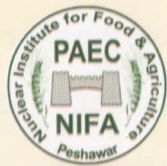


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IMPORTANCE AND USAGE OF NIFA PEROXIDE VALUE (POV) SPOT TEST KITS

Pakistan Atomic Energy Commission
Nuclear Institute for Food and Agriculture
(NIFA), Peshawar
Food & Nutrition Division

Lipids are imperative constituents of our diet and play an important role in the growth and development of human body. They are broadly classified into fats (Banaspoti ghee, butter, cheese, tallow, etc.) and oils (soybean, sunflower, cottonseed, canola, olive, etc). During storage, fats and oils tend to deteriorate/oxidize rapidly due to exposure to air, light, moisture, or microbes resulting in the formation of peroxides and hydro peroxides. These compounds produce an unpleasant taste and odor called rancidity. Consuming rancid fats and oils over a longer period of time can lead to serious health complications such as cancer or cardiovascular diseases. Routinely, presence of rancidity in edible oils and fats is determined quantitatively in lab which is a costly and laborious task. And there is a dire need to develop a rapid and cost-effective qualitative kit that can facilitate on-spot detection of rancidity in fats and oils.

NIFA Spot Test Kits:

To facilitate on-spot testing, Food & Nutrition Division (FND) of Nuclear Institute for Food and Agriculture (NIFA), Peshawar has developed different rapid qualitative testing kits such as:-



NIFA Iron Spot Test Kit



NIFA Vitamin-A Spot Test Kit



NIFA Iodine Spot Test Kit



NIFA POV Spot Test Kit

Characteristics of Kit:

Composition:

One Spot Test Kit consists of the following three labeled glass bottles containing different reagents: -

LABELING	REAGENT TYPE	QUANTITY
Blue labeled bottle	Reagent-1	20 ml
Red labeled bottle	Reagent-2	1 gm
Green labeled bottle	Reagent-3	20 ml

How to Use?

- Take 6-8 drops of homogenized fats or oils sample in a clean and dry test tube (pre-heat samples up to 40 °C)
- Add 1ml of Reagent-1 from the blue labeled bottle into the test tube and shake it well
- Add a few crystals of Reagent-2 from the red labeled bottle into the test tube and shake for 1 minute to uniformly mix the reagents
- Now, add 1ml of Reagent-3 from the green labeled bottle into the test tube
- Observe the color change in the upper layer of the test tube and compare it with the given color chart for determining the level of rancidity based on POV in samples

Test Chart

Test chart shows the level of rancidity



POV (meq/Kg)

Testing Capacity/Kit:

Approximately 18-20 tests can be performed by using one (1) spot test kit

Shelf Life:

The test kit can be used within 4 months before the opening of reagents while a kit should be used within 15 days after opening. It is advised to keep/store kits at 25 °C temperature.

Precautions:

- ★ Always keep the reagents tightly packed. Properly wash and dry test tube for analysis.
- ★ Use disposable gloves and face masks during the experiment because the kit contains hazardous chemicals which are injurious to health.
- ★ Keenly observe the change in color of the sample and compare it with the test chart.
- ★ Wash your hands with soap after performing the test.
- ★ Properly discard the sample solution after performing the test.

Benefits of POV Spot Test Kits

- ★ Rapid, economical, easy to use
- ★ Quality assurance during fats and oils processing

- ★ Assist regulatory bodies to enforce the fats and oils food safety standards
- ★ Quality assurance of fats and oils during supply chain
- ★ Quality inspection of fats and oils during household usage

Potential End Users of POV Spot Test Kits:

- ★ Oil and Ghee Industry of Pakistan Provincial Food Regulatory Authorities
- ★ Governmental organizations/departments monitoring quality assurance of fats and oils.
- ★ International NGO's (NI, WFP, GAIN etc) working on nutrition in Pakistan
- ★ Household consumers

Contact:

Mr. Ali Raza, (Sr. Scientist)
Dr. Maazullah Khan, (DCE / Head Food and Nutrition Division)
Dr. Zahid Mehmood, (Pr. Scientist)
Mr. Tauqeer Ahmad, (Jr. Scientist)
Dr. Muhammad Amin (Manager ORIC)
Mobile No.0333-9156518, 0333-8365080
Ph. Off 091-2964873
Fax: 091-2964059
Email: razi.bwn@gmail.com
www.nifa.org.pk