



POLISHABLE OVERLAYS

Thin coatings that can be polished work wonders on floors new and old. But applying them right takes know-how.



Among the polishable overlays on the market today are several featuring cement-based systems, such as the Mosaic topping manufactured by LifeTime Floors. The topping is designed to be applied wet on between 1/2 inch thick on freshly poured concrete slabs. After it's cured, it should be ground down and taken up to a full polish. Seen here is a Mosaic floor at the University of Texas, San Antonio.

Polishable overlays are making substantial headway into the realm of decorative concrete. Tom Graf, owner of LifeTime Floors, which manufactures the polymermodified Artera and the portland cement-based Mosaic toppings, thinks the general state of the economy is one reason why. "Buildings aren't being built at the rate they were before, so a lot of our business involves what we can do with existing concrete floors."

However, contractors take heed: Not everyone is up to the task of properly installing them.

"It's a field reserved for only the most skilled in the business," says Bruce Burton, technical services manager for construction repair systems at Mapei North America, the company behind the polymermodified Ultratop system. "We get calls from three to four customers a

week (about overlays). Fifty percent say we have the best product on the market while the others say they can't get the job done no matter what they do."

Burton says his company also gets mixed reviews from diamond manufacturers. He recalls a time when his company sent material with the same batch code (which identifies the ingredient mix in a given batch) to three manufacturers of diamonds for testing. "One said it was too soft. Another said they got acceptable results but not great. The other said the product was the best thing they ever used. All of which means it's very complicated."

Jim Harvey, creator of Deco-Pour, a portland cement-based overlay, emphasizes patience and education when working with polishable overlays. "You can't go in and rush through this

process," he says. "You need to be trained by someone familiar with the product. I think we should only sell to technically competent contractors or we'll ruin it for everybody."

EACH BRAND IS UNIQUE

David Landrey, director of technical services for Raeco Specialty Cements, defines polishable overlays as "any type of a thin-bonded topping system that's suitable as a wearable surface for heavy-duty traffic when polished." "No sealers or waxes are needed. When fully cured, these toppings boast a compressed strength of anywhere between 4,000 and 6,500 psi.

But the generalization stops there. Manufacturers use a wide variety of ingredients to produce these toppings, from portland-based, calcium-aluminate and other fast-setting cements with trace amounts of polymer to complex polymer-modified formulas, some complete with hardeners and others reinforced with fibers. Overlays may be self-leveling or trowelable. They can be applied with or without aggregates or other decorative elements such as glass or metal flakes. Their makeup truly runs the gamut.

"A lot of contractors aren't familiar with polymer-modified systems," says Graf. "They are generally sticky and contractors often get frustrated with them."



ARTICLE REPRINT

Concrete Decor Magazine November / December 2010



Before the polishing process can begin, an overlayment must be properly raked and spread.

ESTIMATE THICKNESS CORRECTLY

Correctly estimating the thickness needed to get the job done right is one of the biggest issues a contractor faces when applying a polishable overlay, says David Stephenson, president of American Concrete Concepts in Springdale, Ark., who has been working with them for six or seven years.

If you think you'll only need a 1/4-inch overlay and it ends up being a half-inch, your cost has doubled and your headache has just begun. "A polishable overlay is very expensive," Stephenson says. "When you bid on an overlay project, it's very important to know how much material to purchase. " Too much and you'll end up with a lot of extra product. Too little and you're out of luck. "Once you get going on the job, you have to have it all there to finish it out. You can't stop and go get more."

Also, Landrey adds, mixes high in polymer content are not as polishable.

Whatever the overlay is made of, properly prepping the substrate is key to a successful job. It must be free of contaminants, properly profiled and primed. The overlay is generally applied between 3/8 inch and 5/8 inch thick, but it can be put down much thicker if necessary, up to 1 1/2 inches or more.

If a job calls for a thicker application, Graf says, it's much more cost-effective to use a cement-based topping without polymer modification. "Polymer-modified systems get really, really spendy at anything over 3/4 inch thick."

Whether a job is large or small, Landrey says, installing and polishing an overlay generally takes a minimum of four to five days. The polishing process itself involves at least seven steps. The rule of thumb is to wait at least 24 hours before polishing. Some installers prefer to wait longer.

If taken to a full polish, says Graf, both polymer and portland-based systems are breathable, sustainable and can reap LEED points for a project.

WHY USE A TOPPING?

Probably the most common reason a polishable overlay is installed is to cover an existing substrate that needs serious attention: it's badly stained, deeply trenched, not level, or has inconsistent aggregate, unsightly patches or ghosting from VTC tiles.

One of an overlay's most attractive decorative attributes is that colored overlays can be replicated, a feature

relished by many big box stores across the nation. “If you can make a sample at the shop, you can reproduce it on the floor,” says Joe Zingale, sales representative for CTS Cement Manufacturing Corp., the company that makes the self-leveling, interior/exterior overlayment called Rapid Set TRU.

“If a customer has multiple locations, overlays are easier to duplicate in store after store because they are consistent in makeup,” he says. In contrast, the shade of regular concrete can vary depending on where a batch’s raw materials came from.

Burton agrees. “With overlays, you can deliver a consistent color and high-quality finish while retaining the natural look and feel of polished concrete,” he says.

But make no mistake about it. Polishing concrete and polishing concrete overlays are two different animals. Do some research on the toppings you’re considering - call various equipment manufacturers and ask what brands they have worked with, what results they got and what to expect when working with a certain product. “If they say you polish it the same way you’d polish normal concrete, hang up. If they say the overlay systems are quite different than regular concrete, they deserve more questions,” Burton says. “At the end of the day, pick a manufacturer you trust that has tested the product with a specific hardener, diamonds and equipment.”

Following manufacturer recommendations and mix instructions, try polishing an overlay in your own basement or garage where you can perfect your technique before you take on a job. “We’ve had

contractors who have bid on 20,000 square feet of retail space who have never polished our toppings,” Burton says. “Way too frequently, it just doesn’t work out.”

CHOOSING THE RIGHT DIAMONDS

Whether overlays have high polymer content or feature hydraulic cement and silica sand, they are all very aggressive on diamonds, says John Abrahamson, manager of East Coast operations and marketing for SASE Co., a company that specializes in surface preparation equipment. “We have special diamonds designed for overlays because they are tricky and react differently.”

Harvey of Deco-Pour notes that while traditional tools are used to place and polish his portlandbased overlay, determining the process took a lot of trial and error. “While the only difference from traditional concrete (polishing) is the size and sequence of the diamonds used, it took us about four years to find the ones to do the job properly.”

Before tackling a job, contact your diamond supplier, Abrahamson suggests. If asked, most leading companies will direct you to purchase certain diamonds to be used with specific products.

When you use the right diamonds, you’ll get the proper wear and they’ll last longer, he says. “When grinding soft concrete use a hard-bonded diamond, and if the concrete is hard use a soft-bonded diamond.”

Polishing polymers can get a bit tricky, notes Burton of Mapei. If you start polishing a polymer topping after it has set for only 24 hours, you will be polishing a surface that hasn’t yet reached its cured hardness of 6,000 psi. “Maybe it’s only

2,500 psi at that point,” he says. “You have to work with it as a soft product. People who are successful know how to read the (topping) and compensate for individual circumstances by adjusting equipment and pads.”

Burton says that for the purposes of polishing and grinding, it’s best to treat polymer toppings as if they were soft no matter their age. “Ultratop and others would rather dent than cut.”

Finally, Paul Lundberg, director of sales and operation for VMC Technical Assistance Corp., advises contractors to avoid using metalbond diamonds when polishing overlays high in polymers. “Metal bonds leave scratches that are difficult to remove,” he says. If you can, start with a resin-bond diamond or a hybrid diamond, if necessary.

CTS Cement Manufacturing Corp. is the leading manufacturer of advanced calcium sulfoaluminate (CSA) cement technology in the United States. Our Rapid Set® and Komponent® product lines are renowned for proven performance, high quality, and exceptional service life. Contact CTS Cement for support on your next project. Call 1-800-929-3030

Original publication: Klemenc, S. E. (2010, November/December). Polishable Overlays. Concrete Decor Magazine, 35-40.



ARTICLE REPRINT

Concrete Decor Magazine November / December 2010



POLISHABLE OVERLAYS: A DECORATIVE CASE STUDY

Alabama Robotics Technology Park – Tanner, Ala.

Polishing 52,000 square feet of floor is never an easy task, but some jobs can be more demanding than others. This was one of them. It took contractor Darryl White and a crew of five 11 weeks to prep, polish and finesse the artwork for the floors of Alabama Robotics Technology Park, a robotics maintenance training center in Tanner, Ala. It celebrated its grand opening Nov. 10.

The biggest obstacle White had to overcome was getting the facility's floor in the 4,000-square-foot front lobby to the specified 5/8-inch recessed depth. "We wrote the specs for how to do the recess work and gave them to the (installing) contractor and GC, who did it the way they wanted anyway," says White, owner of Concrete Flooring Solutions, based in Alabaster, Ala.

Subsequently, his crew had to bushhammer out the 1 5/8-inch overage with a jackhammer and bushing tools after the building - which features a 58-foot glass curtain wall - was already built. To make matters worse, the lobby's underground air ventilation system had to be completely redone to get the floor back to architectural specifications.

When that was accomplished, White's crew applied 5/8 inch of Rapid Set TRU, a hydraulic cement manufactured by CTS Cement. During the application they simultaneously seeded and broadcast 3,500 pounds of multicolored recycled crushed glass at the same time.

Then using HTC diamonds and grinders, the floor was ground wet and polished dry to 800 grit, White says, noting that the 11-step process started with a 60-grit steel diamond. "When we were done, it turned out to look like a sheet of glass.

Considering we had to jackhammer it out, it was a pretty amazing feat. We do more than 1 million square feet of polished concrete a year and I've seen it all. This was a huge leap in the overlayment process."

Besides polishing, the job also entailed coloring the topping in a crosswise pattern with three different L.M. Scofield acetone liquid dyes. The crew also used a mongoose concrete saw to cut and score various geometric shapes into the floor, grouting the saw cuts to create a level surface.

White has nothing but praise for the TRU topping. "TRU is a wonderful substitute for concrete because it's similar to polishing regular concrete. That's what makes working with it so nice.

"It colors and saw-cuts well. We found we can do some pretty amazing stuff with it."

