

ABSTRACTS

in water at 30°C for the removal of water soluble parts of films. The extracted films were then air-dried and subjected to heat treatment at 40, 80, 120, 160 and 200°C for 10 minutes. Original films were also similarly treated. The swelling, solubility and density of the two series of films were compared. In the case of heat treatment at lower temperature, there was a distinct difference between the two series. Extracted films showed lower swelling and higher density and crystallinity. Similar experiments were also carried out with an unfractionated polyvinyl alcohol of DP 1550 to obtain similar results.

Studies on the Swelling of Polyvinyl Alcohol. (VI)

Swelling of Films Prepared from Water-Soluble and Insoluble Parts of Polyvinyl Alcohol Films

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A fractionated polyvinyl alcohol of DP 720 was used as a starting material and separated into water-soluble and insoluble parts by the method given in the previous report. DP's of the water-soluble and insoluble parts were 540 and 770, respectively. Films were prepared from these two kinds of polyvinyl alcohol and subjected to heat treatment to compare the swelling, solubility and crystallinity of them. In the case of heat treatment at lower temperature, there was a distinct difference between the two. Films from water-soluble part showed higher swelling and lower density and crystallinity. It was attributed not to the difference of molecular structure but to the difference of molecular weight.

Studies on the Swelling of Polyvinyl Alcohol. (VII)

Influence of the Residual Acetyl Groups on the Swelling of Polyvinyl Alcohol Films

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Films were prepared from the following two kinds of polyvinyl alcohol and subjected to the heat treatment to see the influence of residual acetyl groups on the swelling of polyvinyl alcohol films: 1. Fractionated and unfractionated polyvinyl alcohols (DP 235-3630) with some residual acetyl groups (0.05-5.95 mol %), 2. Polyvinyl alcohol with no residual acetyl groups, obtained by the resaponification of 1. When the temperature of the heat treatment of films is low, the residual acetyl group, even when its concentration is very low (0.2-0.3