

cipitate purified in the usual manner. There was obtained an essentially quantitative yield of benzanilide, m. p. 160.5–162.0°. This was identified and distinguished from the azine and other possible products by mixture melting point experiments and hydrolysis to benzoic acid and aniline.

Extensions of an obvious nature are being carried out on the rearrangement of other hydrazones and of other hydrazine derivatives under these conditions.

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RECEIVED MARCH 31, 1949

#### THE DIELECTRIC CONSTANT OF WATER AT VERY HIGH TEMPERATURES

Sir:

A property of liquid water that is very important in modern solution theories is its dielectric constant. Since no data are available for temperatures above 100° we have made a number of measurements of the value of this constant at temperatures up to 375°. An all-platinum cell enclosed in a stainless steel bomb was used with a high frequency resonance measuring circuit for the range 70–250 megacycles. The temperature was determined with thermocouples calibrated against a platinum resistance thermometer. In Fig. 1

The full drawn curve represents our experimental values at temperatures up to 325°. The two curves practically coincide up to temperatures of about 250°.

We wish to express also in this place our sincere appreciation for the aid given us by Mr. Fred Denig, Vice President of the Koppers Company.

KOPPERS COMPANY, INC.  
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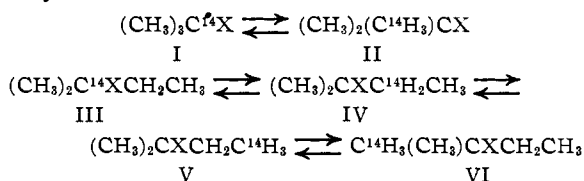
H. I. OSHRY  
G. C. AKERLOF

RECEIVED MARCH 7, 1949

#### REARRANGEMENT OF CARBON ATOMS IN ALKYL DERIVATIVES

Sir:

Carbon-14 has been used as a tracer to detect rearrangements of carbon atoms in *t*-butyl and *t*-amyl derivatives.



Rearrangement of 2-methyl-2-chlorobutane-2- $\text{C}^{14}$  (III, X = Cl) proceeded under the influence of aluminum chloride. Using conditions where

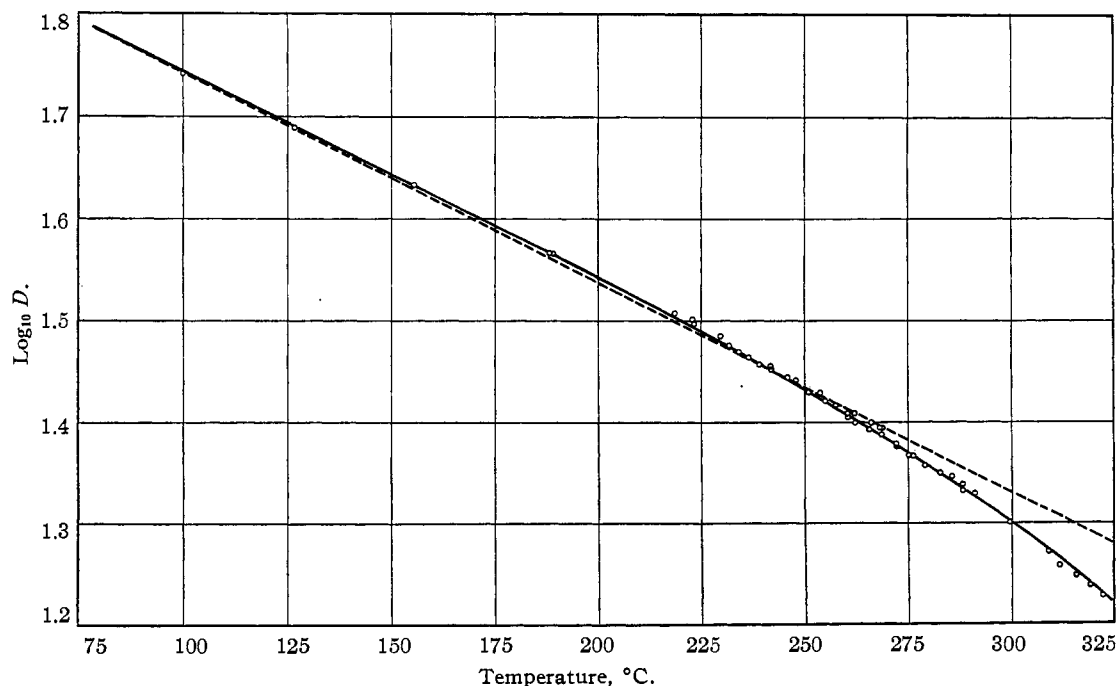


Fig. 1.

the dotted line represents values of the dielectric constant predicted from the equation of Akerlof (THIS JOURNAL, 54, 4125 (1932))

$$\log D = 1.9461 - 0.00205t$$

59% of the chloride was recovered the composition of the product was 64% of III (X = Cl), 35% of IV (X = Cl) and about 1% of V (X = Cl). Less than 0.1% of VI (X = Cl) was detected.