

Welcome to modern stone technologies online training video series. In today's lesson we're going to be talking about diamond restoration. Diamond restoration is going to be the most common and, often times, will give the best result out of all the different approaches that you can take with natural stone. While diamonds do have their limitations, I always recommend using this approach to achieve the best overall finish. There are two different types of diamond pads that we'll be using for the diamond restoration process. Metal bound diamonds and resin bound diamonds. The difference between the two is simple; metal diamonds are diamonds bound in a metal matrix, whereas in the resin diamonds the diamonds are in a resin mold. These resin and metal diamonds are actually pads with diamonds literally embedded in the matrix. As with the honing powders and the evolution pads, these diamonds are categorized by grits. The lower the grit the more aggressive the diamond and the higher the grit the least aggressive the diamond. The grit is a number that represents the number of holes in a filtration screen. The metals should only be used to aggressively grind down a natural stone floor. You'll typically only use this approach when trying to remove giant gouges or flattening a floor that's been installed unevenly. The most common use for metal diamonds is lippage removal. Lippage is when one tile is installed next to the other creating a lip in the floor. We'll learn more about the grinding process, metal diamonds and lippage removal in future videos. So for this demonstration we'll just assume the floors have already be ground flat or that they've been installed without any lippage. The most common diamond and the diamond that we'll be using for this demonstration is a resin diamond. The resin diamond can be used to remove light scratching, honing and polishing natural stone surfaces. As mentioned, restoring the floors with diamonds will achieve the best results possible for your natural stone surfaces. In this video we'll discuss the process of using diamonds as well as the challenges on can face when using this process. The biggest challenge that you'll face when using resin diamonds is the lippage that will be inevitably present in the floor. Because these diamonds are very rigid, any unevenness in the floor will prevent the diamonds from covering the tile surface evenly leaving an unfinished section at the edge of each tile commonly known as picture framing. Not only will you leave this picture framing in the floor, but you can also damage the edges of the tiles or destroy your diamond resin pads. Destroying your diamond resin pads is going to cut into the profits of the job and destroying the edges of the tiles is not only going to cut into the profits, but will also ruin your reputation as a professional natural stone restorer. The sure way to be able to use diamonds without damaging the diamond pads or the floor is to flatten the floor completely using the grinding process and you lippage metals. The following equipment will be needed for the diamond restoration process. A floor machine with a water tank capable at running at least 135 pounds, a portable extractor or truck mount system or similar extractor such as a shop-vac or any dry/wet vacuum. A stand up grout brush or similar agitation brush to remove the slurry from the grout lines when needed, three inch foam risers and modern stone technologies vortex diamond pads. Resin diamond pads come in all sorts of sizes ranging from three inch all the way to nine inch pads. But for floor restoration, your typical 17 inch, 175 RPM floor machine the three inch pads are going to be the most efficient. We're going to start by putting our three inch foam risers around the perimeter of our diamond driver. These foam risers will act as shock absorbers and will allow for a little bit of movement or unevenness still left in the floor. Once we've put on the foam

risers we'll go ahead and put our diamonds on top of the risers. Now that we've got the diamonds on the floor machine, lift it upright, add a little bit of water for lubrication and we're ready to get going. The water is not only beneficial to get the machine rolling, but the water also helps the diamonds cut; a very important factor when doing diamond restoration. With the lower grit diamonds you can also add just a splash of neutral cleaner such as modern stone technologies balance to help with the start of the rotation of your machine. For these lower grits we will also increase the weight of our floor machine. For the lower grits such as the metal diamonds or the 50, 120 or 220 resins we will want our floor machine to be at about 150-165 pounds for the higher grits like the 400's 800's, 1500's and above we can run the machine as low as 120 pounds but I like to be in the range 135. As our machine gets going there should be very little or no clacking on the floor, the clacking would be caused by lippage and if the clacking is too extreme it would be an indication that there is too much lippage on the floor to get an even result and again could potentially damage the tiles or the diamonds if we do hear extreme clacking we'll either need to go back down to our metal diamonds and grind the floor flat go onto the evolution pad or maybe even honing powders to get a nice even result. You can learn more about the evolution pads and the honing powders in different training videos. We will do four to six passes over the entire area in other words we will cover that area about four to six times. Make sure that we are moving the floor machine in a slow consistent motion to ensure we are getting a completely uniform finish over the area. One way to determine our speed would be to look at the slurry lines caused by our diamonds. The slurry lines should be 1-2 inches apart, anything closer means your moving too slow wasting valuable time if the slurry lines are further apart that would indicate you are moving too fast which could result in an uneven finish. To give you a general idea of how fast you should be moving your floor machine your going to cover about 150-200 square feet per hour. The first diamond we will be using in this demonstration will be the 220 grit diamond. The 220 grit diamonds are going to remove light scratching patterns and chemical etching. For more extreme or deeper scratches we would need to go down to our 150 or 120 resin diamonds. Or if there were scratches sporadically throughout the area we could take out our hand grinder and remove those individually before moving on to our 220 grit diamond. For more information on removing an individual scratches please refer to our scratch removal video also available. As we're starting the restoration process it is important that we don't go all the way to the walls with our lower diamonds. Very similar to scratch removal we will feather our way out to the perimeter of the area to ensure that we're removing all the damage caused by the lower grit diamonds. If we're starting at the 50 or 120 grit diamond, make sure not to go any closer than about a foot to the wall. If we're starting at the 220 grit we'll go about 8-10 inches away from the wall. For the 400 grit diamonds we are going to be approximately 4-6 inches away from the wall. And 800 and above you can pretty much go all the way to the wall without any issues. Here an example of a floor that was brought all the way to a polish where we didn't feather our way to the wall. Notice the scratch patterns around the perimeter are caused by lower grit diamonds that we didn't fully take out. Once you have done your six passes over the entire area it is time to extract and rinse the slurry that's on the floor. To extract the slurry you can either use a portable extractor, a truck mounted system or a dry wet vac such as a shop vac. Make note that with the shop vac you will have to manually rinse and agitate the floors because you do not have the benefits of the pressure from the

portable or the truck mounted systems. Even though there is a little more labor involved using a shop vac system it can actually be a little bit more convenient when having to go up stairs or work in small areas. Once the floor has been rinsed and extracted, thoroughly dry the area, and inspect the floor to make sure you are at the desired finish you are looking for. After a 200 grit you will notice the floors are still very matte, there is no light reflecting off of them, and they look a lot lighter than what you would think they would look like. Once we have completed the 220 grit our next step would be the 400 grit diamond. Having a metal paint scraper or a putty knife will be beneficial to taking these diamonds off. Add a little bit of water from our water tank and start the machine. We're going to move the floor machine in the same fashion we did in the previous two steps. Once you have done your six passes over the entire area it is time to extract and rinse the slurry off the floor. You've completed the 400 you'll notice the stones are starting to darken a little. We're still not getting a whole lot of reflection but we are enhancing the natural colors presently in the stone. Once we have extracted and rinsed our slurry from the 400 grit diamond, the next step is going to be the 800. Add a little bit of water from our water tank and start the machine. Make note that as we move up to our higher grit such as the 800, 1500 and above, the slurry lines are going to be a lot harder to see. The reason for this is that as we move up in grits we're removing a lot less stock from the stone surface. Once you have done your 6 passes over the entire area, it is time to extract and rinse the slurry that is on the floor. After the 800 grit diamond we're starting to see some light reflecting off the stone and we are still continuing to enhance the colors in this marble. Now that we have rinsed and extracted our 800 grit slurry our next step up is going to be the 1500. We will add water and move the floor machine in the same method that we did in the last three steps. Again, we're going to do 4-6 passes over this entire area with our nice, slow, steady movements. Once you have done your 6 passes over the entire area it is time to extract and rinse the slurry that's on the floor. After the 1500 grit diamond we have left ourselves with a nice satin finish. We've got some nice reflection and some nice clarity and we've also continued to enhance the stone's surface. The only way to get this look more reflective or more enhanced would be to go up to a polishing powder such as modern stone technologies, Jazz. You can learn more about using Jazz in the Jazz polishing powder tutorial video. This concludes the diamond restoration process tutorial. Thank you very much for watching and we'll talk to you soon.