

Wood powder coating in Minnesota:

Profile Companies

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Profile Companies of Rogers, Minnesota, is doing what others thought was impossible. Through the assistance of an Environmental Assistance loan, Profile has expanded their powder coating capabilities to include medium-density-fiberboard (MDF).

In 2005, Profile began researching equipment upgrades which would improve their capabilities to powder coat MDF and diversify the company. When approached by an outside firm interested in the technology, Profile agreed to research and test the possibility of powder coating the MDF material. Currently, only one other manufacturer in the State of Minnesota has the same capability and experience to powder coat wood.

“We had to overcome numerous hurdles as the MDF acts differently from metal, a typical material that is powder coated,” Steve DeJong, President of Profile, said. To overcome those hurdles, the company had to test and determine the optimum board consistency, moisture, density and lower-temperature cure powders. “We also began working with new resins,” DeJong said.

While powder coating wood products like MDF is not mainstream yet, it lends itself well to design flexibility for seamless shapes, edge contours, and profiles. “The big advantage for our clients is the ability for powder to wrap virtually any shape they are creating,” DeJong said. Powder coatings on MDF meet or exceed the performance characteristics of melamine, thermofoil, vinyl, laminate, and liquid paint finishes.

Powder coating is also better for the environment as the powder does not contain solvents and therefore does not release volatile organic compounds (VOCs) into the atmosphere. Additionally, very little waste is produced through the powder coating process as at least 90% of the powder is used and any waste powder remaining is typically disposed of as a non-hazardous industrial waste.

The process that DeJong uses to powder coat MDF is unique in that it uses natural gas infrared preheat and curing ovens. MDF parts are preheated before the first coat of powder is applied. The parts pass through a second oven and are cured 80% before a top coat is added when required. The parts are then cured completely. By using infrared ovens, the core of the board is not heated, only the surfaces. This leaves the strength of the board intact and shortens production time.

“MDF is a good product for this type of powder coating. At this time, natural wood boards don’t work as well because of the heat used for curing,” DeJong said. “We are working with MDF manufacturers to ensure that the boards are suitable for powder coating. That is important for the powder coating to be successful.”

The Environmental Assistance Loan program, through the Minnesota Pollution Control Agency, helped Profile upgrade their powder coating application equipment and infrared curing ovens. Since Profile added the new application equipment, they have doubled their overall coating transfer efficiency and reduced powder coating purchases and disposal by 80,000 pounds per year saving \$250,000.

MnTAP has a variety of technical assistance services available to help Minnesota businesses implement industry-tailored solutions that maximize resource efficiency, prevent pollution, increase energy efficiency and reduce costs. Our information resources are available online at <mntap.umn.edu>. For personal assistance call MnTAP at 612.624.1300 or 800.247.0015.