



BY-PRODUCTS FROM TALL OIL CAN MAKE MONEY

Tall Oil and Tall Oil Soap Recovery

INFO

Richard Berry

FPInnovations

Pointe-Claire, QC, Canada

T 514 630-4131

richard.berry@fpinnovations.ca



Recovery boiler capacity increases by 2-8% with effective soap recovery

Tall oil is a major by-product of the kraft pulping of softwoods, particularly pine. FPInnovations' studies have quantified the impact of tall oil soap on the kraft chemical recovery system. FPInnovations researchers have also developed knowledge and technology to aid in the effective recovery and acidulation of tall oil soap and to maximize tall oil quality. They have also worked on novel products from tall oil and on the recovery and use of high value components of tall oil, such as sterols.

FPInnovations' studies have shown that effective soap recovery can increase kraft chemical recovery capacity by 2 to 8%. Pilot plant and full-scale mill trials indicate that tall oil soap accelerates evaporator scaling. In addition, as the heating value of soap is about twice that for black liquor solids, its presence in fired liquor will reduce the capacity of a recovery boiler that is limited either by plugging or steam generating capacity. Slugs of soap could further reduce recovery furnace capacity by causing firing problems (gun plugging, poor liquor combustibility, blackouts), high char bed temperatures, and increased carryover and fouling, resulting in increased furnace downtime.

FPInnovations researchers have determined the variables affecting tall oil soap solubility in black liquor and means to minimize soap solubility. They have evaluated different methods to increase tall oil soap skimming efficiencies, and developed low cost methods to improve and optimize tall oil soap recovery, such as air injection.

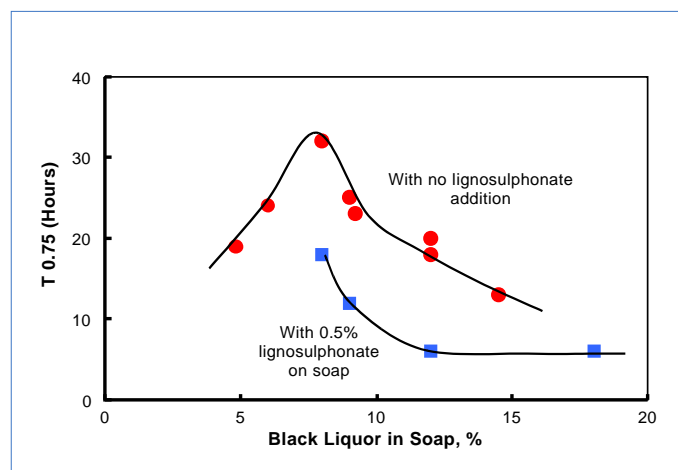
FPInnovations researchers have investigated the effect of operating variables on crude tall oil (CTO) acidulation efficiency (CTO separation rates and recovery efficiency) and developed low cost additives that can dramatically increase tall oil plant throughput and efficiency. Lignosulphonates, a family of separation aids discovered to be effective by FPInnovations researchers, were used to produce over 70% of Canadian CTO. Means to effectively use waste acids and sesqui-sulphate from chlorine dioxide generation have also been developed to help mills solve sulphur balance problems related to the use of purchased sulphuric acid in the tall oil plant.

Collaborative studies and low cost soap skimmer modifications at a number of our mills have resulted in increases of 30 - 100% in soap skimming efficiency.

Optimization of acidulation conditions and the use of separation aids have similarly increased CTO plant throughput by 60 - 100% at several mills.

FPInnovations' research helped us avoid a \$1 million capital expenditure. Application of their findings helped area kraft mills to dramatically increase soap recovery and allowed us to double the CTO plant throughput. An excellent professional relationship has also provided us the opportunity for periodic evaluation of our process and research ideas."

*Hugh Norman, President,
B.C. Chemicals,
Prince George, BC*



Effect of lignosulphonate addition on the separation time required to recover 75% of the ultimate tall oil yield, T 0.75 - Pilot plant test results.