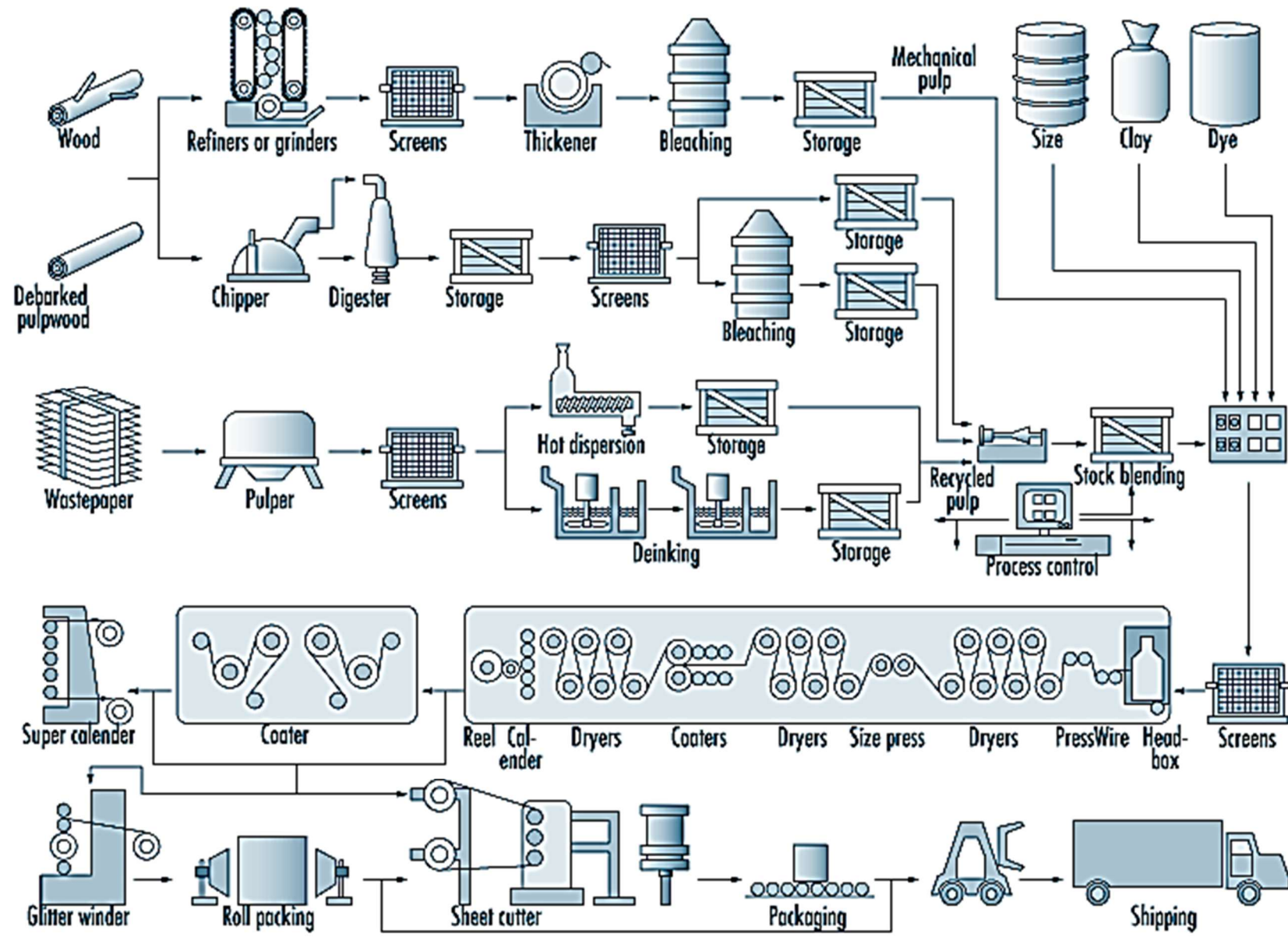


Paper Manufacturing and Recycling

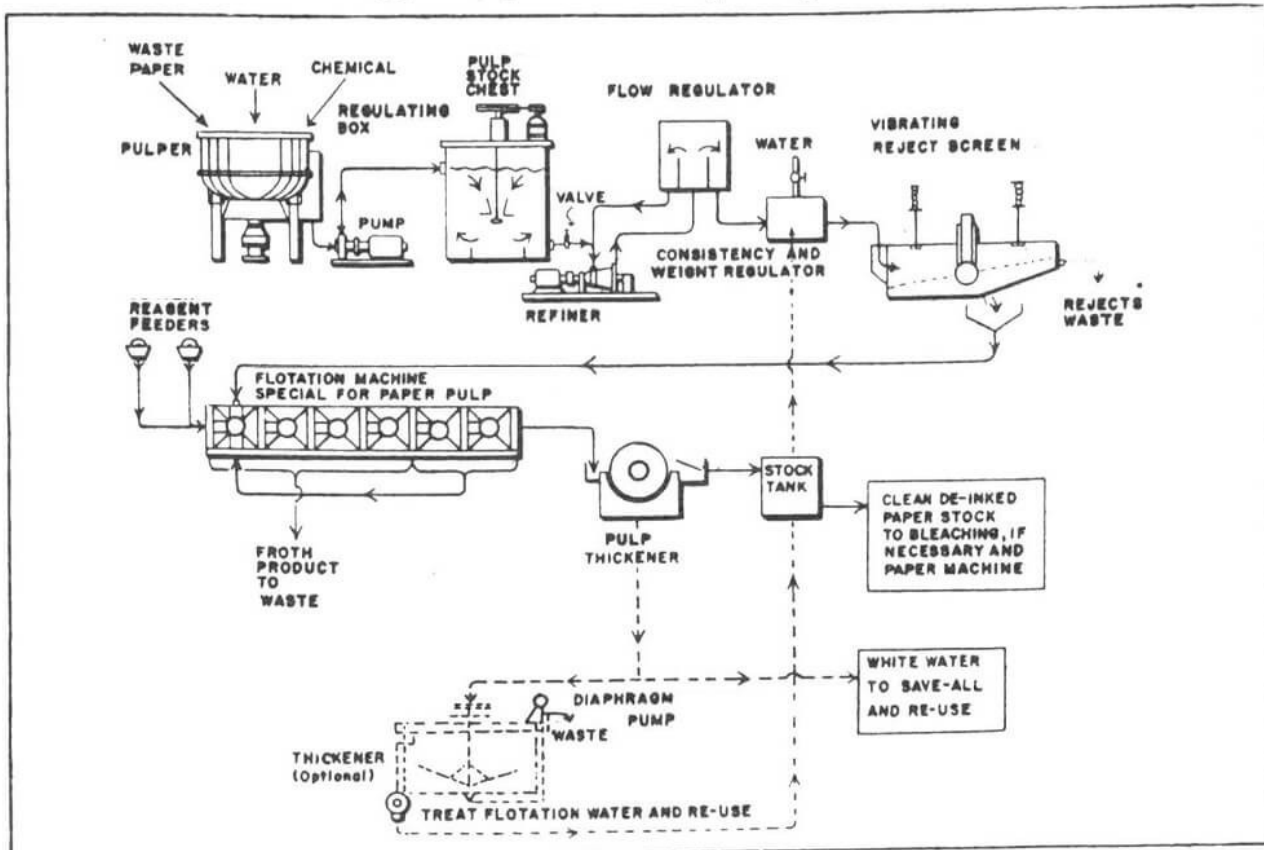


Source: Adapted from Weidenmüller 1984.

Fiber Recycling Process



De-inking Paper Pulp by Flotation



Chemical used in paper recycling

<https://bizfluent.com/facts-5731899-chemicals-used-paper-recycling-mills.html>

The paper recycling process, while using fewer chemicals and polluting less than virgin paper, still impacts the environment. Not all recycled paper is the same. Much recycled paper contains a mix of virgin and recycled pulp to strengthen deteriorating fibers. The higher the content of recycled pulp, the less chemicals needed for bleaching. Not all recycling plants use the same processes and chemicals, and some are more harmful to the environment than others.

Surfactants

Various types of surfactants are used in the de-inking process. Some are toxic while others are sugar or protein based. Scientists are also developing mechanical and enzyme-based processes for de-inking that are chemical-free.

Hydrogen Peroxide

This is a common, environmentally benign bleaching agent used as an alternative to chlorine.

Sodium Hydrosulfite

This is also commonly used to reduce the colors in recycled paper pulp. It produces the relatively benign byproduct sodium bisulfite.

Chlorine

Chlorine gas and hypochlorites are more commonly used to bleach virgin paper pulp, but can be used in recycled paper as well. Chlorine produces dioxin, a toxic, carcinogenic chemical that makes its way into the air and water.

Process Chlorine Free

PCF or “Process Chlorine Free” is the term used for recycled paper that does not use chlorine in its bleaching process.

Detailed views of machinery

<https://www.youtube.com/watch?v=oJKJRTSEGl4>

Edmonton, Added cotton fiber

<https://www.youtube.com/watch?v=kAaCuBbBRcg>

How to Make Handmade Paper Videos:

Handmade paper, quick, no narration. STOP before end

<https://www.youtube.com/watch?v=mNSkQEMxoIk>

Handmade paper, start at 3:00

https://www.youtube.com/watch?annotation_id=annotation_3757742485&feature=iv&src_vid=HMa-YXPPd_A&v=fyr24PgpDDs

Handmade paper with flowers, etc.

<https://www.youtube.com/watch?v=UIX87tvei7c>

<https://www.youtube.com/watch?v=KMEiZYjkWDU>

<https://www.youtube.com/watch?v=jODl07akVHM>