IODINE VALUE (I.V.) | palm oil

DEFINITION AND SCOPE

The most important application of the iodine value is to determine the amount of unsaturation contained in fatty acids. This unsaturation is in the form of double bonds which react with iodine compounds. The higher the iodine value, the more unsaturated fatty acid bonds are present in a fat. Iodine value is used as a parameter in process control as well as a quality parameter in traded palm oil products.

PRINCIPLE

Double bonds react with iodine in alcoholic solution determining a variation in the reagent’s absorbance. This amount measured at 420 nm is indirectly related with concentration of double bond in the sample, expressed as IV (Iodine Value).

COMPOSITION OF THE KIT AND REAGENTS

Reagent test kit *300555, suitable for 100 tests, contain:
- R1: 4 Bottles containing 25 mL of reagent (mixture of alcohols, iodine and chromogenous compounds).
- 100 test cuvettes with caps.

Stability / Storage conditions: Reagent is stable through expiration date if stored at -20 °C. Avoid light exposure.

SAMPLE AND CURVES

Solid samples at room temperature must be heated and dissolved before they can be analyzed. The sample must be collected when the oil is consistently dissolved and still warm.

<table>
<thead>
<tr>
<th>Curve</th>
<th>Measuring range</th>
<th>Unit of measurement</th>
<th>Sample volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.V.PalmRefined</td>
<td>2 - 100</td>
<td>I.V. (g/100g)</td>
<td>20 µL of melted oil</td>
</tr>
<tr>
<td>I.V.PalmCrude</td>
<td>2 - 100</td>
<td>I.V. (g/100g)</td>
<td>20 µL of melted oil</td>
</tr>
<tr>
<td>I.V.PalmKernel</td>
<td>2 - 100</td>
<td>I.V. (g/100g)</td>
<td>20 µL of melted oil</td>
</tr>
</tbody>
</table>

CALIBRATION CURVE / CORRELATION DATA

PalmOilTester shows a good correlation with AOCS Official Method Cd 1d-92.
ACCURACY AND LINEARITY

<table>
<thead>
<tr>
<th>Curve</th>
<th>Measuring range</th>
<th>Resolution</th>
<th>Accuracy</th>
<th>Repeatability</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.V.PalmRefined</td>
<td>2 - 100</td>
<td>1</td>
<td>+/- 5%</td>
<td>CV &lt;5%</td>
</tr>
<tr>
<td>I.V.PalmCrude</td>
<td>2 - 100</td>
<td>1</td>
<td>+/- 5%</td>
<td>CV &lt;5%</td>
</tr>
<tr>
<td>I.V.PalmKernel</td>
<td>2 - 100</td>
<td>1</td>
<td>+/- 5%</td>
<td>CV &lt;5%</td>
</tr>
</tbody>
</table>

REAGENT PREPARATION

Before starting an analysis session, prepare a number of test cuvettes. Each cuvette is suitable for one single test. Follow the instruction below:

1. Dispense exactly 1 mL of reagent in each cuvette and close with its supplied cap.
   In order to verify the correct filling level, make sure that reagent level matches the arrow tip on the reading side.
   Note 1: Filled test cuvettes, not used in the analysis session, can be stored at -20 °C, and used for the following test session.

TEST PROCEDURE

1. Incubate filled test cuvette in the incubation cells for at least 5 minutes.
   The stability of the reagent R1 declines if pre-warmed exceeding 30 mins.
2. Press key 1 on keyboard to display available analysis on reading cell 1.
3. Select the appropriate PalmRefined, PalmCrude or PalmKernel IODINE VALUE curve, depending on the matrix to be tested, confirm your selection by pressing ENTER (on display shows INSERT SAMPLE).
4. Remove the cap of the incubated cuvette and add in 20 µL of the sample using a pipette. Close the cuvette and mix vigorously. Insert immediately the cuvette into the reading cell identified by green LED. Press ENTER to initiate the sample reading.
   Homogenise the sample in the bottle before taking it.
   It is recommended to use a positive displacement pipette for oil samples for higher accuracy.
   To prevent cross-contamination between samples, take the sample with pipette and discard it.
   Repeat the procedure for 2-3 times before transferring it to the reagent.
   Remove excess oil by wiping the outer surface of pipette tip gently using a blotting paper.
   Immerse the pipette tip in the reagent while dispensing sample. Press and release the piston of pipette several times to ensure all sample has been transferred.
   Mix the sample with reagent, after adding, by inverting the cuvette several times.
   Do not remove the cuvette while the reading operation is in progress.
5. If there are more samples to analyze, repeat the operations starting from point 4. Otherwise, press the ARROW KEY UP to end the test session and the test results will be printed automatically.

SYSTEM STANDARDIZATION

The system is supplied pre-calibrated and ready for use.
Results are expressed in accordance with the reference method.
It is also possible to standardize the system using samples with a known titration.
For information on the operating procedure, see the manual provided with the system.

For in-vitro use only