tested

demonstrations

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The Bakelite Demonstration
A Safer Procedure

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The procedure[1] for forming the phenol-formaldehyde-plastic (Bakelite) previously given for a demonstration leads in too many cases to an explosive frothing which results in the plastic and its accompanying solution being scattered all over the demonstration area, the demonstrator, and the front row students. The suggested apparatus for the demonstration is also cumbersome and time-consuming to assemble. Here we recommend a much simpler and safer procedure.

The solution previously described[1] is used; i.e., 25 g formalin + 20 g phenol + 55 ml glacial acetic acid. However, we have found it most convenient to use 25 ml of the reaction mixture, which is placed in a 150-ml beaker which for ease in viewing is placed on a light box or a white surface. Ten to twelve milliliters of fresh concentrated hydrochloric acid is added slowly with stirring to the reaction mixture. The last 1–2 ml may be added dropwise. As the polymerization point is reached, a white precipitate forms and then dissolves. At the point where the polymerization begins in earnest the white precipitate does not dissolve. As the solution is continually stirred with a glass rod, the plastic becomes pink and clings to the rod. The solution becomes warm(hot) and some fumes are evolved. In our large lecture hall we have not found these fumes bothersome. The pink plastic now clinging to the rod can be shown to the class. The polymerization has proceeded smoothly and there has been no resulting mess to clean up as the previous procedure all too frequently caused.

[1] Alyea, H. N., and Dutton, F. B., "Tested Demonstrations in Chemistry," 6th Ed., J. of Chemical Education, Easton, Pennsylvania, **1965,** p. 48.