mesh Chromosorb P column containing 20% silicone grease.

The chromatogram of the material obtained by desulfonation of a detergent sulfonate was quantitatively identical to that of the parent alkylate. When the procedure was applied to a formulated detergent product containing at least 5% of the sulfonate the chromatogram of the desulfonation product was again quantitatively identical to that of the original alkylate. In addition, the chromatogram contained one or two extra peaks, of low retention times, which did not interfere with the peaks due to the alkylate. These extra peaks were due to decomposition of other components in the formulated product. These results showed that the desulfonation process linearly converted detergent sulfonates to the parent alkylate.

It can be seen (Fig. 1) that in order to obtain a constant composition in the case of a commercial sodium xylene sulfonate solution, the reaction time for hydrotrope samples must be increased to 30 min, a reflection of the greater difficulty encountered in desulfonation of toluene and ethyl benzene isomers. Using the normal reflux procedure (1) for such samples, at least six hours' heating was required to obtain constant composition.

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The Relationship Between Alkyl Furans and the Reversion Flavor of Soybean Oil

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Flavor reversion in soybean oil is the development of a characteristic beany and grassy flavor prior to the inception of rancidity. This off flavor may develop in soybean oil when its peroxide number is still less than one meq/kg. In a recent communication (1) we have reported the identification of 2-pentyl furan in the volatile flavor compounds isolated from a reverted-but-not-rancid soybean oil and that this compound at concentrations of 1–10 ppm imparts to an oil a characteristic beany and grassy odor and flavor reminiscent of those of a reverted soybean oil. Expert organoleptic panels at four different laboratories consistently identified a bland freshly deodorized cottonseed oil containing 5 ppm of 2-pentyl furan as a reverted soybean oil.

We have postulated that the compound, 2-pentyl furan is produced through the autoxidation of linoleic acid (1). Since soybean oil contains approximately 7% of linolenic acid, it was considered possible that 2-ethyl furan produced from linolenic acid might also contribute to the reversion flavor of soybean oil, and perhaps have an even stronger odor and flavor potential than 2-pentyl furan. The compound, 2-ethyl furan, was therefore synthesized (by K & K Laboratories, Inc., Plainview, N. Y.). Its infrared spectrum is shown in Fig. 1. The flavor characteristic of this compound was evaluated in a bland freshly deodorized cottonseed oil.

It was found that 2-ethyl furan had a higher flavor threshold than 2-pentyl furan and that it did not contribute any beany and grassy type of reversion odor and flavor to an oil. Careful examination of the gas chromatograms of the volatile flavor compounds isolated from a reverted-but-not-rancid soybean oil also did not yield any peak which had a retention time corresponding to that of 2-ethyl furan. It was therefore concluded that 2-ethyl furan does not contribute to the reversion flavor of soybean oil although 2-pentyl furan does. Why 2-pentyl furan is formed in soybean oil in quantities sufficient to cause beany and grassy flavor, but not so in cottonseed oil, is now being investigated.

ACKNOWLEDGMENT

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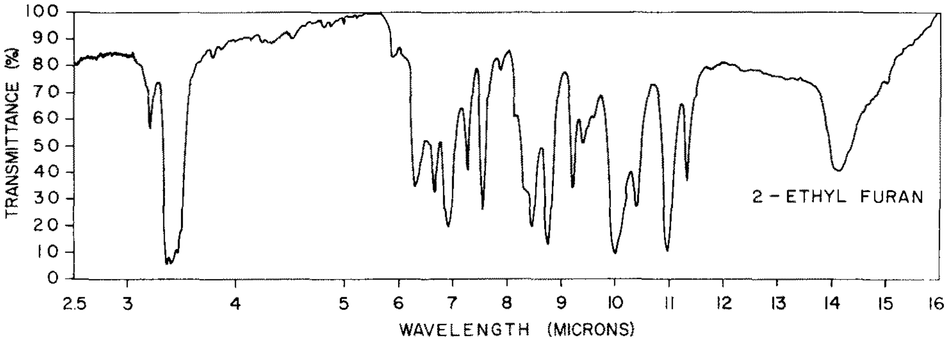

Fig. 1. Infrared spectrum of 2-ethyl furan.