

# Steps of the Concrete Polishing Process

A polished concrete floor has a glossy, reflective finish. The design options for polished concrete are extensive. You can choose nearly any color, create patterns with saw cuts, or embed aggregates or interesting objects into the concrete prior to polishing. The reflectivity of the floor can also be controlled by using different levels of concrete polishing. Polished concrete is popular in commercial buildings because it is easy to maintain. Maintaining polished floors requires dust mopping and occasional use of a cleaning product.

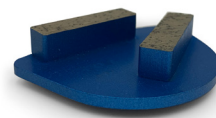
Simply put, polishing concrete is similar to sanding wood. Heavy-duty polishing machines equipped with progressively finer grits of diamond-impregnated segments or disks (akin to sandpaper) are used to gradually grind down surfaces to the desired degree of shine and smoothness.

## Polishing Concrete Process

The process begins with the use of coarse diamond segments bonded in a metallic matrix. These segments are coarse enough to remove minor pits, blemishes, stains, or light coatings from the floor in preparation for final smoothing. Depending on the condition of the concrete, this initial rough grinding is generally a three- to four-step process.

The next steps involve fine grinding of the concrete surface using diamond abrasives embedded in a plastic or resin matrix. Crews use ever-finer grits of polishing disks (a process called lapping) until the floor has the desired sheen. For an extremely high-gloss finish, a final grit of 1500 or finer may be used. Experienced polishing crews know when to switch to the next-finer grit by observing the floor surface and the amount of material being removed.

During the polishing process an internal impregnating sealer is applied. The sealer sinks into the concrete and is invisible to the naked eye. It not only protects the concrete from the inside out, it also hardens and densifies the concrete. This eliminates the need for a topical coating, which reduces maintenance significantly (versus if you had a coating on it). Some contractors spread a commercial polishing compound onto the surface during the final polishing step, to give the floor a bit more sheen. These compounds also help clean any residue remaining on the surface from the polishing process and leave a dirt-resistant finish.



Metal grinding diamond tooling examples.



Resin Diamond Polishing disks.



## Continued...

You can polish concrete using wet or dry methods. Although each has its advantages, dry polishing is the method most commonly used in the industry today because it's faster, more convenient, and environmentally friendly.

Wet polishing uses water to cool the diamond abrasives and eliminate grinding dust. Because the water reduces friction and acts as a lubricant, it increases the life of the polishing abrasives. The chief disadvantage of this method is the cleanup. Wet polishing creates a tremendous amount of slurry that must collect and dispose of in an environmentally sound manner. With dry polishing, no water is required. Instead, the floor polisher is hooked up to a dust-containment system that vacuums up all of the mess.



Many contractors use a combination of both the wet and dry polishing methods. Typically, dry polishing is used for the initial grinding steps, when more concrete is being removed. As the surface becomes smoother, and operatives switch from the metal-bonded to the finer resin-bonded diamond abrasives, they generally change to wet polishing.

## Step-by-Step:

- Remove existing coatings (for thick coatings, use a 16- or 20-grit diamond abrasive or more aggressive tool specifically for coating removal)
- Seal cracks and joints with an epoxy or other semi-rigid filler
- Grind with a 30- or 40-grit metal-bonded diamond
- Grind with an 80-grit metal-bonded diamond
- Grind with a 150-grit metal-bonded diamond (or finer, if desired)
- Apply a chemical hardener to densify the concrete
- Polish with a 100- or 200-grit resin-bond diamond, or a combination of the two
- Polish with a 400-grit resin-bond diamond
- Polish with an 800-grit resin-bond diamond
- Finish with a 1500- or 3000-grit resin-bond diamond (depending on the desired sheen level)

**Optional:** Apply a stain guard to help protect the polished surface and make it easier to maintain.