

The influence of amphiphilic substances and enzymes on resin components of wood pulp

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Abstract

Pitch troubles is a severe problem of many pulp and paper mills. They are manifested in appearing of rosin spots and deposition on equipment in the production of various types of paper. In spite of existing deresination organisational arrangements the most economical, radical and technologically simple method of pitch combating is the introduction of surfactants. Research data of the nonionic surfactants, commercial lipase enzymes and their synergistic mixtures influence on the total pitch content are presented in this paper. The optimal deresination compositions were selected, their colloidal chemical characteristics investigated and results of deresination action given. It is found that among investigated nonionic surfactants sintanol DS-10 has the superior surface activity compared to sintamid-5. The following synergistic mixtures of nonionic surfactants and enzymes were selected with using of surface tension data of investigated samples for wood pulp treatment: mixture of nonionic surfactants + Optimize Plus745 (70:30) and mixture of nonionic surfactants + Buzyme 2567 (80:20). Impact of deresination additives primarily depends on type of wood source, method of its treatment and least of all depends on process conditions. As expected sintanol DS-10 possesses the best deresination action because of its superior surface activity as well as the mixture of nonionic surfactants. It is found that commercial enzyme have a better deresination action on softwood sulphate pulp compared to hardwood sulphate pulp. The best deresination is achieved when composition for newsprint treated with lipase enzyme. In the case of spruce CPMP there is no apparent deresination by enzymes because of the samples have a small amount of fats and they are taken after bleaching. Joint usage of amphiphilic substances and enzymes allows increasing its deresination ability owing to good emulsifying and stabilizing ability of surfactants as well as enzymatic hydrolysis.