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BUILD SMART NEWSLETTER

#Smart2SustainableSolutions



Architectural and Artistic Applications of Stone using Epoxy Compound

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For over two decades now, I have been actively involved in architectural and artistic application of stones. I would like to underscore a few significant changes that are noteworthy.

MAJOR INDUSTRY TRANSFORMATIONS

Shift in Marble Sourcing: The first major departure has been a move from using Indian marble to imported varieties. This transition required changes in sizing, cutting, laying, and polishing procedures.

Reduction in Flooring Thickness: The second notable change is that flooring stone thickness has steadily decreased, from 20 mm down to as little as 15 mm.

Expanded Inlay Practices: Third, there has been a significant rise in the practice of inlaying contrasting materials into flooring stone.

Demand for High-Gloss Finishes: Fourth, we've seen an increased obsession with glazed or mirror-polished floors. Epoxy filling began playing a key role in achieving enhanced shine, and certain silicones are now used to improve jointing performance.

Surface Texturing of Sandstone: Fifth, texturing sandstone surfaces for aesthetic effect has grown in importance. This led to considerable innovation in computer-guided mechanical tooling to create intricate textures. Today, texture and visual appeal often outweigh the stone's underlying physical properties.

In recent years, especially after the COVID-19 pandemic, the availability of skilled artisans for artistic stone applications has become unpredictable and costly, as many craftsmen have moved away from skill-driven work.

EXPLORING CNC AND EPOXY FOR STONE INLAY

I found a way out and began transferring designs using CNC onto the stone surface, followed by filling the CNC-cut design with epoxy. This epoxy grout is then cut and polished in the same way as a flooring surface. The results have been very encouraging, allowing me to replace the conventional inlay process of manual chipping and material insertion, which is then polished.

KEY STEPS INVOLVED

- **Level the Stone Surface**
 - Most gang saws fail to ensure a uniform cut surface, creating technical difficulties when running CNC machine tooling over an uneven surface.
- **Prepare the Design Files**
 - The design must first be developed in CAD format and then converted to CorelDraw for running through the CNC machine.
- **Allow the Stone to Dry Thoroughly**
 - After CNC work, the stone should be allowed to dry to the core.
- **Mechanically Cut the Stone Surface**
 - The stone surface should be mechanically cut to make it presentable and even.
- **Prepare and Apply the Epoxy Mix**
 - Epoxy has three parts:
 - Resin (2 parts)
 - Hardener (1 part)
 - Pigment

All three components need to be stirred into a workable paste and placed in a handy tube with a nozzle to ensure accurate filling.

- **Apply a Second Layer if Needed**
 - After the first filling, the epoxy mix tends to shrink as it dries, and a second layer is often required. Different colors of pigment may be used as per design needs.
- **Polish the Stone Slab**
 - Once the epoxy has dried, the stone slab is ready for polishing.
- **Prepare for Installation**
 - The final result is now ready for installation.

FINAL OUTCOME

The experience has been very encouraging, demonstrating that even the most complicated designs can be handled effectively. The product is long-lasting, requires no maintenance, and shows no signs of fading or degeneration.



CNC Work in Progress



Primer Application on CNC Work



Dry Stone Panel ready for Epoxy



Epoxy Filling in CNC Text



Epoxy Filling

Stone Grinding after Epoxy



Finished Signage





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