ABSTRACTS

Pilot Plant Test for the Continuous Preparation of Polyethylene

Shinjro KODAMA, Isoji TANIGUCHI, Sachio YUASA, Tadahisa ŌTA
and Yutaka TERADA

(Kodama Laboratory)

Polyethylene was preparared in a pilot plant (10 kg. polyethylene per day) continuously polymerizing ethylene with 0.0020–0.050 % oxygen at the pressure of 1000–1350 atm. and the temperature of 150–230°C.

Hanggins' constants (k') of the polyethylenes obtained were determined and correlated to the conditions of preparation.

The results showed that the increase in the oxygen content in ethylene and the rise of temperature as well as pressure increased the degree of branching of the obtained polyethylene.
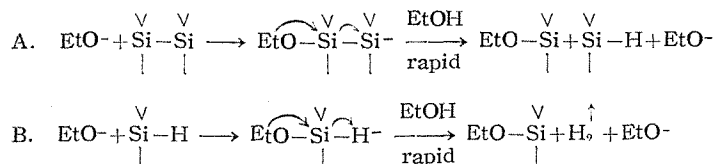
(Read at the semi-annual meeting of the Institute on June 12, 1954)

On the Decomposition Rate of Si–Si Bond in Disilane by $NaOC_2H_5$

Makoto KUMADA, Akira TAKEDA and Kimio TARAMA

(Kodama Laboratory)

The rates of cleavage of some methylethoxydisilanes by $NaOC_2H_5$ in ethylalcohol were measured and the following reaction mechanism was proposed, in which process A is the rate determining step.

$$A. \quad EtO- + \overset{\vee}{Si} - \overset{\vee}{Si} - \longrightarrow EtO - \overset{\vee}{Si} - \overset{\vee}{Si} - \xrightarrow[\text{rapid}]{EtOH} EtO - \overset{\vee}{Si} + \overset{\vee}{Si} - H + EtO-$$

$$B. \quad EtO- + \overset{\vee}{Si} - H \longrightarrow EtO - \overset{\vee}{Si} - H - \xrightarrow[\text{rapid}]{EtOH} EtO - \overset{\vee}{Si} + H_2 + EtO-$$

The reaction rates were followed by volumetrical measurments of hydrogen evolved at suitable time intervals.

The physical constants and analytical data of the disilanes used and kinetical data, that is, the second order rate constants (first order with respect to disilane and also to NaOEt), the activation energies E and the frequency factors A, are lumped in the next Table.

(218)