For the purpose of manufacturing glass insulating electrical machines, we are studying the silicone resin immersed glass cloth. We also invented a semi-transparent thin plate (silicone paper) like mica, which was produced by the following method. Short glass fibers are immersed in the silicone resin varnish, and are rolled by roller, and then are heated.

The properties of the samples of glass cloth and silicone paper were measured respectively.

The relation between the insulating resistance and temperature is located between the characteristics of glass and resin. These properties of the glass of which sizing is eliminated by boiling, are better than those of which sizing is eliminated by heating.

We immersed the sample in water and measured the decrease of insulating resistance. Within 20 hours the resistance was unmeasurable high value by our apparatus, and after about 40 hours it became 1.5×10^{13} ohm-cm, and then it decrease rapidly.

The relation between the dielectric strength and temperature was measured. Our invented silicone paper showed 6 KV/0.29 mm at 240°C.

The electrical and mechanical properties of our sample are shown in the following table. The right end is the laminated plate produced by G. E. Co.

Silicone Varnish	R/Si 1.5	R/Si 1.4	R/Si 1.4	G. E. Co. No. 11523
Base Material	Short Glass Fiber	Short Glass Fiber	Glass Cloth	Glass Fiber Laminated. Plate
Thickness (mm)	0.24	0.30	0.50	3.0
Tensile Strength Kg/cm²	160	—	300	800
Insulation Resistance Ω-cm	1×10^{12} (at 150°C)	—	6.2×10^{12} (at 150°C)	2×10^{11}
Dielectric Strength V/0.01mm	212	169	50	120
Dielectric Constant (1 MC)	2.03	2.81	2.46	2.88
Power Factor (1 MC)	0.0012	0.0065	0.0114	0.0015

59. Aging Phenomenon in Poval Filaments.

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A dural change of mechanical properties in poval filaments,* obtained by semimolten-spinning were computed. The preserving condition of materials were as follows,

(1) Sealed in tubes at various temperatures. (15°C, 30°C, etc.)

(2) Opened to air at ordinary temperature. (30°C)

(3) Opened to air at elevated temperature. (100°C~200°C)

Independent of the water-content of filaments, the load-elongation curves were found to change with the time elapsed. For instance in case of the swollen filaments preserved in the sealed tubes the more the time elapsed, the higher their strength became and these tendencies were remarkably controlled by preserved tempera tures (cf. table 1 and 2). By comparing these data with those of air dried and heat treated filaments, we have deduced that aging phenmena like cellulose materials might have occured in poval filaments.

Then the activating energy due to this aging was discussed from the change of Young's modulus and we have gained an activating energy as about 10 kcal/mol.

Table I. Sealed tube.

Water-contents 40%. Temp. 15°C—30°C. Strength, g/mm².

Date	E. / T.	1.65	5	10	16.6	25	33.3	66.6	133	200
0	—	22.1	47.0	76.7	115	142	178	262	372	523
2 day	15°C	17.2	49.1	83.5	131	172	210	294	344	560
	30°C	29.4	76.3	129	188	240	273	384	514	690
5 day	15°C	22.2	58.0	106	156		228	292	393	575
	30°C	48.1	93.4	132	207	260	340	426	553	694
14 day	15°C									
	30°C	66.8	122	181	243	—	332	403	523	685
21 day	15°C	32.8	73.5	119	172	—	250	327	420	577
31 day	15°C	38.8	77.1	133	184	—	269	371	469	628

Table II. Oppen air.

Ord. Temp. Strength. g/mm².

Date	E. / W.	1.65	5	10	16.6	33.3	66.6
1 hr.	31.7	44.7	89.5	129	1197	293	416
4 hr.	19.7	143	251	406	486	717	830
1 day	12.2	305	649	846	1170	1510	1695
2 day	13.5	260	590	690	1120	1393	1500
6 day	9.3	428	900	1340	1690	1940	2150
14 day	14.0	485	1080	1480	1740	1940	2030
200 day	105	660	1180	1390			

E; elongation
T; temperature.
W; water-contents.

Literature.

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