Detergents eight-0

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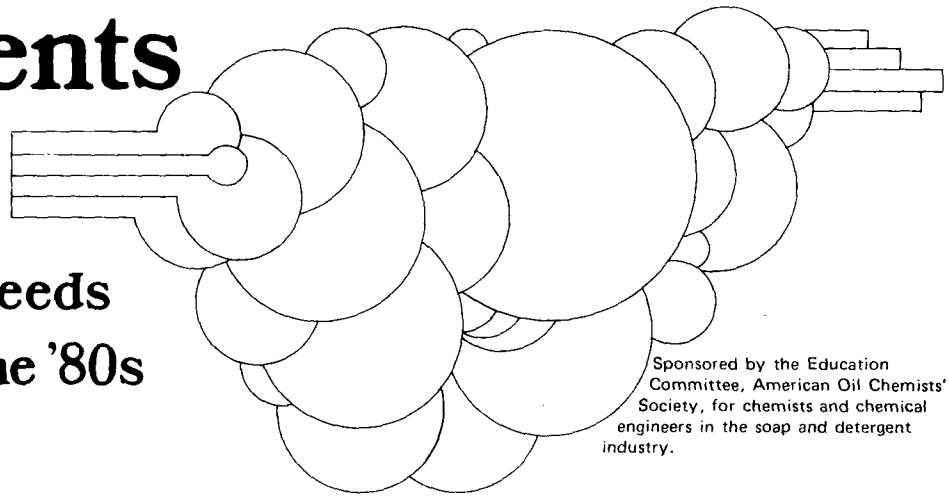

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Current Future Fat-Based Raw Materials for Soap Manufacture

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ABSTRACT

The traditional use of coconut and palm oils for soap manufacture can be expected to continue indefinately. Certain oils of the oleic/linoleic acid group are too unsaturated to yield soaps of the desired degree of hardness and stability. They may be hydrogenated to form suitable hard soap fats; a quantity of these oils is used regularly in the preparation of soft soaps and in blends with harder fats. The chief animal fat used in soapmaking is tallow. Other fats and oils less frequently used include babassu, palm kernel and olive oil. The ratio of tallow/coconut oil used for the manufacture of toilet soaps ranges from 85:15 to 75:25. A correlation of soap properties with the ratio of 95:5 to 75:25 of tallow and coconut oil demonstrates that properties such as cracking, swelling and hardness are not as sensitive to the changes in the blend ratios as are erosion characteristics, slushing and lather. Present production of Russian and Eastern European soap is from huge quantities of straight-chain, odd- and even-numbered, carbon saturated synthetic fatty acids (SFA). Future fat-based raw materials might include certain fractionated fatty acids, methyl ester intermediates, acidulated sunflower and/or safflower soapstocks. Jojoba wax might be a surprising new raw material.

INTRODUCTION

When one considers the "old-fashioned" subject of soap, some get the mistaken impression of an obsolete product which is in the last stage of replacement with a new and improved synthetic detergent. What, then, could possibly be new and exciting in raw materials for soap? The statement, "Soap was made in the past from coconut oil and tallow, or both, is made from them now, and is likely to be made from them in the immediate and near future, albeit in ever decreasing volume," covers in a single sentence about 95% of all that could be legitimately said on the subject. Were that indeed the true situation, the soap future would be bleak. Nothing could be further from the true picture. It is predicted that soap will have somewhat of a renaissance in the next 10 years. Natural fats and oils, the basic soap raw materials, are animal- and vegetable-derived, and, as such, are replenishable, which is the chief long-range advantage for using them. Today, product development has demonstrated that several soap and "lime soap dispersant agent" combinations offer the hope of early circumvention of the environmental disadvantages of phosphate-built synthetic detergents. Some of these better lime soap dispersant agents also are made from natural source materials. In effect, what has almost been accomplished is that the main soap disadvantage—curding in hard water—may be at least partially eliminated. Because soap has always been relatively inexpensive, the possibility now exists that it will reenter some of the areas from which it was previously displaced. Also possible is that process development can achieve significant energy conservation in continuous soap manufacture, and other developments are underway. A "renaissance" is not unlikely.

FATS AND OILS AS SOAP RAW MATERIALS

Fat-based raw materials comprise the primary feedstuff from which the soap part of the finished soap product is produced. This means that the fat or oil itself or the intermediate fatty acids (by splitting and fractional distillation)