

62. Studies on the Reactivity of Dissolving Pulp.

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Dissolving wood pulps for viscose and cellulose acetate must have an excellent reactivity to each reaction involved in both processes and should give completely dissolved viscose and cellulose acetate dope. It is well known that the reactivity so important in practice is not always simply correlated with the chemical purity of the pulp.

In order to clarify the elements upon which the reactivity of the pulp depends and to find the effective methods to increase the reactivity, we examined first of all the influence of cooking in the sulfite pulp process upon the reactivity of the pulp obtained.

The pulp samples for xanthation and acetylation were prepared using two different kinds of raw pulps. One of them consists of a series of unbleached sulfite pulps from red pine, whose lignin content ranges from 1.40 to 3.20%. These pulps were cooked on the commercial scale and submitted to us by a mill. The other samples are composed of a series of sulfite pulps prepared by us by cooking spruce on the laboratory scale and the lignin contents range from 1.09 to 8.84%. All these pulps were subjected uniformly to the three stage refining process and employed for experiments. The pulps appropriated for acetylation were further refined with 10% caustic soda solution. The purity of pulps was determined by the chemical analysis, and the reactivity by the amount of unreacted and undissolved fibers existing in the viscose and cellulose acetate dope.

The reactivity of the sulfite pulp for xanthation was evidently influenced by cooking and it was shown that there existed an optimum condition of cooking.

The solubility of the cellulose acetate in acetone and the clarity of its dope were significantly correlated with the pentosan content in the original pulp samples. An excellent solubility and clarity standing on the same level with those of cellulose acetate prepared from cotton linter were attained only with the pulps having a very small pentosan content, say 1% or less. The conditions of cooking have an immortal effect upon the quality of pulps, and the pentosan content cannot be lessened below a certain limit by any refining, unless due attentions are to the cooking.