

A New Way To Bleach Pulp

POM Chemistry Is a Cleaner Process

The Problem—Despite industry initiatives and compliance with tougher environmental regulations, papermaking processes such as bleaching can affect our water supply. Traditional methods of bleaching pulp for paper use large amounts of water and energy. They also generate chlorinated hydrocarbons and large volumes of wastewater.

A New Solution—Researchers at the USDA Forest Service, Forest Products Laboratory, have developed a new bleaching method that reduces the impact on our environment. The method uses polyoxometalates (POMs), an inorganic enzyme analog, to bleach pulp. POM bleaching produces paper with the same properties as that produced by traditional chlorine-based bleaching, but it does so in a much cleaner way.

The Benefits—POM bleaching is not chlorine based, so it creates nothing more than carbon dioxide and water as byproducts. POMs are reusable and have the ability to bleach pulp without damaging the fibers. This new method also gives paper mills the ability to bleach small-diameter and mixed-species pulp, which has not been possible until now. And amazingly, POM bleaching requires only 0.2 cubic meters of water, compared to the 20 to 40 cubic meters used in traditional bleaching. This fact alone represents an important step toward creating a closed-cycle paper mill, which would have zero water discharge and minimal impact on the environment.

