23. Studies on the Condensation of Chloromethyl-compound of Acidamide by Copper Powder into Diacyl-Ethylene-Diamine

Kazuhiro Teramura, Tsuneji Niwa and *Ryohei Oda*

(Oda Laboratory)

The chloride atom of chloromethyl-compound of acidamide obtained by the action of paraformaldehyde and hydrochloric acid upon acidamide, is very reactive, but a few examples are known about the reactions.

The reactions between chloromethyl-compound and pyridine (U.S.P. 2,327,160), thiourea (U.S.P. 2,051,947) and 3-methyl-oxazolidine (U.S.P. 2,352,152) are reported and these reaction products are used as wash-fast, water-repellents and softners for textiles.

In the previous report (this Buil. **26**, 88 (1951)), the condensation of chloroalkylethers to ethyleneglycol-diethers by the action of copper powder has been described.

It has been found that the condensation by copper powder instead of metallic sodium also occurs in the case of chloromethyl-compound of acidamide, which is converted to diacyl-ethylenediamines.

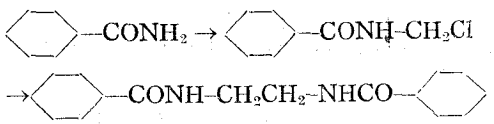
The results are summarised in the following table.

(1) Diacetyl-ethylenediamine Yield (%)

$CH_3CONH_2 \rightarrow CH_3CONH{-}CH_2Cl$ 60% (in gracial acetic acid)

$\rightarrow CH_3CONH{-}CH_2CH_2{-}NHCOCH_3$ 39% (15hrs. in boiling benzene)

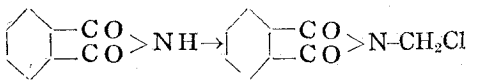
(2) Dibenzoyl-ethylenediamine



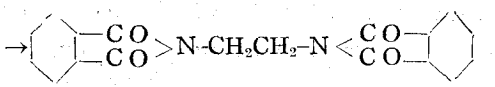
62% (in glacial acetic acid)

40% (15hrs. in boiling benzene)

(3) Diphthalyl-ethylenediamine



70% (in formaline solution)



43% (20hrs. in boiling benzene)