



Best Practices in Wood Waste Recycling

Specification for Inorganic Bonded Fiber Composites

Material: Wood Waste

Issue: *Inorganic bonded fiber composites include building materials such as wood-cement board or wood-gypsum board. The materials consist of a wood fiber or particle component that is bonded within an inorganic mineral matrix. Aged wood waste often performs better than virgin wood in this application. Degradation of wood fiber's hemicellulose improves wood-cement bonding strength. These weather and fire-resistant products are produced for sub-flooring panelboard, roofing shakes or shingles, tiles, siding, fencing, cladding, or building blocks.*

Currently in the U.S. wood-cement composites are produced in the form of cement-bonded particleboard roofing products and cement-bonded building blocks and slabs. Production volume of these products are low compared to the traditional resin-bonded wood composites. However, the potential market for these products are significant. Cement-bonded particleboard manufacturers do not presently use wood waste feedstocks, but have expressed interest in using this resource. Slab and block products have the greatest potential for integrating wood waste feedstock. Satisfying the cement composite manufacturer's specifications and product quality expectations are critical to sustaining the captured market share. A lack of understanding or failure to achieve them leads to price reductions, rejection of delivered products, or termination of the business relationship between supplier and manufacturer.

Best Practice: This Best Practice recommends that wood waste processors and end-users agree to specific product quality requirements in writing. Wood waste processors need to develop these agreements with each individual customer, since the particular details of feedstock specifications vary from one customer to another. The variations in feedstock specifications are determined by the customer's processing equipment and techniques. Wood waste feedstock requirements include:

Wood Species

There are species restrictions. However, some manufacturers might restrict the species mix to a few or a single specie to maintain process and product uniformity.

Size Distribution

Length: 1" to <1.5"

Width: 1.5" to <2"

Thickness: 3/8" to <1/2".

Acceptable Geometry

Manufacturers prefer a sharp-edged, pulp-type chip.

Maximum Allowable Contaminant Levels

Manufacturers rely on virgin feedstock which contain low levels of contaminants. However, the opportunity to use wood waste feedstock exists. The feedstock must be free of non-wood contaminants

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such as: dirt, rock, metal, rubber, plastics, silicon, hazardous wastes, and other foreign material. Also, feedstock must contain no more than 8% bark.

Color/Brightness

Since many manufacturers are currently relying on virgin feedstock, they are accustomed to bright chips, but there is no inherent requirement for this color.

Moisture

Many manufacturers rely on virgin feedstock, so they are accustomed to a uniform chip moisture content in the range of 10 to 50 percent. However, the real concern is consistent moisture content throughout the load and from load to load from a supplier.

Implementation: Wood waste processors should work with each manufacturer's fiber buyer to develop and adhere to written specifications for their unique production systems and product requirements. A quality control program should be in place to ensure product consistently complies with the paper manufacturer's specifications. The goal of the quality control program should be to detect and correct any problems before shipping the processed wood to the manufacturers.

However, if problems are identified, they should be resolved properly, quickly, and objectively. Regardless of whether the supplier (wood waste processor) failed to meet the required specifications or the buyer (the paper manufacturer) changed the agreed upon specifications and expectations, both parties should work together to resolve the problem. Maintaining an open communication and diplomacy throughout the settlement process would foster a healthy business relationship and avoid future problems.

Benefits: Consistently providing high quality feedstock and adhering to the specifications improves the marketability of the material and potentially increases the price and use of it. Arbitrating problem loads promptly, adjusting specifications mutually, and continuously making equipment and process modifications are practices that could improve the use of the wood waste processor's material. Wood has only 1/7 of the coefficient of thermal expansion, compared to plastics.

Application Site: Manufacturing Site and Processing Facility. Recipe: 1/3 wood + 2/3 plastic.

Contact: For more information about this Best Practice, contact CWC (206) 443-7746, e-mail info@cw.org.

References:

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