

Pulp Cooking

Pulp cooking is a process used in the production of paper and other pulp-based products. It involves cooking wood chips or other lignocellulosic materials in a chemical solution to separate the cellulose fibers from the other components of the wood. This process breaks down the lignin and hemicellulose in the wood and leaves behind the cellulose fibers, which are used to produce pulp. The type of cooking process used can vary depending on the desired properties of the pulp and the specific requirements of the end-product. Pulp cooking is an important step in the production of high-quality pulp for a variety of applications.

Pulp Cooking Methods

There are several types of pulp cooking methods, including kraft, sulfite, soda, and others. Each method has its unique characteristics, and the choice of method depends on the specific requirements of the end-product.

The kraft cooking process is the most widely used method, which involves cooking wood chips in an alkaline solution of sodium hydroxide and sodium sulfide. The process is performed under high temperature and pressure to break down the lignin and extract the cellulose fibers. The resulting pulp is high strength and can be used in a wide range of applications, such as packaging and tissue paper products.

Sulfite cooking is another method used to produce pulp, which involves cooking wood chips in an acidic solution of sulfurous acid, which results in a pulp with a high brightness and good printing properties. This method is commonly used for fine paper and high-quality printing applications.

The soda cooking process, also known as the alkaline cooking process, is a less common method of pulp cooking, but still used for specific applications, such as production of pulp for corrugated board. This method involves cooking wood chips in an alkaline solution of sodium hydroxide or soda ash, which results in a pulp with lower strength properties.

Pulp Cooking Process

The pulp cooking process can be divided into three stages: pre-treatment, cooking, and recovery.

The pre-treatment stage involves preparing the wood chips for cooking by chipping and washing them to remove any impurities. The cooking stage involves placing the wood chips into a chemical solution and cooking them at high temperature and pressure to break down the lignin and hemicellulose. The resulting pulp is then washed and screened to remove any remaining chemicals and impurities. The recovery stage involves recycling the chemicals used in the cooking process and recovering the energy generated by the process.

Chemicals Used in Pulp Cooking

The chemicals used in pulp cooking vary depending on the type of cooking method used. The most common chemicals used in the kraft pulping process are sodium hydroxide (NaOH) and sodium sulfide (Na₂S), which create an alkaline solution that breaks down the lignin. In sulfite pulping, the primary chemical used is sulfuric acid (H₂SO₄), which creates an acidic solution that breaks down the lignin. Other chemicals used in pulp cooking include sodium carbonate (Na₂CO₃), anthraquinone, and peroxide.