

PALLADIUM CHLORIDE CATALYZED DECOMPOSITION OF VINYL ACETATE IN ACETIC ACID

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Moiseev et al.¹ have described the reaction of ethylene and palladium (II) chloride in acetic acid containing sodium acetate to form vinyl acetate. While investigating this preparation in our laboratory, we encountered the formation of considerable amounts of acetaldehyde by-product along with the desired ester. Since anhydrous conditions were employed, the acetaldehyde could not have resulted from an ethylene-palladium chloride-water type reaction. A study of the nature of this side reaction was therefore undertaken, and we have now determined that palladium (II) chloride catalyzes the cleavage of vinyl acetate to acetaldehyde and acetic anhydride in an acetic acid-sodium acetate medium. Mention of the palladium chloride catalyzed hydrolysis of vinyl acetate has been made by Smidt².

When a mixture of vinyl acetate (0.10 mole), palladium chloride (0.005 mole), and sodium acetate (0.10 mole) in 60 ml. of glacial acetic acid was stirred for 1 day at 45-50°, fifty-five percent (0.055 mole) of the vinyl acetate was converted to acetaldehyde (0.048 mole identified by gas-liquid chromatography and by its 2,4-dinitrophenylhydrazine derivative) and acetic anhydride (0.05 mole identified by gas-liquid chromatography). No additional organic products were evidenced. Appropriate blank experiments were

1. I. I. Moiseev, M. N. Vargaftik, and Ya. K. Syrkin, Doklady Akad. Nauk. S. S. S. R. 133, 377 (1960).
2. J. Smidt, et al., Angew. Chem. 71, 176 (1959).

