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Diatomaceous Earth stones as a potential new tool in flattening paper objects

Sustainability in the field of paper conservation is an important issue and this commercially available home product can become a viable alternative to paper blotters.

Diatomaceous Earth bath stones (aka DE stones) are made of material similar to Fullers' Earth which already has its place in the field of art conservation. The DE stones are advertised by their manufacturers as made of all-natural material. According to the manufacturers DE stones dry out instantly (DE holds up to 150% of its weight in water), prevent bacterial and mold growth and are made without additives. DE stones do not contain asbestos or other substances of very high concern defined by the European Chemicals Agency and the Office of Environmental Health and Hazardous Assessment. According to the manufacturers this product have passed Prop-65 which holds even more rigorous standards than the EPA.

DE stones have a potential to replace cotton blotters in some drying procedures in paper conservation. However, many other possible uses for this product could be tested, from the stones being an absorbent pasting out surface, to their application in blotter washing techniques.

The stones are rigid and porous, with one side being flat and the other usually having a carved design / manufacturer logo. Their surface is similar to ceramic bisque surface. A diatomaceous Earth bath stone weights about 2 kg / 4 pounds and comes in three sizes which vary slightly depending on the manufacturer:

1. 4 x 4 x ¼" coaster
2. 23.6" x 15.4" x ¼" (one large stone)
3. 31.6" x 22.3" x ¼" (a large mat which comprises of four stones, each measures 11" x 16" x ¼")

Two commercially available products were analyzed (Dorai and Sutera products are available on line) and used for treatment in a private paper conservation studio. Both XRF and FTIR analyses were conducted at the National Archives Heritage Science Laboratory with encouraging results.

Dr. Jennifer Hermann who did the analysis found no suspicious organic substances. The elemental analysis of the samples taken from the stones showed similarities to Fuller's earth.

An experiment with drying a wet piece of Whatman filter paper directly against the DE stone also did not show any undesirable transfer and the product was deemed safe for the use in paper conservation drying techniques.

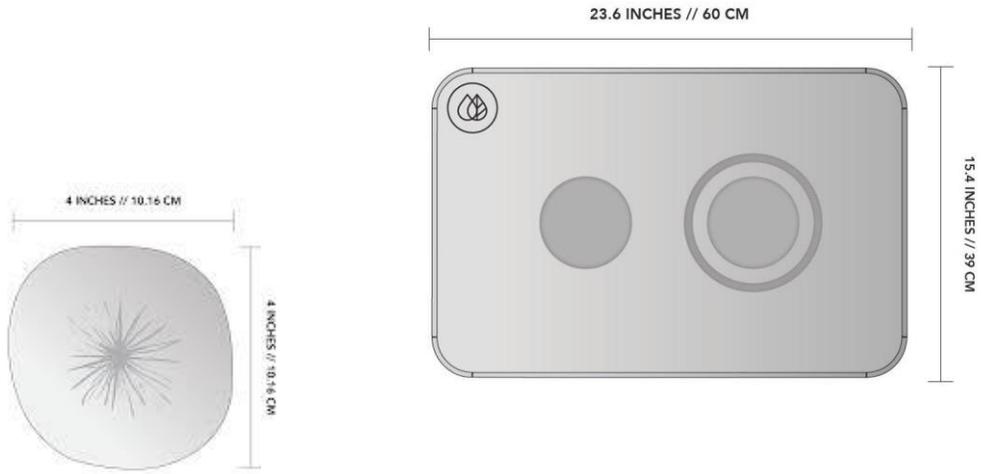


ADVANTAGES of drying with diatomaceous stones

- Cost ranges from 40\$-70\$ per stone but it is potentially reusable in perpetuity
- Reusability = sustainability in standard drying paper conservation procedures
- No deformations and no need for changing stones as it is with deforming blotters
- Combination of rigidity and weight (think = a blotter and Plexi glass in one)
- No concern about the mold growth as the stones are porous and the moisture wicks in and evaporates.
- Provides a good option for hard and soft sandwich drying set up.
- Easy on conservator's back
- Coaster size pieces may be used as pasting area for hinging or tear repair aids.

NEGATIVES

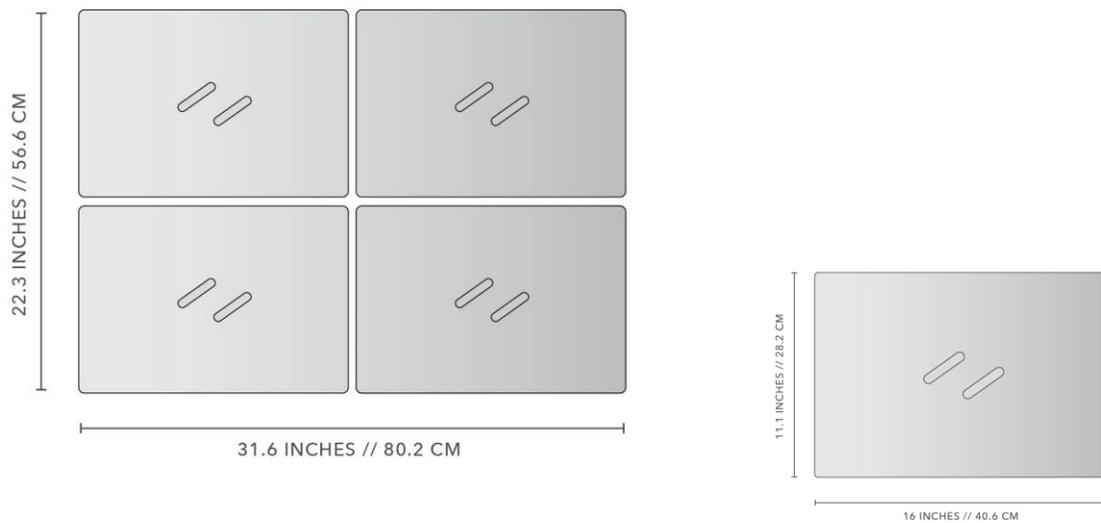
- Relatively small size: 4 x 4 x ¼", 23 ½ "x 15½" x ¼" and 31.6" x 22.3" x ¼" (four smaller stones combined)
- Rounded corners prevent from combining the slabs into a larger area without gaps
- **As a commercial product, this item can be discontinued**
- **The content may be altered / additives may be added without notice**



Different sizes of DE stones produced by SUTERA and DORAI are available for purchase:

4 x 4 x ¼" size coaster and a single stone 23.6 x 15.4" (above)

11" x 16" x ¼" slab which is combined into a larger surface of 31.6 x 22.3 x ¼" (below). The stones can be combined to create a larger surface and the rounded corners can be filled with plugs made out of coasters or from woolen felt.





An example of a hard / soft sandwich during drying and flattening procedure of an etching.
Hollytex isolating layer was used in this case to protect the object and to keep the stone clean.