825-270C

Cooking oil tester

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Safety

 WARNING: The company will not be responsible for the safety of the instrument if it is not used properly or if it is not handled in accordance with the instructions in the operating manual.

 WARNING: Failure to operate the instrument in accordance with the instructions may degrade the safety of the instrument.

 Warning: Please use the power cord supplied by Hanon. Other power cords can affect the safety of the instrument.

 Warning: Risk of electric shock. Only professional qualified personnel can open the cover and panel.

 Warning: Do not touch high temperature parts such as probes and connecting rods during use.
Prevent burns.

 Warning: The instrument cannot be used in an electromagnetic environment. Please turn off the induction cooker and other equipment when using it.

 Warning: The instrument should be used within the specified range. It is easy to damage the instrument if it is out of range.

⚠ Note: When the instrument fails, do not use it, contact the nearest Hanon Service Center in time.

⚠ Note: This instrument must be repaired by a person authorized by Hanon. Hanon recommends the use of original spare parts. If spare parts from other sources are used, the warranty is no longer valid.

⚠ Note: The instrument is designed and tested in accordance with European Union standards (CE). In order to ensure continuous compliance with the standard, the instrument can only be connected to equipment that meets CE requirements.

⚠ Note: Unpacking, assembly and installation of the instrument must be done by an authorized Hanon.

1. Overview

1.1. Overview

Edible Oil Quality Tester OS270 produced by Jinan Hanon Instrument Co., Ltd is a portable measuring instrument designed to quickly detect the aging of frying oil.

The TPM value (total polar component) reflects the deterioration of the edible oil due to high temperature during frying process.

The sensor uses the change in capacitance value to determine the total polar component content by unit of %.

The following measurement tasks can be performed by the Edible Oil Quality Tester OS270:

> Display the temperature value of the frying oil: accurately indicate the actual oil temperature of frying oil, and correct the accuracy of self-contained thermometer of the frying pan.

> Display TPM value: an indication of degree of deterioration of frying oil.

What kind of oil/grease can this instrument be used to detect? In principle, all oils and fats that are fried can be measured. Vegetable oils such as

canola oil, soybean oil, sesame oil, palm oil, olive oil and peanut oil can also be measured.

Depending on type of fat, the TPM of fresh oil will fluctuate between a few percent, and the maximum use time of frying oil will vary.

The acid value is used to evaluate the quality of unfried oil. The edible oil quality detector OS270 produced by Jinan Hanon Instrument Co., Ltd is not used for the detection of acid value. When measuring the commonly used frying oil, it is recommended that the measured frying oil temperature be at least 40 °C(the frying oil is liquid and not crystallized) up to 190 °Cdue to different freezing points of various oils. Exceeding this range will affect the measurement accuracy of the instrument.

The probe is 1 cm from the measuring tip to probe handle or plastic shell. When it is operated, please follow the immersion depth specified in operating instructions or mark on the probe.

Our measuring instruments are inspected before shipment to ensure the accuracy. In order to ensure the high measurement accuracy of instrument, we recommend that you regularly calibrate the instrument.

For OS270 calibration, we recommend that the instrument be calibrated every 3-5 months depending on the frequency of use.You have the following options:

1. Calibrate the 895-270C using the calibration oil supplied by Jinan Hanon Instrument Co., Ltd.
The calibration oil provided by Jinan Hanon Instrument Co., Ltd. is the calibration TPM value detected by the National Testing Center. The calibration method refers to the steps in Section 7.3.2.

2.The user calibrates based on historical data on the new frying oil used.

We recommend that you measure the unexpanded cooking oil （at 50C）

when you start the new instrument. It is best to perform multiple measurements in succession and repeat, and record the average TPM for each measurement. This value will be the reference value for your future

calibration. Refer to section 7.3 for the calibration method.
Please note that when replacing other types of frying oil or replacing the supplier of frying oil, you need to repeat the above steps and record the new oil reference value.

The following is used to record your new oil reference:

The type of measured oil is: _____

The calibration reference value is: _____

1.2. Use conditions of instrument

a. Power source: polymer lithium battery (3.7V)

b. Rated power: 0.45W

c. Operating temperature: -20 ~ +50℃

d. Relative humidity: 30% ~ 80% (no condensation)

e. Storage temperature: -20 ~ +70℃

2. Instrument appearance and working principle

2.1 Instrument appearance

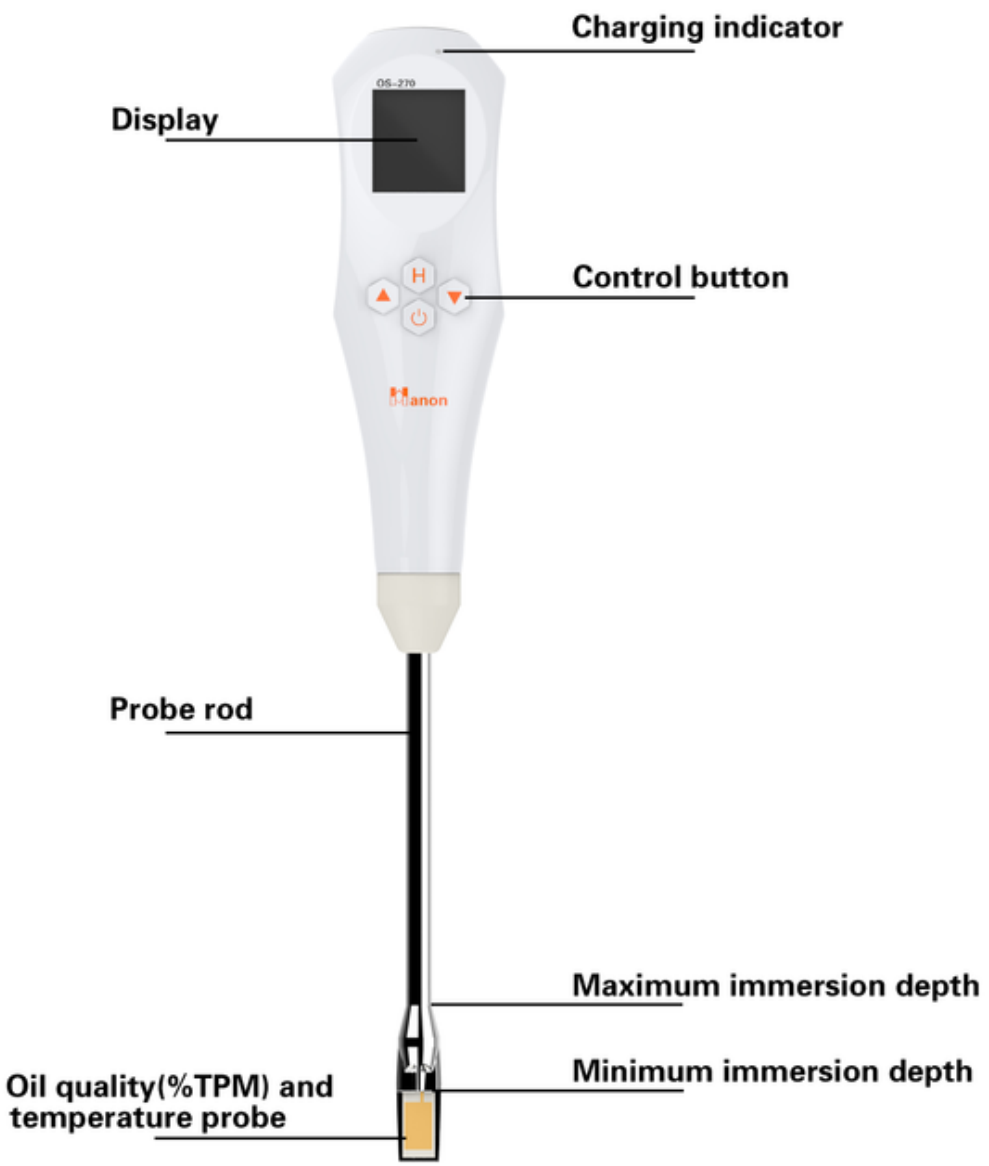

Figure 2.1 Front view of quality tester for edible oil

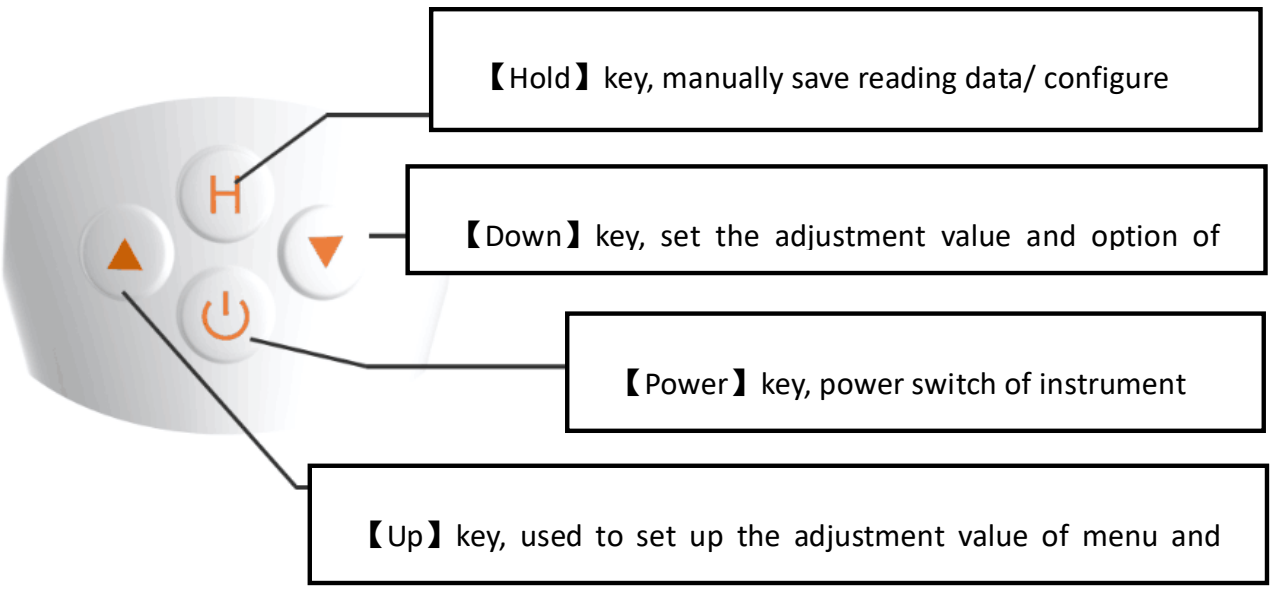

Figure 2.2 Description of operating key for edible oil quality tester

2.2 Working principle

Edible oil is an important source for energy and nutrition of human being and an important raw material for processed foods. Fried foods are popular with consumers for their unique flavor. Edible oils used for frying undergo a series of physical and chemical changes during high-temperature frying, which produce substances that are harmful to health.

At present, the traditional detection methods for frying edible oil are mostly chemical methods. These methods must be operated by professionals in the laboratory, which is time-consuming and laborious. The use of chemical

reagents may harm the health of the test personnel, and the chemical waste agent pollutes the environment.

895-270C is a fast, safe and efficient quality detector for edible oil that quickly detects the content of polar compounds in edible oils. This product can be used in high oil temperature environment and is suitable for quality inspection of various fried edible oils.

3. Main performance

3.1 Technical indicators

a. Measurement Range：

Temperature: 0 - 200.0℃

TPM: 0 - 50%

b. Measurement accuracy：

Temperature: ± 1℃

TPM： ±2%（40℃-190℃）

c. Resolution：

Temperature: 0.1℃

TPM: 0.1%

d. Power supply: polymer lithium battery (3.7V), charging method USB.

e. Temperature sensor: PTC sensor.

f . TPM sensor: capacitive sensor.

g. Communication interface: Micro USB, WIFI, Bluetooth .

h. Data printing: Bluetooth printer (optional).

i. Data storage: Supports 10,000 measurement data storage functions.

j.waterproof level: IP65**.**

3.2 Technical Specifications

a. Dimensions (length ×width ×height): 354mm ×53mm ×65mm.

b. Net weight: 185g (including probe protection soft cover).

c. Shell material: ABS.

4. Installation adjustment

4.1 Unpacking inspection

After the instrument is unpacked, check all the complete machines and accessories according to the packing list attached, and check if there is any damage. If there is any damage, please contact the manufacturer in time.

(Please keep the damaged parts).

After unpacking, main components of 895-270C Edible Oil Quality Tester include:

1. Detector host of 895-270C edible oil quality

2.Micro USB cable.

3. Instruction manual.

4. Probe cover.

4.2 Installation conditions

1. This instrument should not be installed in places where it is exposed to direct sunlight and cold, excessive heat or humidity. Generally, the indoor temperature should be kept between 10°C and 28°C.

2. The charging power supply requires a voltage of 5V and a current of at least 1A. You can use the 5V mobile phone charger directly.

3. This instrument should be used away from large electrical equipment. There is no vibration, no corrosive liquid, no strong electromagnetic field interference at the work site.

4.3 Installation steps

1. It is recommended to fully charge the instrument before using it for the first time.

2. Remove the probe cover before use and wipe the sensor clean with test paper.

5. Use and operation

5.1 Introduction of function

Power on: Turn off [power] key(<1 second), the instrument turns on, the display lights up, the boot initialization interface appears, and then automatically counts into the measurement interface, at which point the measurement operation can be started.
Shutdown: Press [Power] key (<1 second) when the power is on, the instrument is turned off.

5.2 Security measures

The quality detector of 895-270C edible oil should be used away from large electrical equipment, and there is no vibration, no corrosive liquid, no strong electromagnetic field interference at the workplace.

5.3 Instrument Settings

After the instrument is turned on, it automatically enters the measurement interface. The overall effect of the measurement interface is as follows:

The measurement interface icons and their meanings are shown in the following table:

background color	Green: 0%-20% (lower TPM). Orange: 20% (TPM lower limit) -24% (TPM upper limit). Red: 24% (TPM ceiling) -50%.
	Battery indicator, the number on the right indicates the current battery capacity.
20.0%	TPM value showing the current measured TPM value of edible oil.
Auto	Display result of automatic holding function can be automatically locked after the data measurement is stable, which is convenient for observing and recording data.
Hold	Data lock function indicates that the data is locked and no longer changes.
TPM	TPM data indicator.
25.7 ℃	The temperature value shows the temperature of current measurement environment. There are two modes, ℃ and ℉. The temperature display range is 0-200 ℃, and the value does not change when the range is exceeded.
2019/8/19 18:14	System date, showing the date and time of the day. System time, indicating the current time.

Under the measurement interface, press and hold [Hold] key (> 3 seconds) to enter the menu setting interface, adjust the setting contents by [Up] key and [Down] key, then press [Hold] key (<1 second)) and select the menu mode. After adjusting the menu to be modified by [Up] and [Down] key, press [Hold] key (<1 seconds) to save and exit the menu.

Return	Select "return" to save the menu setting and exit, and then return to the measurement interface.
Auto	Automatic holding setting, [ON] for start up and [OFF] for shutdown.
Brightness	Screen brightness setting, divided into 1-5 grades, among which the brightest and most energy-saving grades are 5 and 1, respectively.
Temp unit	Temperature unit setting, [℃] degrees Celsius, [℉] Fahrenheit mode.
Temp Adjust	For temperature calibration, use the instrument to measure the known standard temperature, modify the value to calibrate the temperature sensor, and adjust the value by [Up] and [Down] key.
TPM Adjust	For TPM calibration, use the instrument to measure the edible oil with known TPM value. Modify the value to calibrate the temperature sensor and adjust the value by [Up] and [Down].

TPM Upper	Upper limit value of TPM alarm, when the TPM value reaches this value, the background color of the screen turns red. When TPM value belows this value, the background color of the screen turns orange.
TPM Lower	Lower limit value of TPM alarm, when the TPM value reaches this value, the background color of the screen turns orange, when TPM value below this value, the background color of the screen turns green.
Set time	Set the instrument time by setting the year, month, day, hour, minute, and second. After each setting is completed, press [Hold] key (<1 second) to enter the next setting.
Calibration	This item is used when the instrument is calibrated before it leaves the factory, and the user does not need to set it.
Reset	When you choose to restore the factory settings, the user's settings will be erased and the instrument will be restored to factory settings.

5.4 Sample test

Please follow the points below to get the most accurate results in your measurements:

1. Turn off the induction frying pan during the measurement because the electromagnetic field will affect the measurement results.

2. Please clean the probe before each measurement or before the next continuous measurement. See the cleaning instructions of probe for details.

3. Try to avoid touching the probe with metal objects. For example, frying baskets, pot walls, because these things may affect the measurement results, the minimum spacing from metal objects is at least 1cm.

4. Uneven oil temperature in the frying oil may cause measurement errors. Please stir the instrument quickly in the frying oil.

5. If the measurement result is suspected to be wrong because it contains water: Please repeat the measurement after 5 minutes (do not fry during this period to keep the grease high temperature). If the new reading goes low, measure again after 5 minutes until the reading is stable.

6. Please replace the frying oil when it reaches 27% TPM. Different countries have different limit values. Please be sure to replace the frying oil before reaching the limit value.

7. When the automatic hold function is turned on, immerse the probe in the frying oil, pay attention to the immersion depth! If the temperature is within the allowable measurement range (0 to 200ºC),wait until Auto Hold appears on the screen. After the reading is stable, taking the instrument out of the frying oil will automatically maintain the measurement of data, which will make it easy to observe and record the data.

5.5 shutdown operation

1. After each use of the instrument, press the power key to turn off the instrument.

2. After waiting for the drop of probe temperature to (not hot), wipe off the sensor surface and the grease on the probe by test paper. Insert the probe cover onto the sensor to protect the sensor from damage.

3. Store the instrument in a box.

4. Store it in a dry environment.

6. Analysis and elimination of failure

Fault phenomenon	Cause Analysis	Method of exclusion
Press the power key, the screen does not appear on the screen	1. The lithium battery is low in power; 2. Instrument failure.	1. Use the instrument after charging it; 2. It cannot be turned on under charging status.
TPM is not 0	2. There are stains on the sensor surface.	2. Wipe the sensor surface with a test strip.
The data is abnormal when the edible oil in low temperature is measured.	When the temperature is too low, it will cause the edible oil to crystallize or be close to the crystalline state.	After heating the edible oil to 50 ℃, stop heat and re-measure it.

7. Daily maintenance of the instrument

7.1 cleaning probe

1. Do not touch the hot parts of instrument.

2. Allow the instrument to cool sufficiently before cleaning.

3. Use a weak detergent, clean it with water or soapy water.

4. Gently clean the probe with a soft tissue or rinse it by clean water.

5. Carefully dry the probe with a soft tissue.
Cold oil slag cleaning for probe surface:

6. Insert the probe into the hot oil.

7. Cool the probe and probe rod until there is no risk of burns.

8. Repeat the 3-5 steps to clean the probe before the oil residue cools.

7.2 Cleaning the outer casing

Make sure the instrument is off before cleaning the instrument case.

1. Do not use sharp objects.

2. Do not use aggressive detergents and solvents.

3. Use a weak detergent, rinse with water or soapy water.

4. Clean the outer casing with a damp cloth.

5. Dry the outer casing.

7.3 Calibration instrument

First, we recommend that you purchase 895-270C calibration oil from Jinan Hanon Instrument Co., Ltd. You can also use unused edible oil for calibration.

The 895-270C should be calibrated regularly with calibration oil. We recommend that you calibrate once every 3-5 months to ensure inspection accuracy and quality.

The calibration steps are as follows:

1. Before using the Tester, the probe should be cleaned with water or neutral detergent and wiped clean with soft paper.

2. Put 100C water in the beaker, put the calibration oil bottle in it, turn on the tester and use it monitor the temperature of oil, when it reach to 50ºC, take the bottle out and put it on the table, clean it and waiting for testing.

3. Immerse the probe in the calibration oil,make sure the oil level should over “Min”, stirring the tester to make the probe detect the oil temperature, and record the TPM value of the instrument after the TMP value is stable.

4. Press [Hold] (>3 seconds) to enter the setup menu. Modify the TPM adjustment value by setting the “TPM adjustment value” menu. The TPM adjustment value=standard value-measurement value.

5. Press [Hold] (<1 second) to save and exit the menu.

6. The calibration is completed, the instrument is turned off, and it takes effect after the restart.

8. Storage and transportation

The instrument should be handled gently during handling or movement to avoid violent vibration, collision, impact and drop.

During transportation, it should be bundled or placed firmly to prevent damage to the instrument caused by slipping or collision.

It is strictly forbidden to encounter rain and snow during transportation, and for long-distance transportation, it should be placed in closed compartment.

It is strictly prohibited to store in areas with strong electric fields, strong magnetic fields and corrosive gases.

It is strictly forbidden to mix and transport it with other equipment or items that may affect or damage the this instrument.

The instrument should be maintained or inspected every 3 months during storage. The storage conditions of instrument are as follows:

Avoid water splashes, rain, and direct sunlight.

Storage temperature and humidity meet the requirements.

Avoid corrosive gases and salty air.

Avoid strong electric fields and strong magnetic fields.

There is no severe vibration, impact and pests in the storage place.

9. Out of factory instructions

This product can be repaired within one year from the date of sale (it is subject to the date of invoice issued, and there is no extended warranty agreement), but the following conditions are not covered by the repair:

1. Exceeding the warranty period;

2. Damage caused by improper use;

2. Damage caused by disassembly without the permission of the manufacturer;

4. Damage caused by improper transportation and storage.

10. Environmental protection notice

This electronic device cannot be discarded together with unsorted general waste. Improper handling can harm the environment and human health. Please refer to local regulations for collection and disposal equipment of waste disposal.