8. Studies on Copolymers of Vinyl Chloride and Vinyl Acetate with an X-Ray Counter

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(Sakurada Laboratory)

Copolymers of vinylchloride and vinyl acetate have been prepared and fractionated in this laboratory and several fractions of different compositions have been investigated with an X-ray counter spectrometer mentioned in the above report.

It has been found that the change of spacings takes place with the change of copolymer composition. The results are given below.

Content of V. C. in polymer. mol %	Specing (A°) Inner halo	Outer halo
100	5.21	3.56
96.7	5.21	3.56
61.9	5.37	3.70
41.3	5.53	3.86
22.4	5.53	3.86
0	6.80	3.95

9. On the Bulk Volume of Some Clay-Air-Water System

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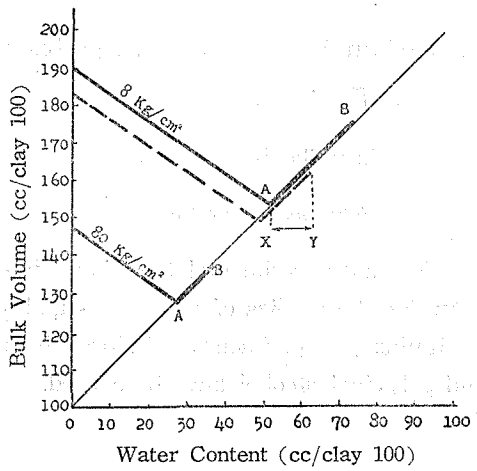
The relation between the molding pressure and bulk volume of the clay-air-water system in some clay bodies was studied.

The typical pictures of the bulk volume at the different molding pressures, i.e., 8 and 80 kg./cm². are given in the following figure.



From an inspection of these curves it is found that: (1) The bulk volume of the mass decreases with an increase in the water content to the point A, then it increases agajn from A to the saturation-point B. (2) Under the condition of high molding pressure both the points A and B come to the lower water contents. (3) When the difference between two molding pressures is small, the ranges from A to B overlap at the region X-Y as shown in the figure.

In this region X-Y each body has the same water content and the same bulk volume, but the different packing of the particles. This fact could be explained from the strain-stress diagram for the bodies obtained by a torsion plastimeter. The body treated at a higher molding pressure was found to have high yield values and large maximum strain values.

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10. Traube's Rule for Organic Solutions of Lower Aliphatic Alcohols. (II)

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(Goto Laboratory)

The influence of lower aliphatic normal alcohols in homologous series ($C_1 \sim C_5$) on the surface tension of such organic solvent as ethylene glycol or nitrobenzene was studied by the authors and the results obtained were reported in this Bulletin Vol. **31**, 134 (1953). The influence of the alcohols above mentioned, on the surface tension of another organic solvents such as aniline, dioxan or glycerin was studied by them, and the results obtained were given in this report. The relation between the surface tension depression of the solution (F) and the mole fraction of the solute in the bulk phase (C) can be expressed by the equation,

$$F = nkT \log\left(\frac{c}{a} + 1\right)$$

where k is Boltzmann's constant, T is absolute temperature, n is a surface chemical

Table 1. Values of n and α for several alcohols.

	n			α		
	A	D	G	A	D	G
Methyl alcohol	$4.89 \cdot 10^{14}$	$3.73 \cdot 10^{14}$	$5.26 \cdot 10^{14}$	$631.9 \cdot 10^{-3}$	$924.1 \cdot 10^{-3}$	$221.5 \cdot 10^{-3}$
Ethyl 〃	3.73 〃	2.82 〃	4.01 〃	423.4 〃	631.5 〃	49.8 〃
n-Propyl 〃	2.82 〃	2.41 〃	3.40 〃	176.7 〃	440.5 〃	21.1 〃
n-Butyl 〃	2.29 〃	2.17 〃	2.54 〃	124.4 〃	378.5 〃	12.1 〃
n-Amyl 〃	1.92 〃	1.69 〃	2.21 〃	102.5 〃	232.4 〃	5.3 〃

A, D and G denote the cases where the solvents are aniline, dioxan and glycerin respectively.