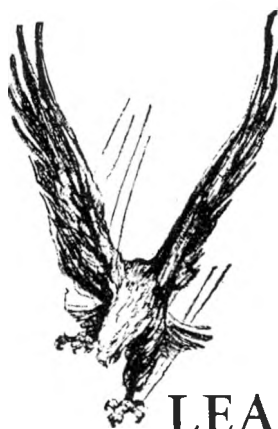


en temperature. The technologist has made use of this characteristic in connection with his work on cellulose nitrate, and doubtless be able to apply much of that information to similar products employing the acetate. However, a warning note is sounded in regard to this practice. It exhibits many of the properties of nitrate, cellulose acetate possesses a group of inactive characteristics which are not due to the treatment accorded cellulose or cellulose benzoate. For example, the nitrate is readily soluble in methyl alcohol, whereas the acetate is quite insoluble in liquid. Any solvent formula, whether for painting, coating, spraying, brushing or dipping, which contains methyl alcohol, may be considered in the case of cellulose nitrate as a formula containing a solvent; where-fore, representatives of this class are, for example, 1, 4 dioxane and tetrahydrofurfuryl alcohol. Cellulose acetate is substituted the methyl alcohol becomes a diluent with respect to cellulose ester.

Liquids which will dissolve cellulose acetate between 36% and 42% acetyl are not only as regards classes of compounds, but also properties as well. Among the very boiling liquids may be mentioned aniline, 84.5° C., and acetophenone, B. P. 198° C., or rather an amine and the later a ketone. Among the esters which are solvents for cellulose acetate may be mentioned methyl formate, methyl salicylate, methyl lactate and glycol acetate. Some of the halogenated hydrocarbons are also solvents, for example, tetraethane, trichlorethane, and hot ethylene oxide. These are, however, all more or less ble and somewhat toxic, both of which make them less desirable than other materials. Cellulose acetate is also soluble in heterocyclic alcohol. Nitrobenzol is also a solvent, representing another class of organic substances, nitro-compounds. Heat is required to bring cellulose acetate into solution in the majority of nitro bodies. Of the alcohols, mention has been made previously. However, cellulose acetate is readily soluble in diacetone alcohol. The ether-alcohols are also solvents, in the case of the mono methyl or ethyl ether of glycol, or trimethylene glycol. The above will suggest the wide variety of the solvents in which cellulose acetate is soluble. But this is only a part of the story, for as in the case of cellulose nitrate, there are mixed solvents for cellulose acetate in which neither component is a solvent. The action of these mixed solvents has offered a most perplexing problem to the scientific worker, not only in the field of cellulose esters, but in other fields of organic chemistry where this same phenomenon has been observed. Again, the technologist found such mixed solvents to be valuable. In the case of cellulose nitrate the example immediately comes to mind is the use of small volumes of ether and alcohol, neither of which will dissolve the ester when used alone. A parallel to the above in the case of cellulose acetate is the use of mixtures of reform and alcohol. Other halogenated hydrocarbons with alcohols also may be used. The acetyl content of cellulose is reduced with the acetone soluble range, say to 30% acetyl, it becomes soluble in a still greater variety of solvents, such as hot 75% aqueous alcohol. However, the products so obtained have not been found useful by the technologist. From the above it is seen that for technical purposes the range of solvents for cellulose acetate is sufficiently broad to permit of great latitude in choice so that the optimum solvent may be found to suit



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the ratio of solvent to solute. This procedure is subject to grave limitations and usually is governed by the requirements imposed by the apparatus in which the solution is to be used or by the character of the coating which it is desired to obtain. The solutions of cellulose acetate for brush lacquers should, of course, be higher in viscosity than those to be used in spraying. It is obviously impractical to attempt to use the spraying solution for brushing both because of the difference in volatility of the solvent mixture and the viscosity of the solution which would produce brush marks. On the other hand, in a spraying lacquer it is not desirable to reduce the viscosity by addition of solvent because of the fact that a thin layer of cellulose acetate would be produced

in the not very distant future, it will take its place among the new coating materials which have become such important factors in the problem of the protection of all manner of surfaces against the forces of nature, or that of the beautification of the home and its furnishings. For some purposes it is believed that cellulose acetate lacquers will be much more suitable than cellulose nitrate. Examples will be given later.

(To be concluded)

NEWS AND COMMENTS

Increased Production of Carbon Black in 1928. The carbon black industry continued to