The oldest cleaning agent, soap, may be adequate for cleaning hands at home. More powerful hand cleaners are needed for stubborn stains while a milder but effective yet easy to handle hand cleaner is needed for anyone on the move. Palm-based waterless hand cleaner (WHC) is a product designed not only to clean but to protect the skin and environment as well. The lotion type hand cleaner does not contain harsh chemicals normally found in other hand cleaners.

**MAIN INGREDIENT**

Usually, paraffins, iso paraffins and kerosene, which are toxic, combustible and non-friendly to the ecosystem, are used to formulate waterless hand cleaner (Klotz et al., 2002). Due to implication of environmental regulations, natural solvents are finding a place in market applications. A report by MarketResearch.com indicated that due to environmental concern, there is demand for replacement of traditional with alternative solvent (www.marketresearch.com). Renewable resources also have the advantages over petrochemicals especially in terms of safety to users and other environmental consideration (Hill, 2000). Hence, this particular product has being developed using palm-based methyl ester as solvent. Other main ingredients in this lotion type palm-based waterless hand cleaner are palm-based anionic surfactants and humectant.

**EVALUATION**

A survey on the acceptance and cleaning performance of this product for removing oil, grease and metal dust showed comparable results to a commercial product using petroleum-based solvent (Figure 1). The dirt being tested (10 g of oil and grease) is rubbed evenly on the palms and backs of both hands by 10 untrained testing panels. The hands are let to dry for 15 min before being washed with the test products (5 g). Comparative assessment was conducted for the cleaning effect. (Scale 1= less cleaning power; 3 = more cleaning power)

**PROPERTIES**

Physical data for lotion type palm-based waterless hand cleaner is described below:

- **Form**: White lotion
- **Volatility by volume**: <0.5%
- **Viscosity**: 2250 cP
- **pH**: 5-6
- **Detergency**: Excellent for oil, grease and metal dust

**GEL TYPE**

This mild hand cleaner is formulated using mixtures of palm-based anionic and non-ionic surfactants as the actives. Detergency results showed that combining both surfactants gave
better cleaning power. The method used was based on Japanese Standards Association. Six pieces of glass plates were dipped in soiled bath. The dried plates were then washed using 1.5 g surfactant solution diluted with 1000 cm³ water (Figure 2).

**CONCLUSION**

With the renewal and abundance availability of palm-based materials in the country, formulation of waterless hand cleaners of various forms may be another venue for value addition for the oleochemical downstream industry.

**REFERENCE**


www.marketresearch.com


The physical data for gel type waterless hand cleaner:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Form</td>
<td>Gelled liquid</td>
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<tr>
<td>Solubility</td>
<td>Soluble</td>
</tr>
<tr>
<td>pH</td>
<td>5-6</td>
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<tr>
<td>Viscosity</td>
<td>9342 cP</td>
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<tr>
<td>Volatility by volume</td>
<td>&lt;0.5%</td>
</tr>
<tr>
<td>Detergency</td>
<td>Excellent</td>
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</tbody>
</table>

Figure 1. Average score between WHC without solvent, palm-based WHC with solvent and commercial product.

Figure 2. Detergency between surfactants and its combination.

Figure 3. Palm-based waterless hand cleaner.