

TABLE I  
SOLUBILITY OF GEON 101 ( $\bar{P} \approx 1400$ ) IN  
THREE ANILINES AT 15°C

Solvent	Solubility (g./100 ml.)
Aniline	0.00
Dimethylaniline	2.25
Diethylaniline	0.68

**Viscosity.**—The viscosity of PVC in the N-alkylaniline and in nitrobenzene was measured by the Ostwald viscometer at 30°C. The results are shown in Fig. 1.

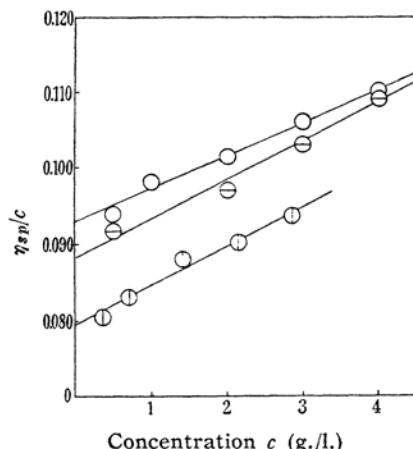


Fig. 1. Viscosity of polyvinyl chloride in three solvents:  $\bigcirc$ , in nitrobenzene;  $\bigcirc$  with  $\text{—}$ , in dimethylaniline;  $\bigcirc$  with  $\text{⋮}$ , in diethylaniline.

### *N-Dialkylaniline as a Solvent of Polyvinyl Chloride*

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It has been found that polyvinyl chloride (PVC) is soluble in N-dialkylaniline, but is practically insoluble in unsubstituted aniline. In this paper, some properties of the dialkylaniline solution of PVC are reported.

**Materials.**—Geon 101 ( $\bar{P} \approx 1400$ ) was washed with methanol and hot water and dried at 60°C in an air oven for twenty hours. N-Dimethylaniline was treated with acetic anhydride, distilled at reduced pressure; the distillate was washed with water, dried on anhydrous sodium sulfate and was distilled under nitrogen at reduced pressure. N-Diethylaniline was purified in a similar way. C.P. aniline and nitrobenzene were purified by distillation.

**Solubility.**—A mixture of PVC and 50 ml. of the aniline was heated at 95°C in a steam bath under a reflux condenser for four hours. The solution was filtered by sintered glass at 15°C. To 10 ml. of the filtrate, methanol (about 100 ml.) was added and powdery precipitates separated from the solution were collected, washed with methanol, dried at 60°C, and were weighed. The results are shown in Table I.

From the table and the figure, it is seen that dimethylaniline is a better solvent for PVC than the other two anilines are. The property of the N-dimethyl derivative may be noted in connection with that of dimethylformamide as a unique solvent for polyacrylonitrile. The lack in the dissolving power in unsubstituted aniline seems to be partly interpreted in terms of the hydrogen bonding between aniline molecules themselves.

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