Concrete Surface Preparation;

Grinding as a floor preparation:

Grinding has not been generally acceptable as a method for mechanical substrate preparation when using the AC•Tech 2170™ Water Vapor Reduction Systems, but with innovations in the technology of grinding machines and the diamond plates they use, this form of mechanical preparation can be acceptable, provided the profile of the prepared concrete is acceptable, consistent and dust-free.

The most important factor in this type of preparation is to achieve a consistent CSP[1] value across the entire area to be prepared and have a dust free surface. One of the most recurring problems that we have encountered with grinding is that it seems to be difficult to provide this "consistent" CSP. The operator will start off with a 3 with new plates or segments on the machine, and as they wear down, the CSP value declines also, so a 3 becomes a 2 then a 1 etc. The only way that this can be avoided is for the machine operator to pay close attention to the wear of the plates or segments and replace as they wear.

The AC•Tech 2170™ Systems require a CSP value of 3 on new concrete, a CSP of 4 on existing or older concrete and a dust-free surface for both categories of substrate.

Grinding:

1. On new concrete, grind deck to a CSP-3 using diamonds size 16 or larger. Vacuum deck free of dust. Apply AC•Tech 2170™ @ 150sf/gl.

2. On existing concrete, the vapor drive as tested under ASTM F1869 must be below 10lbs/1,000SF/24hrs, identify any contamination existing in the concrete slab by core analysis before proceeding.

Shot Blasting:

This machine uses a blast-wheel spinning at a high speed that in turn is fed steel shot (balls) and throws them at the deck at high velocity. The larger machines have a high-powered vacuum system with filters to offer a dust free operation. This machine will remove surface laitance, carbonation, thin mil coatings and other surface dirt and debris plus give the concrete surface a consistent "pitted", dust-free surface.

[1] ICRI, International Concrete Repair Institute: Guideline No. 03732: Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays. www.icri.org.

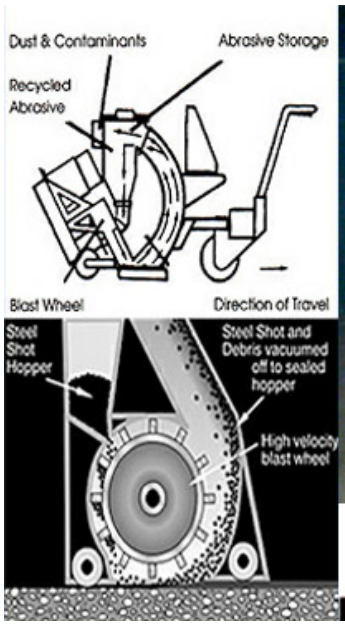
SHOTBLASTING VS. GRINDING:

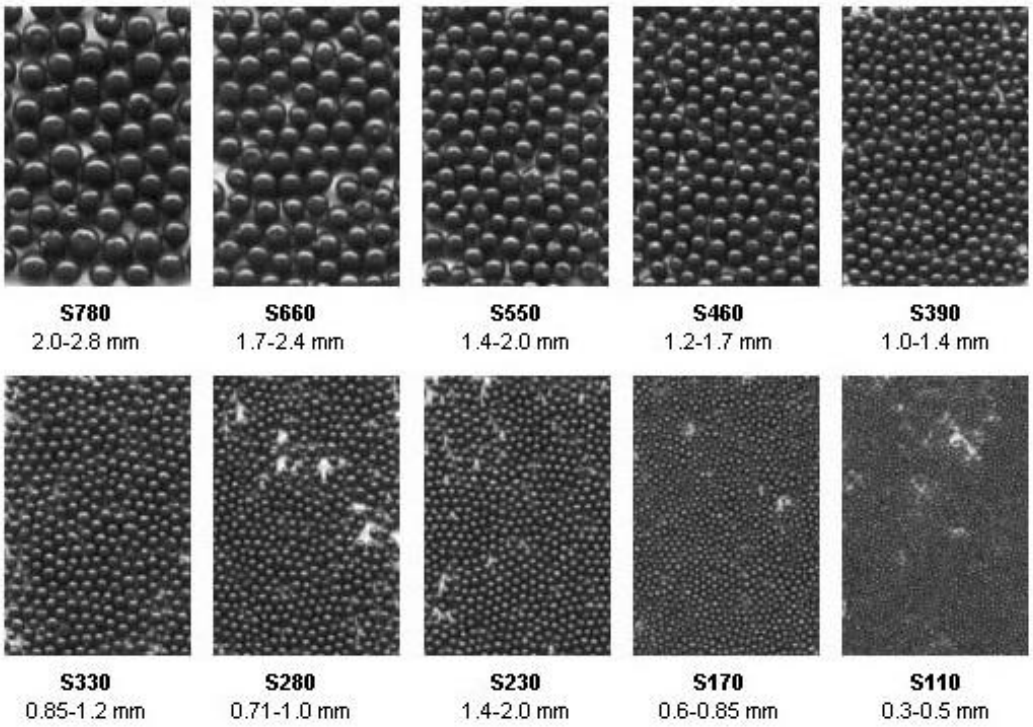
While both concrete preparation methods are acceptable under certain circumstances, the AC•Tech 2170™ Systems require shotblasting in most situations. Grinding is generally not recommended as a surface preparation method other than coatings or finishes removal. The primary reason for the choice in shotblasting has nothing to do with the equipment or who supplies it, it is the manner in which the concrete surface is prepared that is of utmost importance. Shotblasting tends to give a very good profile or anchor pattern in a controllable, consistent dust-free delivery. Grinding tends to be more inconsistent especially in delivering a constant CSP value of a CSP-3/4 and there is a tendency to impact dust into the concrete surface.

Grinding is generally recommended for the removal of old epoxy coatings, flooring systems and floor leveling, for these applications, grinding performs very well. When using grinding as a floor prep method for coating systems such as the Act 2170, the problems soon arise. We are not trying to knock grinding or the grinding machines or their manufacturers, it is that we have learned these things from many years of experience with grinding and their onsite performance.

As an example; Lets say an applicator has a large planetary grinder that he may use for polishing or leveling concrete, he puts on a set of (expensive) plates or diamond segments and sets out to profile a concrete substrate. All is well at first, depending on the psi hardness of the concrete the plates/segments may last a while but they will wear down. As the machine operator moves down the deck, the plates or segments start to wear so that he may have started with a CSP value of 3, but after a while he may be down to a 2 then even lower until such time as he stops the machine to inspect the plates. Then he or the site project manager may call for a change of plates and when completed, continue down the floor, again starting with a CSP of 3 and winding down to a 2 or lower. This is the main problem with grinding, an inconsistent profile.

The secondary, although almost as important an issue as the profile, is the impacting of dust into the substrate surface. Shotblasting because of the direct downward "peening" of the shot on the substrate, it tends to dislodge all dust therefore providing what the machine manufacturers call a "dust-free" profile. With the grinder, due to its circular motion, they tend to grind and pack dust into the surface rather than dislodge it. After grinding you would almost (and would have to in many cases) wash the entire floor free of all dust prior to any moisture reduction coatings application.





Various shot sizes are available for differing applications

Pick up all fugitive shot with a magnet "broom"