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The reusing of dental stone-experimental study

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Introduction: One of the biggest problems that Mongolia and the whole world face on a daily basis is - trash management. Nowadays medical waste has become a big topic of discussion. In theory, the waste that is produced by the medical industry goes through 3 ways: decontamination, burning and burying, but at the moment, the gypsum product is discarded in a regular trash bag. Dispensed dental stone gets into a chemical reaction with soil water and leftovers of biological decomposition, forming hydrogen sulfide gas. Hydrogen sulfide gas is extremely flammable and highly toxic, has no color, and is most well-known for its pungent "rotten egg" odor. When handling dental stone, most European countries take the route of recycling or burning it to nothingness. We have done a study on the recycling of dental stone. Reusing gypsum stone is not only ecologically sustainable but also benefits financially.

Methods: Samples of new and recycled gypsum were analyzed by X-ray diffraction (XRD) analysis to determine the phases and proportions of the compounds in the composition. The sample was prepared by drying and dehydrating the gypsum sample at 150°C for 1 hour. In addition, recycled gypsum was mixed, samples were prepared, and a comparative study was conducted.

Results: The fresh type 4 gypsum contains 71.6% of calcium sulfate, 3.6% of calcite, 6.7% of cristobalite and 18.1% of basanite.

The recycled type 4 gypsum contains 74.8% of basanite, 10.4% of gypsum, 5.2% of calcite and 9.6% of anhydrite.

The recycled gypsum's surface is even smoother than fresh gypsum.

Conclusion: Type 4 stone gypsum contains 71.6% of the total volume of new-generation gypsum, while recycled type 4 gypsum contains 74.8% of the total volume of basanite or CaSO4*0.5H2O. This shows the need to refine and retest the method of recycling. However, this compound is a dehydrated type of gypsum and can be reused. The surface of the recycled gypsum is even and smooth, which makes it comfortable to work with.

Biography

Bilguun E is a lecturer at the Department of dental technology and oral hygiene, School of dentistry, MNUMS and she is 31 years old. She graduated from the School of Dentistry in 2012, with a bachelor's degree. She has 20 publications in the Mongolian language and 3 publications in the English language and she is a young researcher.

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