

Defining the Processing Variables

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THE PROCESS OF GRINDING, HONING and polishing concrete is more technical than most realize. There are many pre-existing variables that can affect the end results of the process performed. Some of these variables are within the contractor's control, such as the quality of your equipment and abrasives and the motion and speed at which you operate your equipment. Others are beyond a contractor's control, such as levelness and flatness of the floor or the concrete mix design used. Knowing how to contend with these variables is the difference between a craftsman who is detailed and results-oriented and a contractor who simply goes through the motions.

One of the main variables on a polishing job is the concrete itself. Residential concrete is generally a low PSI concrete mix (2,500 psi and under) that has been hand troweled. Lower PSI concrete does not polish as well because the surface is not as dense and hand troweling leaves the surface with lots of highs and lows. On the other hand, commercial concrete is a higher PSI concrete mix (3,500 psi and up) that is machine troweled in the open areas and hand troweled in the corners and tight areas. Higher PSI concrete polishes better because it is denser and the surface does not have many highs and lows. If you know a slab will be polished before it is poured, whether in a residential or commercial setting, suggest a polishing-friendly mix design and floor flatness rating to the general contractor or owner. The customer will in turn get a better polishing result and possibly a lower cost to finish the floor.

Concrete is not a consistent material and all of these variables can present themselves in any combination

throughout any one job. The contractor has to work within the limitation of what they are provided.

Variables within the Concrete Polishers Control

- Equipment
- Weight
- RPM's
- The speed at which the machine is moving over the surface in a linear motion.
- Planetary Movement – Active/Passive.
- Direction of planetary movement.
- Abrasives
- Configuration of the diamonds face/tread.
- The saturation of diamond grit in the bonding.
- Hardness of diamond bonding.
- At what point do you switch to an abrasive that will close the surface faster?
- Densifiers
- At what point should the slab be densified?
- What type of densifier is used?
- Repairs
- What equipment repairs are going to be made and when will you make those repairs?
- Physical Grinding, Honing and Polishing
- The degree to which the concrete surface is cut.
- The level of clarity of the cut surface.
- The refinement of the concrete from one grit to the next
- How well the floor is cleaned between each grit abrasive.

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Variables NOT within the Concrete Polishers Control

- The concrete surface you are given to work on.
- Is the concrete hard or soft - PSI?
- What imperfections need to be removed?
- Is the surface level and flat?
- Level means the whole slab. This refers to the angle the whole slab sits on.
- Flat means areas of the slab. This refers to high and low spots within the slab.
- The concrete mix design.
- The concrete for a residential garage is different then the concrete used on bridges, roads and warehouses.
- What types of add mixtures were used?
- Retarders make the concrete cure slower.
- Accelerators make it dry faster.
- Air-entrainers add and distribute air into the concrete.
- Plasticizers increase the workability of the concrete.
- A variety of fibers and polymers may be used to add strength.
- Aggregate (some with different densities) that will vary depending on the
- geographical location.
- Vibrated to remove air.
- Troweled – Hand or Mechanical
- Coatings, Glues, Mastics

For more white papers pertaining to processed / polished concrete, visit the Concrete Processing and Polishing Technical Institute's website
www.polishinginstitute.org