Process for Producing Fatty Alcohols from Fatty Acids

The present invention relates to a process for the production of fatty alcohols. More particularly, it relates to a process for the production of detergent fatty alcohols. Still more particularly, it relates to a process for the production and refining of fatty alcohol products obtained by the hydrogenation of esters.

Fatty alcohols, or higher alcohols as they are sometimes designated, are monohydric aliphatic alcohols containing six or more carbon atoms which are derived either from natural sources or are synthesised from petroleum feedstocks. They are often classified by their market usage. As the primary end use of primary alcohols containing between about 6 and about 11 carbon atoms is the production of plasticiser esters, such alcohols are often termed plasticiser alcohols. For higher alcohols containing, for example, from about 11 up to about 20 carbon atoms, the major use is the production of synthetic detergents, hence such alcohols are often termed detergent alcohols. The distinction between plasticiser alcohols and detergent alcohols is somewhat arbitrary and detergent alcohols may have from 10 carbon atoms. In addition, there is some production of phthalate esters from a C_{13} "oxo" alcohol and also some production of, for example, non-ionic surfactants from C_8 to C_{10} alcohols.

Although there are some natural products which contain esters which can be hydrogenated to produce alcohols in the plasticiser range, these are more usually produced synthetically from petroleum feedstocks by, for example, the so-called "oxo" process, a process which is also termed oxonation or hydroformylation. Detergent range alcohols, on the other hand, are typically produced by hydrogenation of low molecular alkyl esters of fatty acids. Such esters can be produced by transesterification of natural triglycerides or by esterification of the fatty acids obtained by hydrolysis of the triglycerides. Examples of triglycerides which can be used as raw materials include natural oils, such as coconut oil, rape seed oil, and palm oils, and animal fats such as lard, tallow, and fish oils. As such natural raw materials contain mixtures of triglycerides, the alcohol products obtained upon hydrogenation are also mixtures of n-alkanols of differing molecular weight. One process for carrying out the esterification is described in US 5536856 the contents of which are incorporated herein by reference. In this process, the esterification of the fatty acid is