Deep Frying Oil Tester

Operating Instructions

Product code:

825-890

1. Alarm LED
2. Display
3. Battery Compartment
4. Control Keys
5. Probe Shaft
6. Max Immersion Depth
7. Min Immersion Depth
8. Oil Quality (% TPM) and Temperature sensor
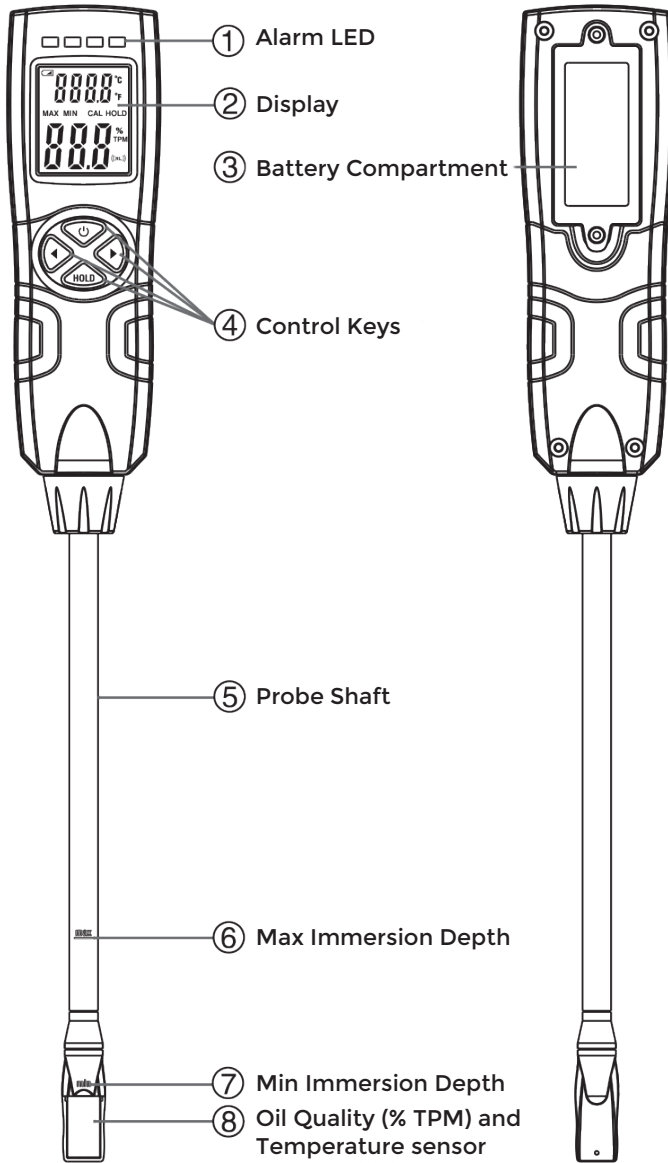
CONTRAST WITH LABORATORY METHODS

Frying oil is a mixture of different polar substances. In the process of frying oil aging, the number of high polarity ingredients will increase. Laboratory chromatography can distinguish between polar and non-polar materials; the content of the total component of the frying oil is defined as % TPM (total polar materials).

The value of the % TPM measured may produce subtle changes by the column method due to the setting of the polar component and the non-polar component boundary.

Depending on the type of oil, the polarity of the polar and non-polar components may also produce subtle changes but the change in the column method is not recognised.

However, the oil tester can measure the entire polarity of the frying oil and therefore get the actual polar component and the non-polar component.

MEASURING

TPM is the measurement of the amount of polar materials within the oil. A molecule is polar because the negatively charged electrons spinning around are not evenly distributed (odd number), whereas a non-polar molecule has evenly distributed (even number) electrons. As an example, water is a very polar material and oil is non-polar which means that water would separate from oil.

Triglycerides are also detected using TPM. These are compounds combined with one glycerol molecule and three fatty acids so are "larger" molecules than singular fatty acids that most test strips will detect.

The digital tester measures the number of these "larger" polar molecules that appear in oil and provides a percentage of TPM (% TPM) on the LCD. This is done via a dielectric constant measurement between two capacitance plates.

In the UK, 24 % TPM is considered as the percentage level at which frying oil is no longer suitable for human consumption.

WHAT TYPE OF OIL CAN THE UNIT BE USED FOR?

In principle, all frying oils can be measured with the tester – for example: rapeseed oil, soybean oil, sesame oil, palm oil, olive oil, peanut oil and other vegetable oils. Animal fat can also be measured with the tester.

Depending on the type of oil, the TPM value of the fresh oil will fluctuate between a few percent, and the maximum time the oil can be used. For example, fresh palm oil has a higher % TPM initial value than other oils, but its aging is much slower.

THE EFFECT OF ADDITIVES

The oil tester is designed to measure pure oil. If additives are used, the results may be affected.

CONFIGURATION MODE

1. Turn on the instrument by pressing the ' ⏻ ' button.
2. Press the '**Hold**' and ' ◀ ' buttons at the same time for at least three seconds to enter Configuration Mode.
3. Use the ' ◀ ' or ' ▶ ' buttons to select the Configuration Options and press '**Hold**' to confirm.
4. The instrument will revert back to the measurement screen once all Configuration Options have been selected. Press ' ⏻ ' in Configuration mode to save and exit.

CONFIGURATION OPTIONS

- Set the Temperature in **°C** or **°F**
- Set the Audible Alarm (ALA) to **on** or **off**
- Set the Auto-Off (APO) to **on** or **off**
- Setting (LED) to **on** or **off**
- Perform Calibration (CAL) to **on** or **off**
- Execute Reset (RST) to **on** or **off. 'On' resets instrument to factory settings**
- Set the Backlight (BL) to **on** or **off**

SET THE HIGH AND LOW ALARM

Set the TPM high alarm limit
1. Turn on the instrument. Press and hold the ' ◀ ' button for at least three seconds in the test mode, the instrument will enter the high alarm setting. '**(((H**' will be displayed and the LED turns red.
2. Press ' ◀ ', ' ▶ ' to set the corresponding value.
3. Press '**Hold**' to save and exit. Press ' ⏻ ' to exit without saving.

Set the TPM low alarm limit
1. Turn on the instrument. Press and hold the ' ▶ ' button in the test mode for at least three seconds to enter the instrument low alarm settings. '**L)))**' will be displayed and the LED lights will turn green.
2. Press the ' ◀ ' or ' ▶ ' buttons to set the corresponding value.
3. Click '**Hold**' to save and exit. Press ' ⏻ ' to exit without saving.

START MEASURING

1. Press the Power '⏻' button to turn the instrument on. The temperature bar will show LO and the TPM bar shows 0.0 %
2. Insert the detector into your oil, making sure the oil level is above the minimum immersion depth but does not exceed the '**MAX**' line on the probe shaft. The oil must also be heated between the temperatures of 40°C and 200°C.
3. If the temperature bar flashes '**HI**' this indicates that the measured temperature is above the range, and '**LO**' indicates that the measured temperature is below the range.
4. Stir the oil tester in the frying oil as uneven oil temperature in the frying oil can cause inaccuracies in the reading. Make sure any bubbles that have occurred disappear as this can cause inaccurate readings.
5. If the TPM bar indicates '**LO**' this means the substance being tested is not oil.
6. All LED's will be illuminated at all times. The LEDs will change to red if your oil quality is outside of the pre-set high alarm of % TPM, will change to green if your oil quality is outside of the pre-set low alarm of % TPM. Otherwise the LED's will be coloured Blue.
7. Press the '**Hold**' button in the measurement mode to activate the '**Hold**' function.

Warning

If the instrument has been used with hot oil the probe and probe shaft may cause a risk of burns if touched!
- Do not touch the hot parts on the instrument.
- Allow the instrument to cool before cleaning.
- Clean the probe gently with a soft paper towel or rinse it in water.

TO ENSURE ACCURATE RESULTS

- If using an induction hob – turn the hob off as the electromagnetic field will affect the measurement result.
- Remove any fried objects from the frying oil being measured and wait five minutes.
- Clean the probe between each measurement.
- Avoid touching metal objects, such as frying baskets or pots as they can affect the measurement results and ensure at least a 1 cm distance from the metal is given.
- Please replace your frying oil immediately when a reading indicates a limit has been exceeded. Different countries have different recommended limits. In the UK the recommended limit is 24 % TPM. Be sure to replace frying oil before reaching the limit.

CALIBRATION REFERENCE OIL
Product code: 816-090
TPM value of oil is as indicated on bottle label

USER CALIBRATION

1. Turn on
2. Press **'Hold'** and '◀' buttons together for three seconds
3. C shown in display
4. Press **'Hold'** four times
5. Press '▶' button to turn calibration ON
6. Press **'Hold'** three times to enter calibration adjustment mode
7. Place probe in calibration standard oil (ensure sensor is fully covered – oil surface between min & max marks)
8. Make sure temperature reading is greater than 40° C
9. Leave for 5 minutes, ensuring that the oil temperature is maintained greater than 40° C
10. Press '▶' or '◀' buttons to adjust top adjustment figure so that the main TPM reading matches the Calibration Standard Oil TPM
11. Press **'Hold'** and '▶' button together for three seconds to SAVE (make sure new adjusted reading is still visible)
12. Press **'Hold'** to exit calibration mode
13. Turn off

CALIBRATION NOTES

The standard calibration oil needs to be at a temperature greater than 40 °C (but aim for 50 °C to give sufficient time for the process).

There is obviously a danger of scalding and therefore care is required in heating the water/oil. Place the bottle, with the top loosened, into a mug of hot water which has a temperature of greater than 40 °C (Ideally 50 °C) so that the water comes two thirds up the bottle.

Warning: It is essential that no water enters the bottle.

It is essential that no water enters the bottle. You can keep replacing the hot water until the oil reaches 50 °C, or you can put the cup into a standard 600 watt microwave for 15 seconds at a time, again, until the water/oil reaches 50 °C. (A Thermapen is a useful aid).

If done carefully, the oil will be the same temperature as the surrounding water after 15 minutes and should be ready to use.

Do not let the water boil. You can then proceed with the calibration, carefully removing the bottle top. Keeping the bottle in hot water will help to retain the heat, but make sure no water enters the bottle.

RESTORE FACTORY SETTINGS

1. After enabling RST function to on, the screen will display RST.
2. Press the '▶' and '**Hold**' buttons simultaneously to reset the user calibration data to the factory settings.

CHANGING THE BATTERIES

1. Make sure the instrument is switched off by pressing and holding the Power '⏻' button.
2. If necessary, clean the instrument from any excess oil or moisture.
3. Using a cross-head screwdriver, undo the two screws on the battery compartment on the rear of the instrument.
4. Remove the 2 x AAA batteries and replace with new batteries, making sure they are fitted correctly as per the label inside the battery compartment.
5. Close the battery compartment, ensuring it is fitted correctly to prevent any liquid ingress.