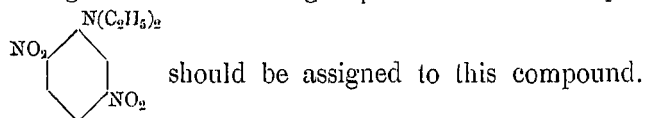


*Citation:*

A.P.N. Franchimont, On sodium-alkyl carbonates, in:  
KNAW, Proceedings, 12, 1909-1910, Amsterdam, 1910, pp. 303-304

in regard to the amino-group the *ortho*- or *meta*-position, the structure:



The structure of both these compounds is therefore quite in agreement with those of the nitro-products which I obtained previously from dimethylaniline.

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**Chemistry.** — “*On sodium alkyl carbonates.*” By Prof. A. P. N. FRANCHIMONT.

(Communicated in the meeting of September 25, 1909).

- Of alkyl carbonates but very little is known. After DUMAS and PÉLIGOT had prepared in 1840 barium-methyl carbonate and potassium-ethyl carbonate, and noticed their property of being decomposed by water into alcohol and a hydrocarbonate, BELSTEIN gave in 1859 a good method for the preparation of sodium-ethyl carbonate. He passed dry carbon dioxide through a solution of sodium ethoxide in absolute alcohol. The sodium salt was obtained in 1868 by GEUTHER from diethyl carbonate and sodium ethoxide, the potassium salt by HABERMANN in 1886 in the electrolysis of anhydrous potassium acetate in absolute alcohol, the barium salt by DESTREM in 1882 by passing dry carbon dioxide into a solution of barium ethoxide in absolute alcohol. Attention was always called to the decomposition of these salts by water. This property is generally believed to be common to all the alkyl carbonates.

Sodium-phenyl carbonate is also decomposed by water into phenol and sodium hydrogen carbonate. Of this, however, it is also known, that it evolves carbon dioxide on warming, and this is not mentioned of the alkyl carbonates. Although, as a rule phenol and primary aliphatic alcohols have but little in common, I thought it would be advisable to make a comparative study of the alkyl carbonates and sodium-phenyl carbonate, particularly since Dr. MOILL VAN CHARANTE had found that the latter salt is decomposed at the ordinary temperature by dry acetone, with evolution of carbon dioxide and formation of phenol.

I, therefore, prepared sodium ethyl carbonate by BELSTEIN'S method, and observed that it is decomposed by water into sodium hydrogen carbonate and alcohol. It is, however, not decomposed by acetone nor when heated to about 180°.

Sodium phenyl carbonate is now prepared by the dry process, namely, by passing dry carbon dioxide over dry sodium phenate, whereas ethyl carbonate is prepared by the moist process. Dr. MOLL VAN CHARANTE having made unsuccessful experiments to prepare sodium phenyl carbonate by the moist process, I tried to prepare sodium ethyl carbonate by the dry method, in order to avoid the objection that the difference in properties between sodium phenyl carbonate and sodium ethyl carbonate might be due to the different method of preparation.

I succeeded in finding the conditions in which dry, alcohol-free sodium ethoxide gives with dry carbon dioxide a *product* which agrees in composition and properties with that prepared according to BEILSTEIN's method.

It did not yield carbon dioxide on heating, or on treatment with acetone, but was decomposed by water into alcohol and acid carbonate.

The different behaviour of sodium phenyl- and sodium ethyl-carbonate is, therefore, not due to the different manner of formation, but to the difference between alkyl and phenyl, or to a difference in the action of carbon dioxide on sodium phenyl- and ethyl-carbonate. These experiments, which I had made three years ago, have been recently repeated and extended at my instigation by Dr. DUBSKÝ who prepared also in both ways sodium methyl carbonate which hitherto had never been made.

Not only were all my results with sodium ethyl carbonate confirmed, but it was also shown that sodium methyl carbonate behaves entirely like its homologue towards water, acetone and heat. As, however, it was shown during the research that the acetone should be dried by shaking with phosphorus pentoxide and subsequent distillation, which was not done in MOLL VAN CHARANTE's experiments, we have repeated with his co-operation the experiment with sodium phenyl carbonate and acetone, and although we dare not pretend with absolute certainty that sodium phenyl carbonate is not affected by dry acetone, a powerful decomposition with evolution of carbon dioxide, as noticed by him, was not observed by us.

In the case of sodium methyl- and ethyl carbonate the *product*, after having been treated with acetone, was analysed and investigated and showed no difference from the original.