



Best Practices in Wood Waste Recycling

Process Modifications for Panelboard Wood Waste Feedstocks

Material: Wood Waste

Issue: *Fiber composite panelboard mills were originally designed and constructed to use virgin wood feedstocks as a raw material. Some of the virgin wood fiber used for the panelboard mills are from low value roundwood. This wood fiber is too small, an undesirable species or too defective for solid wood manufacturing. The remaining virgin feedstocks are typically derived from the residual chips produced by primary wood products manufacturers (sawmills and plywood plants) that use round logs for their raw material. The virgin wood fiber is generally free of non-wood contaminants and relatively uniform in specie, geometry, color, and moisture content. Millions of tons a year of such residuals are generated.*

The feedstocks produced from wood waste for the panelboard mills are more complex. They frequently contain various quantities of non-wood contaminants, consist of a number of different species (softwood and hardwood varieties), lack uniform geometry, include weathered wood colors, and might vary significantly in moisture content (green wood to kiln dried). These complex characteristics are a challenge for the panelboard industry because their production systems were not originally designed to account for these feedstock variations.

Best Practice: This Best Practice recommends the implementation of certain processing techniques at panelboard plants when substituting waste wood derived feedstocks for a portion of the raw material supply. The general commonality among these techniques is that they allow the manufacturer to focus attention and maintain full control of the wood waste material as it enters their production process.

Specialized Quality Control System. The complexities of a wood waste feedstock requires the panelboard manufacturer to adopt specialized feedstock sampling and analysis techniques to maintain adequate quality control of wood waste supplies. The wood waste feedstocks require a greater amount of monitoring. The quality control system needs to account for the possible presence of non-wood contaminants and a unique feedstock geometry. As a result, the manufacturer should customize their feedstock specification to account for the wood waste material complexities and develop a workable sampling system for accurate monitoring. Since a single delivery of wood waste feedstock could contain significant variations within the load, multiple sampling might be necessary to attain an accurate quality assessment.

Segregated Storage System. Wood waste feedstocks should be stored separately from the conventional feedstocks. Segregated storage allows the manufacturer to use additional contaminant removal techniques, maintains close control over mixing with conventional feedstocks, and restricts the wood waste from use in certain product lines, if necessary.

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Enhanced Contaminant Removal Systems. Manufacturers should consider enhancing their contaminant removal systems to ensure the wood waste feedstocks do not contain contaminated materials. Possible contaminant removal systems include magnets for ferrous metals, air density separators for hard contaminants (non-ferrous metals, rocks, glass, etc.), air density separators for soft contaminants (some plastics, paper, cloth, rubber, Styrofoam, etc.), and chip washers for dirt or grit. Effective contaminant removal systems would also allow the manufacturer to blend higher percentages of wood waste material into their process.

Controlled Blend with Conventional Feedstock. Manufacturers should maintain a separate material handling system for the wood waste feedstocks so that operators can meter this material into the production process at a controlled rate. In general, the waste wood material is less likely to cause manufacturing and end product problems when it is blended with the conventional feedstock. In the absence of an accurate metering system, manufacturers run the risk of allowing a spike in the percentage of wood waste material which could lead to problems with processing equipment or end products.

Implementation: The substitution of wood waste feedstocks for conventional virgin wood feedstocks is not a straight forward interchange. Composite panelboard manufacturers need to carefully account for the inherent complexities of waste wood derived feedstocks and customize a segregated system for introducing this material into their manufacturing process. The preparation for wood waste materials is likely to require capital investments for the modification of raw material preparation equipment at the front end of the panelboard plant. The manufacturer should work closely with wood waste suppliers to fully understand the quality characteristics of the alternative feedstock. The manufacturer can then adopt appropriate process modifications that will neutralize any adverse characteristics of the raw material.

Benefits: The implementation of certain processing techniques at composite panelboard plants will allow for the substitution of waste wood derived feedstocks for a portion of their raw material supply. The ability to process wood waste derived feedstocks expands raw material base and sourcing flexibility of the panelboard manufacturer. Under certain fiber market conditions, this sourcing flexibility is extremely advantageous in keeping raw material costs as low as possible. The capability to process wood waste derived feedstocks also anticipates possible future shortages in the supply of virgin wood feedstocks.

Application Site: Manufacturing Site.

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References:

1. International Resources Unlimited, Inc. Eugene, OR.
2. Smith, David. CE/Western Engineering. Albany, OR.

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