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Research Paper :

Ecofriendly liquid detergents based on malenised vegetables oils

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ABSTRACT

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Malenized linseed oil suitable for use in liquid detergent has been synthesized. The reaction conditions such as mole ratio, temperature, time of reaction and use of catalyst have been standardized to get a product with desired HLB ratio, viscosity and solubility. A standard liquid detergent mainly based on sodium laurel sulphate, sodium laurels ether sulphate, Acid slurry and Alpha olefin sulphonate has been replaced by neutralized malenized linseed oil by 50 to 100 per cent. A comparison of our maleic based detergents with commercial samples shows that maleic treated oils give excellent foaming, surface tension reduction and detergency properties. The raw material cost of our novel liquid detergents in reasonable and they can be tried on pilot scale and commercial scale production. The special feature of these liquid detergents is freedom from conventional linear alkyl benzene sulphonate and sodium tripoly phosphate so they can be labelled as ecofriendly products for green environment.

KEY WORDS : Liquid detergent, Malenised oil, Physio-chemical properties of liquid detergent.

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Malenised vegetable oils have been used in various industrial products like wall finishes¹, water thinnable paints, electro deposition paints³ water thinnable primers⁴ and printing inks⁵. We have already used malenized oil for production of liquid detergent as well as lotions. Polymeric surfactants are an exciting new addition to the existing product range of surfactants. Polymeric Surfactants when incorporated into detergent they offer following performance features.

- Ca and Mg sequesterization
- Clay soil disperancy
- Calcium carbonate inhibition
- Prevention of soil redeposit ion
- Fabric anti incrustation..

In the present work experimental conditions have been worked out for getting a novel resin based mainly on linseed oil and maleic anhydride. The experimental conditions have been set up to get desired molecular weight, HLB ratio and desired characteristics. Novel catalysts sodium bisulphate and hydrochloric acid have been used in preparation of malenised oil.

The reaction of maleic anhydride when we heat the oil, a part of linolinic acid is converted to 9, 11,13 octadecatrionoic acid by condensation, this conjugated acid reacts with maleic anhydride by Diels Alder reaction. Maleic anhydride reacts with linolinic acid

The other reaction is direct addition of maleic anhydride at active methylene group

All the reaction is expected to give a useful active material for detergents. The high acid value copolymers have been neutralized with KOH to get water soluble composition with high surfactant activity.

EXPERIMENTAL METHODOLOGY Experimental:

The reactor:

The preparation of malenised oil was carried out in a glass reactor. The reactor consists of two parts. Lower part of the reactor is round bottom vessel with very wide mouth. The upper part of the reactor is its lid having four necks with standard joints. A motor driven stirrer was inserted in the reactor through the central neck, while another neck was used for thermometer a condenser was fitted with the reactor through the third neck. The fourth neck was used for dropping the chemicals into the reactor. An electric heating mantle having special arrangement for smooth control of the temperature (+2) has been used. A regulator controlled the speed of the stirrer with help