

MPOB TT No. 340 - PALM-BASED TYRE CLEANER AND SHINE
MPOB TT No. 341 - PALM-BASED DASHBOARD CLEANER AND SHINE
MPOB TT No. 342 - PALM-BASED ENGINE DEGREASER

Solvent-based cleaning products are widely used to remove tough stains. They are formulated into various types of cleaners such as engine degreaser, hand cleaner, tar remover, parts cleaners (circuit board, machinery parts, etc.) and industrial cleaners. Due to environmental concern and regulations, some of the traditional solvents are being replaced with *green* solvents. The world demand for solvents is expected to approach 20 million tonnes in 2007 with increasing growth for *green* solvents. The market for *green* solvents in the US is projected to grow more than 6% annually and constitute 25% of the global solvent value in 2007.

Palm methyl esters have been found suitable as a *green* alternative to petroleum-based solvents. Palm methyl esters, in combination with surfactants, have good cleaning properties. The surfactants remove dirt from a soiled surface while the methyl esters help to dissolve the polar deposits so that they remain suspended in the solution rather than being re-deposited on clean surfaces. The detergencies of these products are better or comparable to commercial samples as shown in Figures 1, 2 and 3. Three car care products were formulated using palm methyl esters and palm-based surfactants - tyre cleaner and shine, dashboard cleaner and shine, and engine degreaser.

TYRE CLEANER AND SHINE

Tyre cleaner and shine were formulated using palm methyl esters and palm-based surfactants. Their performance was found to be either comparable or better than commercial samples for soil removal and provision of gloss. Detergency was measured using the Leenert Improved Detergency Test and gloss using a gloss meter at 60° light incidence. The results are shown in Figure 1 and Table 1.

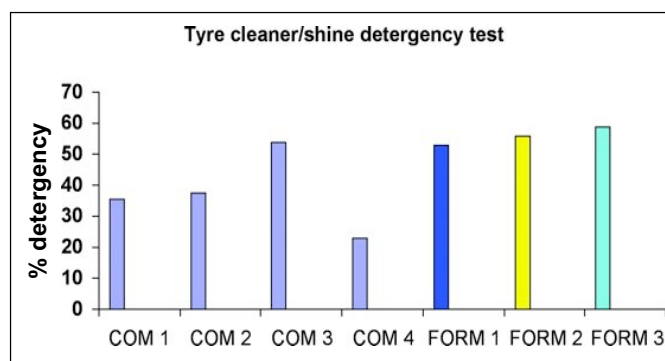


Figure 1. The ability of palm-based tyre cleaner and shine in removing soil. COM 1, COM 2, COM 3 and COM 4 are commercial samples and FORM 1, FORM 2 and FORM 3 formulated samples.

TABLE 1. GLOSS AND GLOSS RETENTION ON TYRE AFTER WASH

Product	Initial reading	After application	% Increase	3x washing	% Reduction
FORM 1	3.9	24.7	84.2	18.3	25.9
FORM 2	4.2	26.4	84.1	19.5	26.1
FORM 3	3.8	21.3	82.1	15.1	29.1
COM 3	3.9	26.6	85.3	19.8	25.6

Note: FORM 1, FORM 2 and FORM 3 are formulated samples and COM 3 a commercial product.



DASHBOARD CLEANER AND SHINE

Again the ability of the product to remove soil and provide gloss was measured using the same methods as above. The results in *Figure 2* and *Table 2* show that palm-based dashboard cleaner and shine were either comparable or better than commercial products.

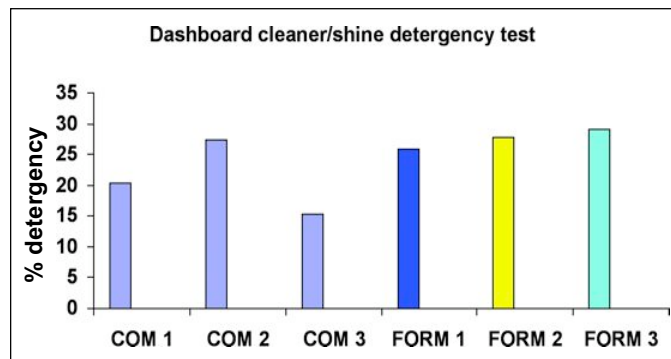


Figure 2. The ability of palm-based dashboard cleaner and shine in removing soil. COM 1, COM 2 and COM 3 are commercial samples and FORM 1, FORM 2 and FORM 3 formulated samples.

TABLE 2. INCREASE IN GLOSS AFTER APPLICATION OF PALM-BASED DASHBOARD CLEANER AND SHINE

Product	Initial reading	After application	% Increase
FORM 1	2.4	3.7	35.1
FORM 2	2.6	4.0	35.0
FORM 3	2.4	3.3	33.3
COM 1	2.6	3.6	27.8
COM 2	2.7	4.2	35.7
COM 3	2.3	3.5	34.3

Note: FORM 1, FORM 2 and FORM 3 are formulated samples and COM 1, COM 2 and COM 3 commercial samples.

ENGINE DEGREASER

The ability of palm-based engine degreaser to remove the oil and grease from the engine is shown in *Figure 3*. The palm-based samples performed as well as the commercial samples. They were also found not to be corrosive to mild steel. *Figure 4* shows a car engine before and after cleaning by a palm-based engine degreaser.

The advantages of these products are:

- not harmful to the environment and user;
- made from biodegradable, natural and renewable resource; and
- less volatile, less flammable and less odour.

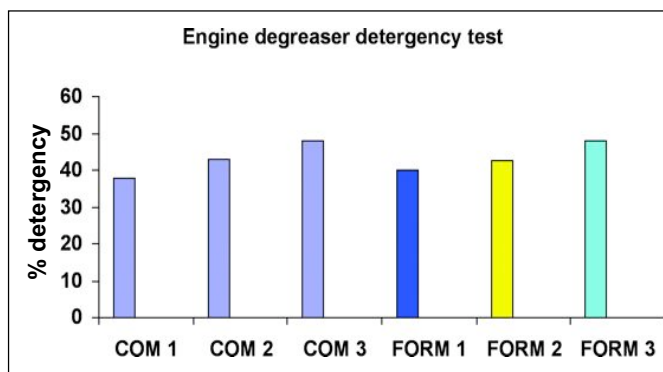


Figure 3. The ability of palm-based engine degreaser in removing soil. COM 1, COM 2 and COM 3 are commercial samples and FORM 1, FORM 2 and FORM 3 formulated samples.

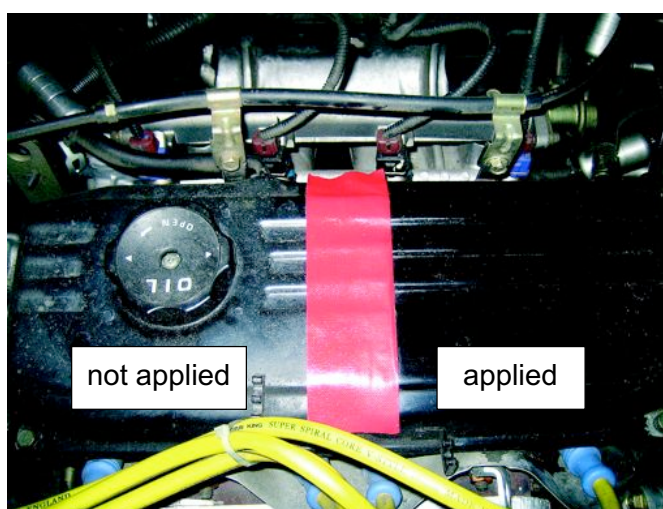


Figure 4. Engine before and after cleaning with palm-based engine degreaser.

COST OF PRODUCT

About 10% cheaper than current products.

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