

Pollen/Phytolith/Starch Washes from Groundstone and Vessels

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Equipment and Supplies:

Bowl to collect liquid from wash

Clean trowel

Sonicating tooth brush (or you may use a stiff-bristled brush, such as a tooth brush or a paint brush with bristles cut to a length of 3/4 to 1 inch

Jars with rubber gaskets to contain samples, or plastic bottles (lids must seal to prevent leakage in the mail or during transport), peanut butter jars or canning jars are good. Plastic bottles with plastic screw lids also are excellent sample containers.

2 plastic squirt bottles (1 for HCl, and 1 for distilled water)

Canned air, pressurized air (Dust off, Tornado, etc.)

Liquid household bleach

Distilled water

HCl, diluted to 10% or Muriatic acid

Instructions:

All supplies must be sterilized prior to collecting the sample. Mix a bleach solution (1 part bleach to 3 parts water) and use to clean the bowl, brush, and jars. All supplies must be thoroughly rinsed with tap water to remove any bleach residue. Bleach oxidizes pollen, so any residue left on the sampling supplies will destroy the sample. Rinse copiously with tap water so there is no bleach smell left on the supplies. Then rinse lightly with distilled water to remove any particles introduced by the tap water. Fill 1 squirt bottle with dilute HCl or Muriatic acid and the other with distilled water.

Unwrap first piece of groundstone and remove any dirt clods adhering to the ground surface (do not include these in the sample). Next, remove additional dirt using a clean trowel. Next, use canned air to blow any contaminants or loose sediment off the surface. You should have a fairly clean looking surface at this point. If not, loosen more dirt with the trowel and use the canned air again. If you cannot see the ground surface of the tool, call Linda for further instructions, which might include lightly washing the surface with a gentle stream of water.

Wash non-ground surfaces so that any liquid dripping down these surfaces does not collect additional sediment to contaminate the sample. Be certain not to wash the ground surface during this process unless it is thoroughly covered with caliche (see next paragraph).

When ground surface is thoroughly covered with caliche (calcium carbonate), rinse the entire artifact with water to remove all dirt, scrubbing with a brush to be certain it is clean. Otherwise, skip this step and proceed. If the groundstone is thoroughly covered with caliche, call Linda for more instructions in removing the caliche prior to collecting the wash. The record of use is on the surface of the groundstone, not contained within the caliche.

Hold groundstone so that liquid dripping from ground surface will drip into bowl, but not run down the underside of the artifact. Squirt ground surface with vinegar to wet. If surface bubbles, there is some calcium carbonate present, which must be dissolved (or the groundstone is made of limestone or other mineral soluble in acid). If the artifact is soluble in acid, only a limited quantity of HCl or Muriatic acid should be used on the surface, as it will erode the surface.

The wash should be continued with distilled water just as soon as any apparent carbonate deposits are removed. For non-soluble groundstone, use the HCl or Muriatic acid until the bubbling stops, indicating that the carbonates have been dissolved. This will uncover the original ground surface and allow the pollen accumulated on it to be removed.

The ground surface should be scrubbed with the brush (a sonicating tooth brush works wonders getting the surface clean) while the HCl or Muriatic acid is being applied. This is easier with 2 people -- 1 to hold the rock and the other to squirt the HCl or Muriatic acid and brush, or 1 to hold the rock and brush and the other to squirt the liquid. Do not brush so vigorously that you spray the acid on the counter or on people. Remember both safety and that any pollen removed from the ground surface is contained within the drops being sprayed around.

When the surface no longer bubbles, indicating that the carbonates have been dissolved, continue washing with distilled water and brushing (in circles) with the brush. The object is to get the ground surface clean enough to eat from. This insures that any dirt particles originally present in pores of the rock have been removed, and with them any pollen that had been ground into these pores. Brush only the ground surface, not unground areas surrounding them. When the ground surface is clean, rinse the brush into the collecting bowl with distilled water. Pour the sample into the jar (or jars) and seal.

Sterilize all supplies with bleach before proceeding to the 2nd wash.

Remember to rinse copiously again!