cooler

The Falling Number instruments require continues cooling for accurate test results. This cooling can be provided in a convenient and reliable manner by the Recirculating Cooler AWC 100. The unit requires little space, is easy to install, and requires only a connection to mains power.

Features and Benefits

Enables flexible placing of Falling Number instruments: With no need for instruments to be close to running water or drains, it is possible to place Falling Number instruments in locations wherever they are needed.

Saves cooling water costs: A standard Falling Number Instrument can consume 25 l/h (6.5 gl/h). Depending on your type of operation this could become a significant cost. Using the Circulating Cooler you can now eliminate this unnecessary expenditure.

Eliminates running water requirement: As the Circulating Cooler re-circulates the cooling water there is no further requirement for running water.

Maintenance free: There are no filters or other components that require routine maintenance.

Robust and reliable: The in-line flow indicator provides easy means to ensure that the Circulating Cooler operates and that there is sufficient amount of cooling water in the unit.

Other Recommended Accessories

Shakematic: Automatic viscometer tube shaker for fast and uniform sample mixing

Water Dispenser: Easily and accurately dispenses 25 ml of water

Spolett 1010 Tube Cleaner: Easy cleaning of Falling Number tubes

FN 1700 Printer: Prints date and results of analysis

Lab Mill: Approved FN Lab Mill

Falling Number Tubes: Calibrated viscometer tubes (10 per box)



Shakematic 1095



Water
Dispenser



Spolett 1010
Tube Cleaner



FN 1700
Printer



Lab Mill 3100

Specifications

Power requirements: 115 or 230 V, 50 Hz or 60 Hz (Specify on order)

Current draw: 1 A

Dimensions: (HxDxW) : 315x360x205 mm

Net weight: 11,0 kg empty, 12,0 kg filled

Water capacity: 1 l

The Circulating Cooler is only to be used with one Falling Number instrument.

Shakematic 1095

Falling Number Sample Mixer



Falling Number 250



Flour



Grain Intake



Whole Grain

Increased Lab Throughput



Official Methods:
AACC/No. 56-81.03
ICC/No. 107/1
ISO/No. 3093

Perten Falling Number – The World Standard

Perten
INSTRUMENTS

Shakematic 1095 Sample Mixer

The Shakematic 1095 is designed and built specifically for mixing samples for Falling Number analysis. Building on the success of the previous model, the Shakematic 1095 is improved in a number of ways. It has further enhanced safety features, is CE-labeled and runs significantly quieter and vibration free.

Features & Benefits

Operator independent results: Where there are several operators performing Falling Number analysis there is the possibility that different methods of shaking the tubes can lead to slightly different results. The Shakematic mixes the samples in exactly the same manner each time, thereby improving repeatability and also removing any differences between operators within and between laboratories.

Increased throughput: Sample mixing time is reduced to 3 seconds which gives an increase in lab throughput.

Other Recommended Accessories

Water Dispenser: Easily and accurately dispenses 25 ml of water

FN 1700 Printer: Prints date and results of analysis

Spolett 1010 Tube Cleaner: Easy cleaning of Falling Number tubes

Recirculation Cooler: Re-circulate and save cooling water

Lab Mill: Approved FN Lab Mill

Falling Number Tubes: Calibrated viscometer tubes (10 per box)



Water
Dispenser



FN 1700 Printer



Spolett 1010
Tube Cleaner



Recirculating
Cooler



Lab Mill 3100

Specifications

Power Requirements: 115 or 230 V, 50 or 60 Hz (specify by order)

Power Consumption: 230 W

Dimensions (HxDxW): 560x410x200 mm

Net Weight: 28 kg

Mixing Time: 3 seconds

Falling Number

Spolett 1010



Falling Number 250



Flour



Grain Intake



Whole Grain

Easy Cleaning of Falling Number Tubes



Official Methods:
AACC/No. 56-81.03
ICC/No. 107/1
ISO/No. 3093

Perten Falling Number – The World Standard

Perten
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Installation

The Spolett 1010 is supplied with a ½ inch securex nut. The nut is designed to fit all cold water taps having a similar matching thread. Simply attach the nut and screw on the Spolett 1010. A separate suitable sloped tap is recommended so that the Spolett does not have to be removed to allow the tap to be used for other purposes.

Instructions for use

It is recommended that Falling Number Tubes are not cleaned while still hot from the Falling Number test. Falling Number tubes can be rapidly cooled by placing them in cold water prior to cleaning.

The Falling Number tube to be cleaned is placed in the protection cover. Be sure that the water is off before placing the tube on the cleaning brushes of the Spolett.

There are two brushes in the Spolett - one black at the top end of the tube and one white lower brush that prevents Falling Number tube damage by the Spolett.

To begin washing, the tube and protection cover are placed on the brushes, the water tap is turned on, and the tube assembly is moved slowly up and down while twisting. This action removes the remaining flour debris. Turn the water off before removing the viscometer tube.

NOTE!

If the tube is pushed down over the Spolett using too much force, there is a risk of breaking the glass tube bottom. **Always use the protection cover!**

Other Falling Number Accessories

Shakematic 1095: Mixes the samples in exactly the same manner each time

FN 1700 Printer: Prints date and results of analysis

Water Dispenser: Easily and accurately dispenses 25 ml of water

Recirculation Cooler: Re-circulate and save cooling water

Lab Mill: Approved FN Lab Mill

Falling Number Tubes: Calibrated viscometer tubes (10 per box)



Shakematic 1095



FN 1700 Printer



Water
Dispenser



Recirculating
Cooler



Lab Mill 3100

Accessory List

Falling Number



Accessories and Consumables for the Falling Number Test



Official Methods:
AACC/No. 56-81.03
ICC/No. 107/1
ISO/No. 3093

Perten Falling Number – The World Standard

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Accessories & Consumables

Falling Number

Accessories



Shakematic SM 1095

Sample mixer. Shaking is made independent of operator and may improve the FN results. For laboratories with high sample volume, the Shakematic substantially reduces the work load for the operators and saves time. The shakematic is mixing the sample in only three seconds. One or two tubes can be shaken.

Part # 011090 (230V)

Part # 011091 (115V)



Cooling Tower 1000

For circulation of cooling water to the Falling Number cooling lid. Fits all FN models.

Note: One cooler per one Falling Number instrument.

Part # 011050 (230/115V)



Laboratory Mill 3100

Approved for preparation of grain for Falling Number analysis. The LM 3100 is a hammer type cyclone mill built into a soundproof casing. The fine homogenous sample is separated from air in a cyclone and collected in a quick release stainless steel container. The mill can also be used for pellets, feeds and forages and for Glutomatic/Gluten Index and NIR analysis.

Part # 031010 (230V, 50Hz)

Part # 031011 (115V, 60Hz)

Part # 031016 (230V, 60Hz)

Part # 031013 (380-420V,
50Hz, 3ph)



Laboratory Mill 120

Approved for preparation of grain for Falling Number analysis. The LM 120 is a hammer type mill built into a stable metal body. The ground product is collected in a filter bag placed below the grinding chamber. The mill can also be used for pellets, feeds and forages and for Glutomatic/Gluten Index and NIR analysis.

Part # 032000 (230V, 50Hz)

Part # 032001 (115V, 60Hz)

Part # 032006 (230V, 60Hz)

Part # 032003 (380-420V,
50Hz, 3ph)



Mill Feeder 3170

A motor driven rubber paddle Mill Feeder can be added to the LM 3100 or LM 120 to provide a consistent feed rate. This improves grinding of high moisture grain and the constant feed rate also improves overall mill performance and reduces motor strain caused by overfeeding of sample.

Part # 037000 (230V)

Part # 037010 (12VDC)



Dispenser for Falling Number

The Falling Number Dispenser provides fast and accurate dosing. This automatic pipette can be set to 25 ml for standard Falling Number method as well as 30 ml for Fungal Falling Number buffer solution.

Part #194000



Printer for FN 1000

Thermal printer for FN 1000. Prints out the result with time and date stamp. Cables included.

Part # 26767



Printer for FN 1700

Thermal printer for FN 1700. Prints out the result with time and date stamp. Cables included.

Part # 26949

**Spolett 1010**

Rapid cleaner for viscometer tubes. Install the Spolett on a standard cold water tap. The Spolett 1010 provides fast, easy and safe cleaning of the viscometer tubes.

Part #191000**Spolett 1010 USA**

Same as 191000 but including adapter kit 191011.

Part #191100**Adapter kit USA for Spolett**

Includes a variety of adapters to fit the spolett to most taps in USA.

Part # 191011**Cover Spolette**

Must be used when cleaning the tubes with the Spolette.

Part # 191003**Pipette 25 ml**

Manuel Pipette for 25 ml.

Part # 100500**Tube Rack**

For 20 viscometer tubes.

Part # 100800**Cassette Single**

For FN 1310 and 1500 single analysis instruments.

Part # 150205**Cassette Double**

For FN 1000, 1700 and 1900 double analysis instruments.

Note: Be aware that you cannot swap between different style cassettes as they are individually adjusted for the instrument. If changing cassette service must make adjustments.

Part # 160440**Cassette Stand**

For two single cassettes or for one double.

Part # 160810**Flow Indicator**

To monitor the cooling water flow.

Part # 106571**Drain Water Container**

For FN 1310 drain water.

Part # 130509**Sample Container 500 ml**

Is also used as drain water container for FN 1500, 1700 and 1900.

Part # 364021**Sample Container 250 ml**

Alternativly used as drain water container for FN 1500, 1700 and 1900.

Part # 331410**Plastic Funnel**

For pouring the sample into the viscometer tube.

Part # 100600**FN/GM Instruction DVD**

DVD with instruction videos for Falling number and Glutomatic standard methods.

Part # 191500**Power Cord**

European and USA standard is available.

NOTE: The picture shows the European standard.

Part # 100118 (Eur.)**Part # 100126 (USA)**

**Hose Clamp (2pcs)**

For FN 1000

Part # 31565

**Bottle for refill water**

For FN 1000

Part # 31185

**Submersable filter**

For GM 2100 / FN 1000

Part # 211802

**Plastic spiral for cooling tubes (100mm)**

For FN 1000

Part # 31566

**Plastic Baton**

For LM 3100 and 120. To clean the grinding chamber.

Part # 310430

**Brush**

For LM 3100 and 120. To clean the grinding chamber etc.

Part # 311440

**Brush for cyclone**

For LM 3100. To clean the cyclone.

Part # 310440

**Plastic Funnel**

For LM 3100 and 120.

Part # 310260

**Cyclone, complete**

For LM 3100. Including adapter for fitting new cyclone on old LM 3100. The new cyclone was implemented 1994.

Part # 310500

**Cyclone upper part**

For LM 3100. 1 Litre. For new cyclone model.

Part # 310501

**Collection container**

For LM 3100. 1 Litre. For new cyclone model.

Part # 310502

Consumables

**Viscometer Tubes**

Set of 10. High precision viscometer tubes of special glass with tolerances conforming to FN standards.

Part # 100300

**Viscometer Stirrer**

For FN 1310, 1500, 1600, 1700, 1800, 1900 and FN 1000

Part # 160400

**Tubing for Cooling System**

3 meter silicon tube for Falling Number cooling system.

Part # 30718

**Printer Paper for FN 1500**

Comes in 5-pack. 44 mm. Also used in IM 8100.

Part # 150018

**Printer Paper for FN 1700 Printer**

For old style printer 170010. Comes in 5-pack.

Part # 170018

**Printer Paper for FN 1700 and FN 1000 Printer**

For new style printer 26949. Comes in 5-pack.
Bisfenol-A free. 80mm.

Part # 950001

**Printer Paper for FN 1900**

Comes in 5-pack. Also used in AM 5100.

Part # 171918

**Ink Ribbon Cassette FN 1500**

For FN 1500 Printer. Also used in IM 8100.

Part # 822411

**Reference Sample Falling Number**

Wheat flour sample with Falling Number value specified by
Pertten Instruments reference lab. 100 g.

Part # 190108

**FFN Potato Starch Substrate**

900 g substrate for Fungal Falling Number method. For
approximately 170-180 tests.

Part # 190105

**Brush kit for Spolett**

Including two brushes, one black for upper position and one
white for lower position.

Part # 191010

**Tube Stoppers for Shakematic**

For Shakematic. Plastic, including O-ring.
Comes in 2-pack.

Part # 109090

**Tube Stoppers**

For manual shaking. Rubber.
Comes in 4-pack.

Part # 100704

**Sieve**

For LM 3100 and 120.
0.8 mm is standard for Falling Number sample preparation.

Part # 310230 (0.8mm)

Part # 310231 (1.0mm)

Part # 310232 (1.5mm)

Part # 310233 (2.0mm)

Part # 310234 (0.5mm)

**Drive Belt**

For LM 3100 and 120.

Part # 310303

**Cyclone Dust Bag**

For LM 3100.

Part # 310413

**O-ring for Cyclone Dust Bag**

For LM 3100. This O-ring fits the new type dust bag #310413.
If you have the old thin type dust bag, also change the dust
bag.

Part # 310411

**Nylon Bag**

For LM 120.

Part # 311401

**Rubber Bushing for Cyclone**

For LM 3100. For new cyclone model (implemented 1994).

Part # 310503

**Rubber Bushing for Cyclone**

For LM 3100. For old cyclone model (before 1994).

Part # 310403

Specialists in quality control of grain, flour, food and feed

Our goal, to be Specialists in quality control of grain, flour, food and feed, has been driving us since Harald Perten founded the company in 1962.

Mr. Perten's vision, to help customers improve product quality by providing analytical methods that are affordable and easy to use, is still inspiring us to new innovations.

Today, Perten Instruments is present in just about every part of the world. In some countries we serve you through our own companies, whereas in others we serve you through local distributors. Wherever you are, we are close to you. And we are all "Specialists in quality control of grain, flour, feed and food".



- Perten Office
- Perten Distributor

Falling Number

Application & Method



Falling Number 250



Flour



Grain Intake



Whole Grain



The World Standard for detection of Sprout Damage



Official Methods:
AACC/No. 56-81.03
ICC/No. 107/1
ISO/No. 3093

Perten
INSTRUMENTS



The World Standard Method

The Falling Number Method is the worldwide industry standard and accepted method for detecting sprout damage in flour and meal of wheat, durum, rye, barley, other grains and malted cereals. Approved methods include: AACC/No. 56-81.03, ICC/No. 107/1, ISO/DIS 3093 and ASBC. The Falling Number is the established trading parameter for detection of sprouted grain.

Field-Sprouting

Rainy, adverse weather conditions during harvest can cause sprouting. When sprouting occurs the alpha-amylase enzyme develops. Alpha-amylase activity has direct impact on bread and pasta quality and adversely affects the malting process. As little as 5 % sprouted grain, mixed with 95 % sound grain, can render the entire mixture unacceptable.

Baking

Alpha-amylase activity affects bread quality. Flour with a low Falling Number will produce bread with poor texture, a sticky bread crumb and will be difficult to process. Bread made from flour with a high Falling Number can result in loaves with poor volume and a dry bread crumb. The shelf life of the bread will also be adversely affected. It is important, therefore, to use flour with the correct Falling Number.

The Falling Number Method is also used to monitor fungal enzyme supplements. Savings are realized by optimizing enzyme additions in order to achieve the desired characteristics.

Pasta Manufacturing

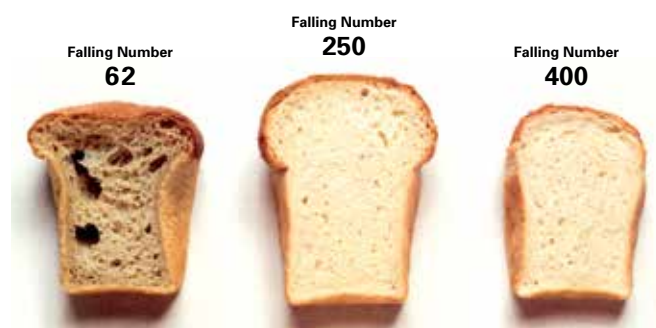
Producing noodles from flour with a low Falling Number results in off-color product. The product will be sticky, making it difficult to process. The end consumer product will be sticky after it is boiled.

Using flour with the correct Falling Number will result in savings through improved processing as well as a higher quality end product.

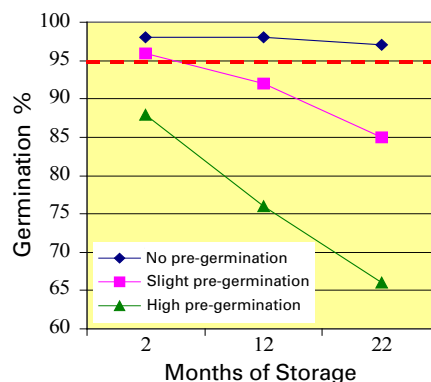
Field Sprouting of Barley

Sound, viable grains are required for high germination rates in malting barley. Studies have shown that barley that has pre-germinated in the field has a decreased ability to germinate during the malting process, leading to high levels of beta-glucan in the wort. Even barley with a low degree of pre-germination will be affected. The ability to germinate is further decreased during storage. Only months later, barley with acceptable germination at harvest may exhibit germination abilities significantly lower than the generally required 95 %. Low levels of pre-germination are not possible to detect with visual inspection, but are readily identified with the Falling Number Method.

Alpha-amylase in Bread Baking



Malting barley germination stability





The Falling Number Method

The World Standard Alpha-Amylase Activity Test — AA

Definition: The Falling Number Method determines the alpha-amylase activity in grain, flour and other starch containing products. The Falling Number is defined as the time in seconds required to stir and to allow a viscometer stirrer to fall a measured distance through a hot aqueous flour gel undergoing liquefaction.

1. Sample Preparation

For grain, a 300 g sample is ground in a Laboratory Mill LM 3100 or LM 120 equipped with a 0.8 mm sieve. The large sample is to avoid sampling error. For flour a representative sample is taken.

2. Weighing

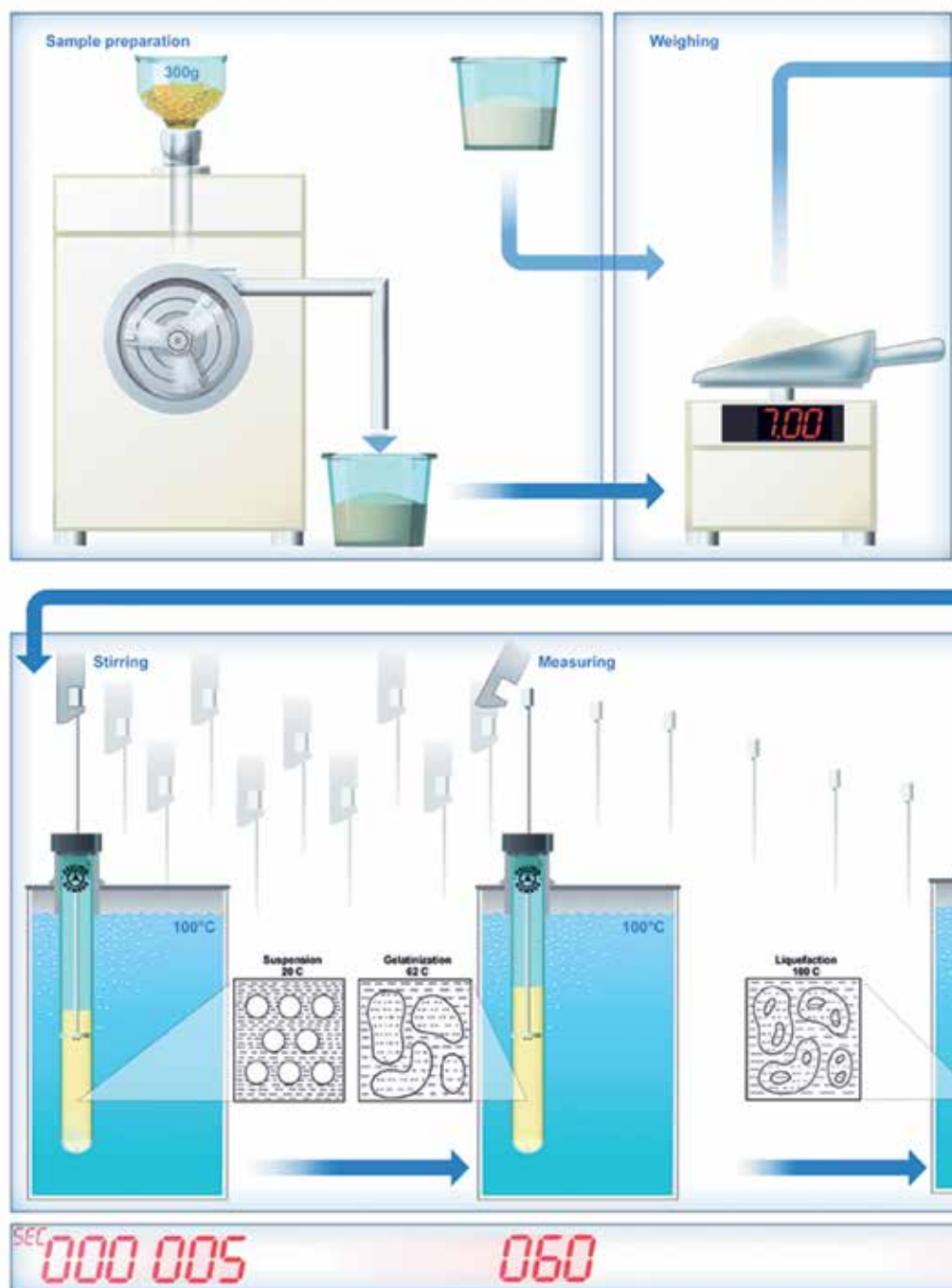
7.0 ± 0.05 g of whole meal or flour is weighed and put into a Viscometer tube. The flour amount should be moisture corrected by measuring the actual moisture content of the sample.

3. Dispensing

25 ± 0.2 ml of distilled water is added to the tube.

4. Shaking

Sample and water are mixed by vigorously shaking the tube to obtain a homogeneous suspension.



Method by Perten Instruments

CC Method No. 56-81.03, ICC No. 107/1, ISO 3093, ASBC



Principle: The Falling Number Method uses the starch contained in the sample as a substrate. It is based on the rapid gelatinization of a suspension of flour or meal in a boiling waterbath and the subsequent measurement of the liquefaction of the starch by alpha-amylase.



5. Stirring

The Viscometer tube with the stirrer inserted is put into the boiling water bath and the instrument is started. After 5 seconds the stirring begins automatically.

6. Measuring

The stirrer is automatically released in its top position after 60 (5 + 55) seconds and is allowed to fall down under its own weight.

7. The Falling Number

The total time in seconds from the start of the instrument until the stirrer has fallen a measured distance is registered by the instrument. This is the Falling Number.



Illustration: Falling Number Method

Benefits of the Falling Number Test

Falling Number measurement has a direct impact on your operating profits. It is a method with many uses in many industries:

- Detect sprouted wheat, barley and rye
- Measure the alpha-amylase activity of flour
- Avoid mixing sound and sprouted grain
- Blend grains to optimize the Falling Number value
- Charge premiums and maximize the value of quality grain

Silos, Grain Handling and Trading

The Falling Number test is used to segregate sprouted grain from sound products - imperative when as little as 5 % of sprouted grain, mixed with 95 % sound grain, renders the entire mixture unacceptable. In addition, the Falling Number test results are used to classify grain for different end-user requirements, helping traders to purchase the most suitable grain.

Grain profits can be further maximized by mixing high grade and lower grade grain to achieve the desired product characteristics and providing the user with consistent, good quality raw material suitable for each specific purpose.

Flour Milling

Flour Millers test all incoming grain to ensure suitability for the specific flour product in question. Segregating poor quality grain prior to milling saves time, effort and money. It is also important to avoid poor quality grain

being mixed with good quality, as this may destroy the entire mixture.

Further, the addition of Fungal Enzymes can be optimized. By using the correct amount of enzyme, savings and quality improvements are realized.

Baking

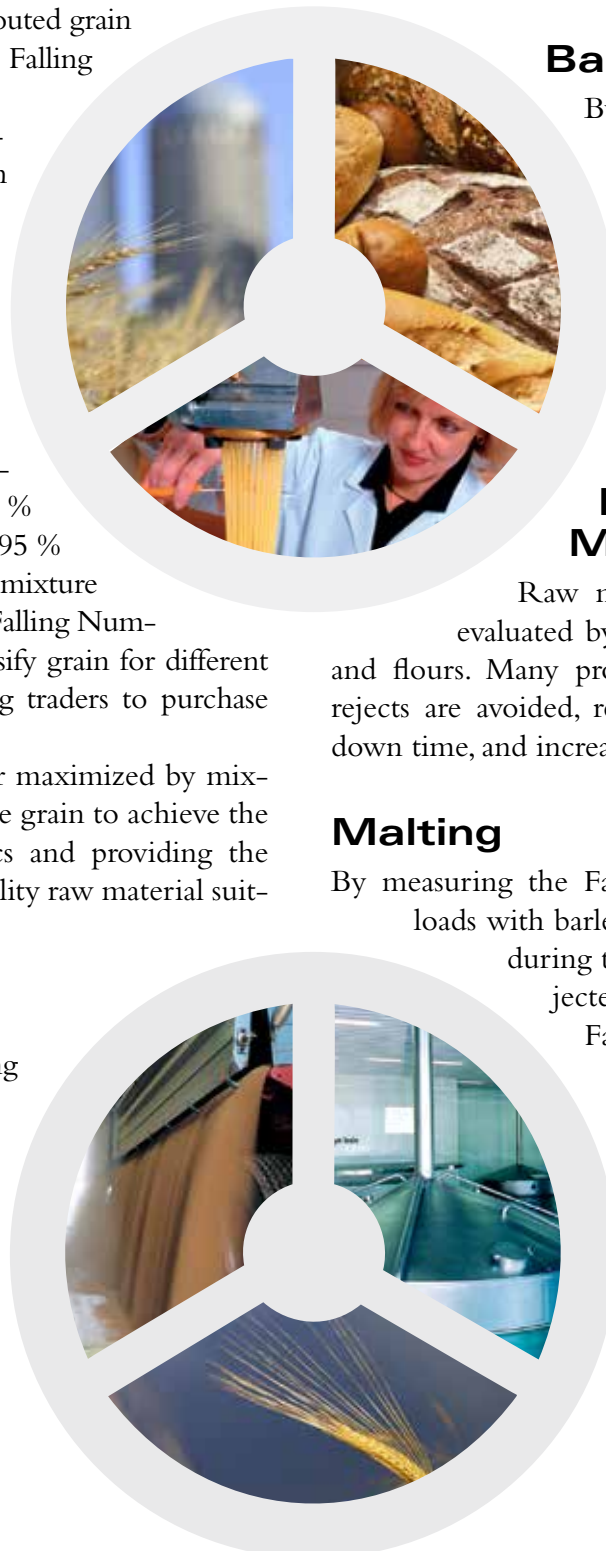
By testing incoming flour, incorrect deliveries as well as many process problems and resulting product rejects are avoided. With in-house testing, bakers can easily and quickly identify or rule out Falling Number as a cause for difficulties.

Pasta Manufacturing

Raw material suitability is quickly evaluated by testing the incoming grains and flours. Many process problems and resulting rejects are avoided, resulting in savings, decreased down time, and increased operating margins.

Malting

By measuring the Falling Number at the intake, loads with barley of low ability to germinate during the malting process can be rejected while loads with higher Falling Number can be accepted with confidence.



Required Equipment



Falling Number Apparatus

The easy-to-use instruments are available as single and dual models. Options include printer, bar code reader for sample ID input and serial output for connection to laboratory information systems. All Falling Number units include viscometer tubes and stirrer.

Balance

Required accuracy: $\pm 0,05$ g or better.



Laboratory Mill 120 or 3100

Large capacity hammer type cyclone mill with 0,8 mm sieve is used for preparing samples of whole grain. A large sample size (300 g) is required to avoid sampling errors.

Accessories



Shakematic 1095

Specifically designed and built for mixing samples for Falling Number analysis, providing operators with a convenient tool to ensure consistent sample mixing.



Cooling Tower

Re-circulation of the cooling-water avoids water waste, saves costs and is environment-friendly.



Dispenser

The Dispenser easily and accurately adds the 25 ml of water required for each test.



Spolett 1010

Rapid cleaner for viscometer tubes. The Spolett tube cleaner fits on an ordinary water tap and facilitates the cleaning of viscometer tubes.