

Functional Ecological Economical



Concrete is the most commonly used construction material because of the many benefits it offers. Among these are strength, durability, a long lifespan, affordability, environmentally friendly, and it is recyclable. Why then have we chosen to cover it up with man made petroleum based materials that do not have these characteristics, which leads to expensive repairs and maintenance? HTC, the industry leader in high production concrete grinders and polishing equipment combined with high efficiency dust extracting systems and state of the art dry diamond tooling technology, has developed a unique diamond grinding process, HTC Superfloor™. This process utilizes an innovative grinding and polishing system which includes both metal bond and resin bond diamonds to bring out the natural beauty in your concrete floors. HTC Superfloor™ produces a highly reflective surface finish that is not only aesthetically pleasing, but reduces maintenance costs and increases durability. HTC Superfloor™ can also polish in a variety of environmentally friendly colors.



What Makes HTC Superfloor™ the Best?

HTC Superfloor[™] is superior to all other processes because it is more functional, ecological and economical.

Functional

- Dense, polished surface helps protect against absorption of oil and other contaminants
- Resists tire marks from fork trucks and other traffic
- Harder and stronger than other floor finishes
- 40% more abrasion resistant than unfinished concrete
- 20% increase in impact resistance than unfinished concrete
- 30% increase in ambient light reflection from unfinished concrete
- Flatter, more level surface
- OSHA recommends that you achieve a static coefficient of friction (SCOF) of 0.5 for polished surfaces HTC Superfloor™ SCOF wet: .50 and dry: .58
- Easily add color to existing concrete during the HTC Superfloor™ process

Ecological

- Dry, dust-free grind filters out 99.9% of all airborne dust
- No VOC's
- No coating, urethane, waxes or topical coatings applied
- No slurry
- No protective gear, such as ear plugs, masks, or retardant proof clothing necessary
- New water-based dyes for environmentally friendly coloring

Economical

- Lower initial costs compared to most other floor coverings
- No down time waiting on chemical processes to cure
- One-time application with minimal maintenance
- Lower maintenance costs with less wear on cleaning equipment and consumables
- Long life cycle of 5-10 years

Our Precision Process is the Superfloor™ Difference

The HTC Superfloor[™] process consists of seven basic steps of mechanical grinding and polishing. Depending on the current condition of the floor, the process may require more steps, or even less. The first three steps prepare the floor by flattening and leveling it using metal bond diamond grindings. These steps are crucial to ensure proper finishing and safety standards. The last four steps use resin bond diamonds for polishings. These steps seal the floor and polish it to a matte, satin or glossy finish. HTC's VOC compliant polishing method brings out the natural strength and beauty of the concrete—without harming the environment.

Basic Stages of the HTC Superfloor™ Process



STAGE 1 A rough grind removes old dirt and coatings from the concrete



STAGE 2 Two progressively finer grinds refine the rough floor to a flat, level surface



STAGE 3 The floor is treated with an impregnator to prepare it for diamond polishing



STAGE 4 Polishing uses specially designed Superfloor™ diamond tools with progressively finer abrasion



Concrete Polishing



STAGE 5 Final polishing brings floor to a durable, high-gloss finish

A Little Goes a Long Way

Low and Simple Maintenance

HTC Superfloor[™] is resistant to tire marks and other contaminants, therefore the floor only needs a light cleaning from time to time and the periodic use of the TWISTER Diamond Cleaning System. HTC Superfloor[™] never requires harsh chemicals to clean or strip the surface like some other processes—and over a 20-year period, Superfloor[™] costs a fraction of what vinyl, tile or coatings cost to maintain.



Cleaning and Maintaining a Superfloor™

- 1. **Sweep** Every day, sweep the floor with a dust mop or fine bristle broom to remove surface debris such as sand and dirt that may scratch the surface.
- 2. **Clean** Dilute Superfloor[™] Cleaner as directed and apply to the surface using a mop or use TWISTER Diamond Cleaning System by HTC with an autoscrubber.
- 3. **Restore** Extensive traffic or poor maintenance practices may cause polished concrete to lose some of its luster. Restore the floor's original shine with a simple re-polish using the last grit of resin diamond or by using the TWISTER Diamond Cleaning System by HTC.
- 4. **Protect** Provide an extra level of protection by applying a fine layer of HTC Superfloor[™] Stainguard with a wax applicator or airless pump sprayer.



TWISTER™ Welcome to the Cleaning Revolution!

Clean shiny floors result in satisfied customers over and over again....

TWISTER Diamond Cleaning System consists of diamond impregnated pads in conjunction with TWISTER Cleaner that can be used on most common floor surfaces such as HTC Superfloor[™] polished concrete, terrazzo, marble, natural stone, concrete, vinyl and epoxy. Some unique advantages of the TWISTER Diamond Cleaning System are:

- Produces a high quality floor that offers extreme cleanliness, without the use of wax or polish, resulting in high gloss every day.
- Works on almost all floor surfaces and designed to be used with most janitorial machines.
- Leaves a consistent shine on floors eliminating the need for periodic restoration along with 40% lower cleaning costs and less chemical (CLEANER is diluted 1:400) use makes TWISTER™ Diamond Cleaning System cost effective
- Recognized as a preferred environmental choice for cleaning worldwide, due to TWISTER™ and TWISTER CLEANER eliminating the need for caustic or acidic cleaners and also being pH neutral for the environment.

TWIS

TWISTER

WISTER

WISTER

Diamond Cleaning System by HTC

INSTER













Case Study, Hitachi Automotive Products (USA), Inc.

"We give tours every other week to customers such as GM and Nissan, and the owners are very proud of the parts of our facility where we have HTC Superfloor™ such as our tool & dye shop and our assembly lines." - John Shewmaker.

Originally, the Hitachi facility floors, 368,000 square feet, were covered in a gray epoxy coating which made the environment seem dark and gloomy. When the coatings would scar and begin to peel after a few years, the company's continuous improvement group would hire someone to remove the coatings and then they would reapply them. Which equipment sparked their interest? The HTC 800 HD, which they saw made the coatings removal process much easier. The company originally purchased the equipment just to remove coatings throughout their facility once it was time to redo them, thinking that they would only use it when necessary. When they purchased the machine and came in for training, they were shown what the HTC Superfloor™ process could do for a floor, and immediately wanted to do a sample for their owners. The owners, who wanted the facility to be aesthetically pleasing, agreed and the Continuous Improvement Group went to work. Two men, Eric Stratton and Keith Smith, are responsible for stripping the coatings and polishing the floors during plant shutdowns. Now, instead of only recovering the floors when the coatings are not looking good, the two men are working hard to replace all of their floors with HTC Superfloor™ polished concrete. As time permits, the two men will complete the HTC Superfloor™ polished concrete process throughout the entire plant.

"A lot of people want to know what we put on our floors to make them look so good and we have to show them the process we use." - Eric Stratton

HTC Superfloor[™] - Beautiful and Easily maintained

"Its a lot of work to apply coatings to our floors and they have to be reapplied every 3-4 years. One and a half years ago, we did the best coatings on one of our floors that we have ever done, and it already looks scarred and will need to be replaced soon. With the HTC Superfloor[™], we are restoring and not recovering. It doesn't scratch and we love the maintenance since all we have to do is use a wet mop. It is 10x better than the coatings. There is just no comparison. The floor is shiny and the lighting in the room has improved overall." - John Shewmaker

HTC Superfloor[™] - Approved Equipment

What do Eric Stratton and Keith Smith love most about the process? "We have quality products that cannot be subjected to dirt and dust. Before, when the coatings were being removed, there was so much dust that we had to not only cover our equipment and products, but we would have to try and shield our work areas to protect our products. With the HTC vacuum system, there is very rarely any dust and we don't have to wear masks. Sure we hang plastic to separate our work area from our products, but it is nothing like it was before. The HTC equipment is very easy to use. We used the HTC flex plates and the new tooling which made a big difference and was much better."



Diamond Grinding/Coatings



After Coatings Removed & Concrete Polished to HTC Superfloor™

Keith Smith and Eric Stratton

Case Study: Lancaster Schools I.S.D.

"Our floors require less maintenance with only dust mopping and occasional burnishing (with a Twister™ pad) to keep their new look." - Phillip Pape, Director of Maintenance and Transportation

Initially, the Lancaster Independent School District (I.S.D) had VCT throughout their facilities. They were experiencing what most all others do with VCT; the maintenance burdon needed to maintain the floor, the life-cycle cost for maintenance and the replacement cost. Lancaster I.S.D. recognized that they were alotting a signifigant amount of labor dollars toward the stripping and rewaxing of the VCT. These activities mainly occurred during holiday and shut-down periods adding more costs to the budget. As time wore on replacing the VCT became an issue. At times water vapor can move through a concrete slab, building pressure





below VCT and its glue, resulting in tiles popping from the surface. Replacing those tiles or others damaged by different factors are not only a aggravation but costly. The issue then arises of matching the new tiles to the old.

"We foresee a savings in overall maintenance costs because there is no waxing or stripping involved." - Phillip Pape, Director of Maintenance and Transportation

HTC Superfloor™

The concept of HTC Superfloor[™] polished concrete is to transform what most people cover up into an aesthetically pleasing, highly functional, extremely durable, long life-cycle, low-maintenance floor system. In order to acheive the previous statement HTC Superfloor[™] is produced mechanically with progressively finer diamonds under state-of-the-art grinding/polishing equipment. This process yields a flatter, more abrasion and impact resistant substrate. HTC Superfloor[™] will increase the ambient lighting in a facility up to 30%. This will allow occupants to utilize more natural reflective lighting than expensive energy consuming light bulbs. An array of colors can be acheived through dyes or acid staining to customize each HTC Superfloor[™], even logos can be incorporated. Lastly, HTC Superfloor[™] is a perfect choice of floor systems when environment sensitivity is crucial. HTC Superfloor[™] can help owners gain tax savings on their projects that are under 'LEED'.





Polished Concrete Slip Coefficient of Friction



Test #1: Dry 0.58



Test #2 : Wet 0.50

Flooring systems used on Industrial, Commercial, and Residential floors should provide a safe walking surface in both wet and dry conditions. By measuring the coefficient of friction (COF), a quantitative number can be used to express the degree of slip resistance of a floor surface.

When the coefficient of friction is measured from a resting position, it is called the "static coefficient of friction" (SCOF). When it is measured when the surfaces are in relative motion, it is called the "dynamic coefficient of friction". Measuring the dynamic COF is difficult and requires a strict laboratory environment for accurate results. The James Machine would be used in this situation under the ASTM D-2047 standard. Almost all portable and laboratory meters measure only the static COF and most measuring devices (slip meters) refer to static COF based off the ASTM C1028 standard. The Sellmaier slip test meter measures both Static and Dynamic coefficient and provides a digital printout and audit trail.

The higher the SCOF, the less slippery the surface. It is possible to have too high a SCOF; the surface can be too slip resistant and difficult to walk on. The American Society for testing and Materials (ASTM) initially set a standard of 0.50 or higher for polished surfaces. Because the required friction for normal walking is significantly below that figure (As measured on the James Machine) a coefficient of 0.35 is sufficient. The Occupational Safety and Health Administration (OSHA) will only recommend that you try to achieve a 0.50 SCOF for flat surfaces. In short their really is no set standard that any one will stand behind. Plus all of the standards were tested using natural stone and liquid sealers / coatings. So we have to group our selves in with this category until they do testing for polished concrete.

The test results shown here were done with the Sellmaier FSC-2000 at HTC's facility in Knoxville, TN. Test #1 was a dry test with a leather slider on polished concrete @ a level of 3000 grit. Test #2 was a wet test with Synthetic slider on polished concrete @ a level of 3000 grit. The results where taken from an average of multiple readings and tests.

Comparative Installation and Maintenance Costs

"Its a lot of work to apply coatings to our floors and they have to be reapplied every 3-4 years. One and a half years ago, we did the best coatings on one of our floors that we have ever done, and it already looks scarred and will need to be replaced soon. With the HTC Superfloor™, we are restoring and not recovering. It doesn't scratch and we love the maintenance since all we have to do is use a wet mop. It is 10x better than the coatings. There is just no comparison. The floor is shiny and the lighting in the room has improved overall." - John Shewmaker

Costs per Square Foot	Installed Cost	Annual Maintenance	Years Average Life	Replacement Costs	Total Expense Over 20 years	Cost Per Square Foot per Year
Vinyl Sheet Flooring	\$2.72	\$1.39	9	\$3.43	\$38.14	\$1.91
Vinyl Tile Flooring	\$1.23	\$1.47	15	\$1.60	\$32.76	\$1.64
Ceramic Mosaic Tile	\$6.48	\$1.22	20		\$30.88	\$1.54
Quarry Tile	\$5.78	\$0.58	20		\$30.18	\$1.51
Cement Terrazzo	\$8.50	\$0.46	20		\$20.10	\$1.01
Granite-Glaze	\$6.50	\$0.46	20		\$20.10	\$1.01
Polished Concrete	\$2.50	\$0.17			\$ 5.90	\$ 0.30

Comparative costs based on 10,000 square feet. Your costs may vary based on square footage, preparation needs, coloring, etc.