

PALM KERNEL OIL REFERENCE MATERIALS FOR SLIP MELTING POINT AND IODINE VALUE

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Palm kernel oil (PKO) is a lauric-type oil originating from the kernel of the oil palm fruit, *Elaeis guineensis* Jacq. The oil can be further fractionated into two distinct products, namely palm kernel olein (PKOL) and palm kernel stearin (PKST). PKO products are mainly used in formulating lipid-based food products such as cocoa butter substitutes (CBS), margarine, filling cream, ice cream, filled milk and as a replacement for dairy products such as non-dairy whipping cream and non-dairy cheese analogues. In 2017, the global production of PKO rose to 7.16 million tonnes from 6.39 million tonnes in the previous year (Oil World, 2017). Malaysia alone produced 2.28 million tonnes of crude PKO of which nearly 0.97 million tonnes was exported to more than 100 countries worldwide in the same year (MPOB, 2017). PKO and its products are traded internationally following the specifications outlined by international and national standards such as Codex Standard for Named Vegetable Oils (CODEX STAN 210-1999) and the Malaysian Standard MS80:2011.

In meeting the PKO quality requirements for trade purposes, it is imperative that testing laboratories involved in the analysis of PKO products are able to demonstrate their competency using validated methods. According to ISO 17025, one of the recommended techniques for assessing the competency of a laboratory is through the regular use of reference materials. Reference materials (RM), according to the definition provided by ISO Guide 30, are 'materials that are sufficiently homogenous and stable with respect to one or more specified properties, which has been established to be fit for its intended use in a measurement process'. RM are mainly used for the calibration of equipment or measurements, method validation, establishing traceability, assigning values to other materials and quality control of a measurement procedure. In the case of PKO products analyses, RM for PKO products are yet to be available in the market.

SPECIFICATIONS OF MPOB PKO REFERENCE MATERIALS

MPOB offers six PKO RM consisting of PKO, PKOL and PKST for the determination of iodine value (IV) and slip melting point (SMP), respectively. The property values for each RM are characterised through interlaboratory comparison programmes involving nationwide and worldwide laboratories based on MPOB Test Methods. Data obtained from the interlaboratory comparison programmes undergo statistical analysis according to ISO Guide 35 using a reference materials certification software, SoftCRM 1.2.2 which was developed by the European Commission of Standards, Measurement and Testing Programme. Each RM is supplied in a 5 ml amber glass ampoule and with an accompanying certificate of measurement stating the property value and its uncertainty. The RM products are stable at the recommended storage temperature of -20°C for one year.

ADVANTAGES

- Provides a reliable source of quality reference materials at a reasonable cost which is not made available elsewhere;
- Promotes the use of MPOB Test Methods;
- Encourages harmonisation of methods associated with PKO analyses; and
- Ensures quality assurance in PKO testing laboratories.

TARGET USERS

- Oil palm industry, *i.e.* oil palm mills and refineries
- Independent testing and calibrating laboratories
- Food industries
- Research institutions
- Universities and colleges

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Figure 1. PKO RM are supplied in 5 ml amber-coloured glass ampoules.



Figure 2. One of the six types of PKO RM products available for purchase.

INDICATIVE COST

Each RM shall be sold at RM 150/unit (subject to change). The RM will be available for purchase at Palm Shoppe at MPOB headquarters or through mail order.

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