REACTION OF POTASSIUM WITH 1-METHYLBENZIMIDAZOLE

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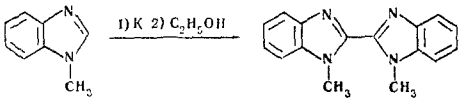
It has been found that the action of potassium on a benzene solution of 1-methylbenzimidazole (I) at room temperature gives a compound mp 210.5°–211°. Analytical results, molecular weight, and the IR spectrum led to the conclusion that it is 1,1'-dimethyl-2,2'-dibenzimidazolyl (II), previously obtained from 1-methylbenzimidazole and BuLi [1].



I II

It is noteworthy that 1-ethyl-5-bromobenzimidazole does not react with potassium even at elevated temperature. After prolonged boiling in toluene, III is almost completely recovered. The mechanism of the reaction is being investigated.

1,1'-Dimethyl-2,2'-dibenzimidazolyl (II). 4 g K powder in benzene was activated with iso-AmOH, and 4.2 g I in 15 ml benzene added under nitrogen. After 2 hr the unreacted K was removed with EtOH, and the base extracted with 10% HCl. The HCl extracts gave 0.6 g II. Found: C 73.11; 73.48; H 5.35; 5.61; N 21.71; 21.59%; M 254 (Rast), calculated for $C_{16}H_{14}N_4$: C 73.26; H 5.38; N 21.36%; M 262.3. IR spectrum, cm^{-1}: 1612, 1584, 1480 (aromatic C=C and C=N); 1008, 964 (benzene ring of benzimidazole [2]); 744 (four adjacent aromatic H atoms).

REFERENCES

1. P. W. Alley and D. A. Shirley, J. Org. Chem., 23, 1791, 1958.

2. K. J. Morgan, J. Chem. Soc., 2343, 1961.

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