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MULCHING ENGINEERED WOOD PRODUCTS: AN ALTERNATIVE TO LANDFILLS

Anyone who has ever walked through a construction site knows that building a structure creates a surprising amount of wood waste. In fact, building a 2,000-square-foot house generates 1.7 tons of it, on average. Some of the construction waste is from engineered wood products (EWPs), such as oriented strand board and plywood.

Most construction waste ends up in landfills. This adds to the cost of the structure because the contractor must pay twice for unused building material: once when the goods are purchased, and again when they are discarded. While some of the extra cost is passed on to the consumer, the rest comes out of the builder's profit.

There is now an innovative alternative to burdening our landfills with this waste. Researchers at the University of Georgia investigated environmental risks of making mulch from engineered wood products (EWPs). The researchers looked for any indication that the resins and adhesives used in EWPs would affect the environment. Their work compliments a report prepared by the National Association of Home Builders (NAHB) Research Center, which evaluated the feasibility of on-site mulching. The mulch can be used on construction sites for ground cover to maintain soil moisture for plants, to control erosion, and to reduce mud in heavy-use areas. Grinding engineered wood products on location eliminates the need to haul in straw or other materials that would be used as ground cover.

Overall, the University of Georgia study and the National Association of Home Builders Research Center report found that engineered wood product waste generated on construction sites can be ground up and used as an effective and safe mulch. Dumping fees and transportation costs can be reduced, and strain on our overflowing landfills can be eased.

University of Georgia Study

The following compositions were used to make three types of mulch for the investigation:

- Untreated dimensional lumber (25 percent southern yellow pine and 75 percent spruce-pine-fir)
- All engineered wood product (60 percent OSB, 20 percent plywood, 10 percent I-joist, 5 percent laminated veneer lumber, and 5 percent southern yellow pine glulam timbers)
- A mix of dimensional lumber and engineered wood products (30 percent EWP in the proportions listed above, 45 percent dimension lumber in the proportions listed above, and 25 percent finger-jointed studs)

Untreated dimensional lumber was included as a control. The all-engineered wood products mixture represented an extreme case that probably would not occur on an actual construction site. It did, however, present an opportunity to study the resins and adhesives that might have an effect on the environment. A typical residential construction project normally creates wood waste similar to the third mixture described above.

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First, the mulches were tested to determine if they contained toxins. Under controlled conditions, water was percolated through the mulches. The leachates were tested for contaminants that have been identified by the Environmental Protection Agency (EPA) as toxic (EPA Method SW 846). No toxic contaminants were found in any of the leachates.

The investigators then created test plots covered with the three types of mulch, as well as a plot of bare soil. The test plots were subjected to simulated rainfall. Runoff from each plot was examined for nutrient content, oxygen demand, and organic compounds using a gas chromatograph/mass spectrometer.

In all of the compositions tested, the runoff from freshly applied mulch was higher than the bare soil runoff in nutrient content, oxygen demand, and organic compounds. After one year, however, no difference was measured between the bare soil runoff and the mulch runoffs. It is also notable that the nutrient content measured in the freshly applied mulches was lower than that found in typical animal manures and other types of compost.

The soils under the mulches were also studied. There was a small increase in amines in the soil under the engineered wood product mulch, but it was not statistically significant. Also, there was an increase in phosphorus under the EWP mulch. Overall, though, there were few differences between the soil under the mulches and the bare soil control.

To observe the effect that the mulches might have on plants, some commonly used landscaping plants had mulch applied under them. Three plants were studied: Buford holly, Kurume azalea, and lorapetalum "Sizzling Pink". The mulches had no detrimental effect on plant growth. Moreover, the roots of the plants grew right into the mulch made of 100 percent engineered wood product, indicating that it is likely that nothing in the mulch would inhibit plant growth.

NAHB Research Center Report

A study prepared by the NAHB Research Center looked at the feasibility of on-site grinding of wood waste from residential construction. A pilot project was carried out that explored mulching untreated dimensional lumber. In this case study, the costs of grinder operation, transportation, labor, tipping fees, etc., were measured. Analysis of the data found that grinding wood waste for use as mulch costs less than disposing of it in landfills. This economic advantage was especially evident for builders developing large construction sites, where there were numerous uses for the mulch.

References

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