

SmartNotes

Deterioration of Bleachability Index (DOBI) for palm oil analysis

The Deterioration of Bleachability Index (DOBI) is an analytical procedure used for the quality control of crude palm oil. The DOBI of palm oil indicates the rate of oxidation of the sample and the ease of processing the palm oil. A higher DOBI value indicates the fruit is more fresh, ripe and free of contaminants. Bleaching earth is used with palm oils to refine the oil to an acceptable color as required by users and food manufacturers. The DOBI value gives the palm oil refiner information on what type of bleaching earth to use and how much is required.

The DOBI of palm oil can easily be determined using a spectrophotometer by measuring the absorbance of a test solution at 446 nm and 269 nm and then applying the following equation:

$$\text{DOBI} = \frac{A_{446}}{A_{269}}$$

The Grade of palm oil can then be determined using the ranges displayed in Table 1.

DOBI value	Grade
1.68 – 2.30	Poor
2.31 – 2.92	Fair
2.93 – 3.24	Good
> 3.24	Excellent

Table 1. Grades of palm oil

Materials needed

Thermo Scientific™ GENESYS™ 50 UV-Vis Spectrophotometer, Fisher HPLC grade 2, 2, 4-trimethylpentane (isooctane), 10 mm quartz cuvettes, 25 mL and 10 mL volumetric flasks, pipettes, pipette filters, analytical balance.

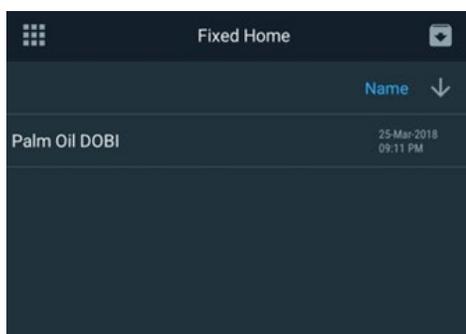


Thermo Scientific™ GENESYS™ 50
UV-Vis Spectrophotometer

Procedure

1. Accurately weigh 0.1 g of a melted and homogenized palm oil sample in a 25 mL volumetric flask. Dissolve the sample and fill to the mark with isooctane.
2. On the GENESYS home screen, select Fixed and then select the Palm Oil DOBI method.
3. Fill a quartz cuvette with isooctane and use it to blank the instrument.
4. Then fill a quartz cuvette with the palm oil solution and measure the sample.
5. If the palm oil solution was found to be too concentrated for measurement it should be further diluted. This can be done by pipetting 2 mL of the palm oil solution into a 10 mL volumetric flask and filling to the mark with isooctane for example.
6. The GENESYS software will calculate the DOBI Value of the palm oil sample.

Easily measure DOBI



1. On the GENESYS home screen, select Fixed.
2. Select the Palm Oil DOBI method.



3. Measure the blank.
4. Measure sample to obtain the DOBI value.

Results

The results show that the DOBI value of the sample was 2.728 which would classify this palm oil with a fair grade.

Related chemicals ordering information

Description	CAS number
Isooctane	540-84-1

References

1. International Organization for Standardization. (2011). Palm oil — Determination of the deterioration of bleachability index (DOBI) and carotene content (Standard No. 17932). Retrieved from <https://www.iso.org/standard/54401.html>



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