PALM-BASED DISHWASH PASTE

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and dishwashing detergents remove food soils, hold soil in suspension as well as provide long-lasting suds to indicate how much cleaning power is left in the wash water. They are available as liquids, gels, powders and solids. MPOB has developed a firm, mild, goodperforming, low-smear solid dishwashing product from palm sulphonated methyl esters (SME).

Palm SME (*Figure 1*) is an anionic surfactant made from an oleochemical from palm oil, and is, therefore, environmental-friendly. It degrades faster and better than linear alkyl benzene sulphonates (LAS) (*Figure 2*). In addition, palm



Figure 1. Palm sulphonated methyl esters (SME) flakes.

SME has good calcium tolerance, thus, greater detergency and less sensitivity to water hardness than other anionic surfactants.

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Palm SME can be used as active ingredient to formulate dishwash paste. SME flakes are used. They are dissolved in water and then mixed with the other ingredients. The sequence of adding the ingredients, rate of mixing and production technology plus quality of the ingredients are important factors influencing the product obtained (*Figure 3*). The palm dishwash paste produced by MPOB is under the brand *Palm Touch* (*Figure 4*). Various formulations of palm dishwash paste have been developed and evaluated (PDW1-PDW 5).

PROPERTIES

Consumers are increasingly aware of the chemical constituents in dishwashing products, and becoming more wary of the residues on their dishes from the synthetic materials used to make the present dishwash pastes. Using SME instead as the active compound in *Palm Touch* dishwash paste should obviate the concern as the natural compound is safe to use. The residues of *Palm Touch* dishwash

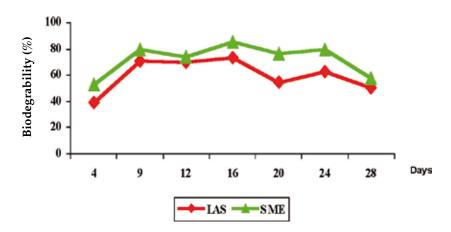


Figure 2. Biodegradability sulphonated methyl esters (SME) and linear alkyl benzene sulphonates (LAS).





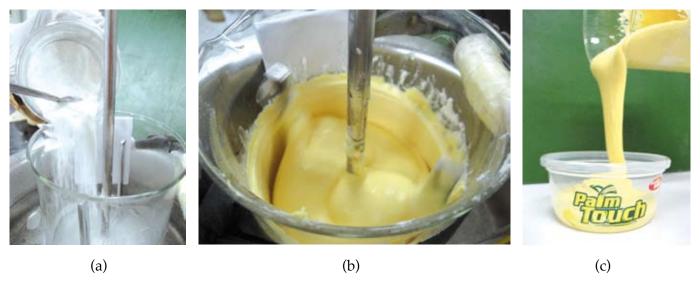


Figure 3. Production of palm dishwash paste. (a) Dissolving of palm sulphonated methyl esters (SME) in liquid solution; (b) mixing of other ingredients; (c) packing of palm dishwash paste.



Figure 4. Palm Touch dishwash paste.

paste entering the water ways would not be harmful to the environment as they are easily biodegradable (*Figure* 2).

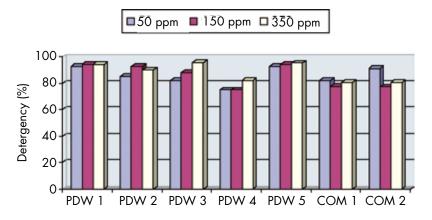
Palm Touch dishwash paste also contains an ingredient that prevents shrinkage of the product in the container after use. Some formulations are integrated with skin care products, such as vitamin E, to improve skin compatibility.

PERFORMANCE

The performance of *Palm Touch* dishwash paste in detergency, foaming power, solubility and stability is similar to or better than that of the present products sold in the country (*Figures 5* to 8).



Figure 5. Detergency of Palm Touch (PDW 2) and commercial (COM 1 and COM 2) dishwash pastes on a glass plate and in water of 150 ppm Ca hardness.



Method:Japanese Standards Association Instrument: Leenert's Improved Detergency Tester Product: 1.5g litre⁻¹ solution at 25°C

Figure 6. Detergency of Palm Touch (PDW 1-5) and commercial (COM 1 and COM 2) dishwash pastes in water of different hardness.

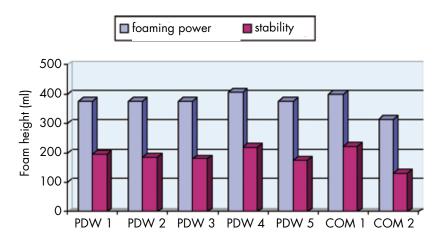


Figure 7. Foaming power and stability of Palm Touch (PDW 1-5) and commercial (COM 1 and COM 2) dishwash pastes at 0.1% solution.

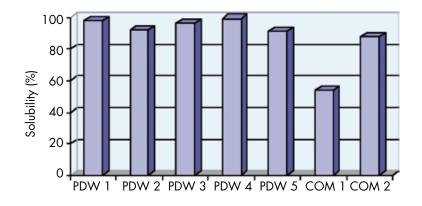


Figure 8. Solubility of Palm Touch (PDW 1-5) and commercial (COM 1 and COM 2) dishwash pastes at 0.2% solution.

TABLE 1. SALES BY PRODUCT OF DISHWASHING DETERGENTS FOR THE MALAYSIAN MARKET, 2004

Dishwashing product	Value (RM)
Liquid	44 981 129
Gel	3 594 803
Paste	41 939 372

TABLE 2. CHINESE MARKET FOR HAND DISHWASHING PRODUCTS

Year	Volume (million litres)
2002	456.1
2003	478.6
2004	500.8
2005	521.4
2006	541.2
2007	561.1

MARKET ANALYSIS

The Malaysian market for dishwashing detergents in 2004 was 20 830 704 kg, valued at RM 90.5 million. The product breakdown is shown in *Table 1*.

The Chinese market for hand dishwashing products has been inexorably increasing over the years (*Table 2*). It is expected that further strong consistent growth will be driven by the introduction of more added-value, specialized and task-specific products.

ECONOMIC ANALYSIS

Return on investment = 38%. Payback period = 2.6 years.

CONCLUSION

Environmental concern, mildness, natural products, cost-effectiveness and sustainable develop-

ment are the battle cries of the new consumers, and this has prompted the development of new surfactants from renewable resources like palm oil. Palm SME can be formulated into a dishwash paste of high performance and environmental acceptability. The product is likely to be in high demand by consumers.

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