

15. Studies on Silicone Resins. (X) On the Dielectric Properties. (2)

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The studies on the dielectric properties of the silicone resins were reported in this Bulletin (No. 25 (1951)).

The relation between compositions and dielectric properties of the silicone resins have been studied. The methyl-ethyl silicone resins were accordingly prepared which are so synthesized to have the organic radical per Si atom i.e. the ratio R/Si are respectively 1.2, 1.4 and 1.6.

The temperature characteristics of dielectric properties of these resins have been measured as a parameter of frequency.

We found that the logarithm of the measured frequency and the reciprocal of absolute temperature at which the loss angle was max. were generally in linear relation.

From these relations a number of measured curves of the dielectric properties are expressed as so many straight lines, and the inclination of these lines indicate the degrees of heat of activation and entropy in the dielectric relaxation process. Thus we can study the dielectric phenomena of the resin graphically.

As the results of our studies, the greater the ratio " R/Si ", the lower becomes the temperature at which the loss angle is maximum. The ranges of temperatures corresponding to max. loss angle for each resin are shown in the following table.

R/Si	1.2	1.4	1.6
Temp.	95—75°C	60—30°C	25—15°C

The limits of these temperature ranges, however, are not so strict, and as the resins dry, the peaks of the curves of dielectric loss angle move to higher temperatures, within the ranges.

These phenomena can be qualitatively explained.