

# PAPER CLAY

## A Primer

by Rosette Gault

If you've been looking for a clay body that can be used to make large slabs with little or no warping or cracking; has incredible green strength; can be assembled at any stage (from wet to leather-hard to dry); is compatible with your existing glazes; and, when fired, weighs up to 50% less than ordinary bodies, you'll find such a miracle body in paper clay. The clay in paper clay can be porcelain, stoneware, terra cotta, earthenware and/or scrap.



Given a good foundation in basic clay-working techniques, such as coiling, pinching, slab building, press molding or even throwing, there's no need to be shy or too cautious with paper clay. Before the bisque firing, almost anything goes. After the bisque, you'll need to consider the natural properties of the clay, such as its maturation temperature, because the paper will be gone.

### Equipment

You'll need some special equipment for paper clay, but nothing that you can't readily find.

- 2 large, clean, watertight barrels—one for the paper pulp, one for the clay slip. A third empty bucket or barrel is convenient.
- Heavy-duty drill with blunger attachment for mixing and blending pulp and slip.
- Large screen(s) for straining the paper pulp.
- Large plaster slab(s) for drying the mixture. (Optional, but useful.)
- Assorted tools and supplies, including heavy-duty garbage bags, plastic covering, large sponge(s), plastic rib, mixing stick, large scoop or cup, needle tool, knife, rasp and serrated rib(s), plus (optional) bleach and deflocculant (such as Darvan).

### Firing Precautions!

Paper clay can be fired in electric, raku, natural gas and even salt kilns. I use an electric kiln with the lid propped open until the paper burns off completely. All switches are on medium by that point. The smoke, which is equivalent to wax resist burn-off, should stop after the temperature exceeds 500°F, depending on how much paper you have in your clay. Here are the few things to watch out for when firing paper clay:

- Be sure to fire paper clay only in well-ventilated kilns.
- Never use cellulose fibers with fire retardant in them (such as building insulation).
- Expect a smoking period during the first two to three hours of the firing, depending on how much paper clay is in the load.



Rosette Gault has written and lectured extensively about paper clay over the past decade. Inventor of P'Slip® and P'Clay®, commercial varieties of paper clay and paper clay slip, Rosette is also the author of two books on paper clay. She currently resides in Seattle, where she teaches at Pottery Northwest.

You may notice that "paper clay" is two words and not one word as commonly found. While Rosette did not pursue the trademark on "paperclay" in 1990 based on legal advice she received, another company did trademark the name Creative Paperclay® for a resin-based non-firing clay. Rosette later trademarked P'Clay and P'Slip to distinguish paper clays intended for firing from polymer clays not intended to be fired. Rosette's trademarked names are used for products manufactured according to her patents and now under license with New Century Arts, Inc.



## GETTING STARTED

Before getting started with paper clay, here are a few tips on how to select and evaluate the types of paper to use:

Lower-grade paper, such as shredded paper from copying machines, works very well. Even office carbon copies or yellow- or pink-colored papers do not adversely affect the mix. Fired results of lower-grade paper are relatively more dense and slightly heavier than with higher grade. Toilet paper (bathroom tissue) is also a good source.

Certain types of better stationery and/or brochures or leaflets printed on nonglossy paper

are among the higher grade papers. Higher "rag" content means more delicate fibers.

Don't use newsprint, brown bags or cardboard if you want a clean, white result. There is too much sawdust-grade pulp in their compositions.

Glossy brochures and catalogs take a longer time to break down into pulp so they should be avoided.

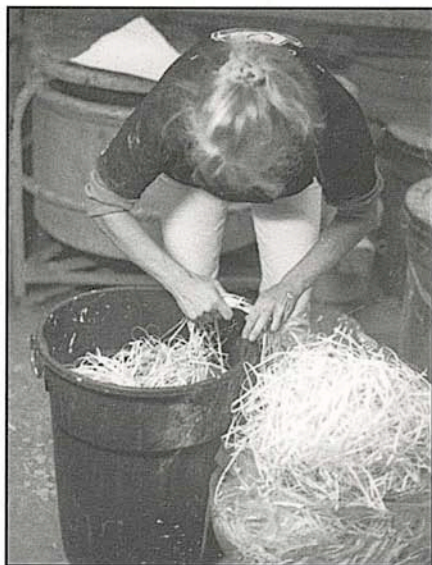
Use a consistent source for your paper. Once you've selected a paper, make a test batch of clay and test fire it to be sure that you like the clay color. Most inks, including those used in photocopiers, are carbon based and burn out during

firing; but ink-containing mineral oxides will stain your clay. Testing also helps determine the best proportion of paper to clay for your purposes.

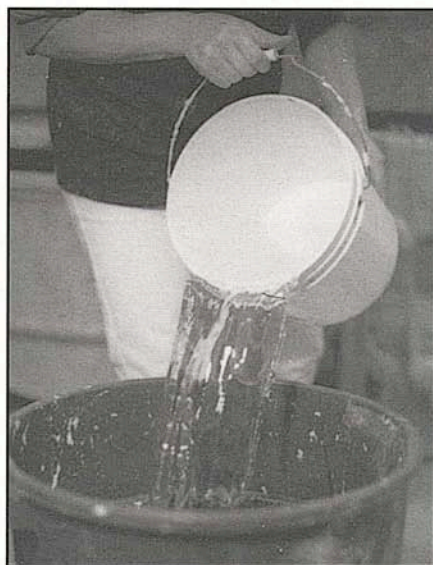
Wet clay particles are much smaller than paper fibers so they mold to the fibers as they dry. When the paper burns away during firing, a fine-grained latticelike structure results.

Be aware that adding paper to your clay body may significantly change the maturation temperature, because small amounts of clay are routinely added to commercial papers to improve texture, and the clay in your pulp will tend to raise overall maturation temperature.

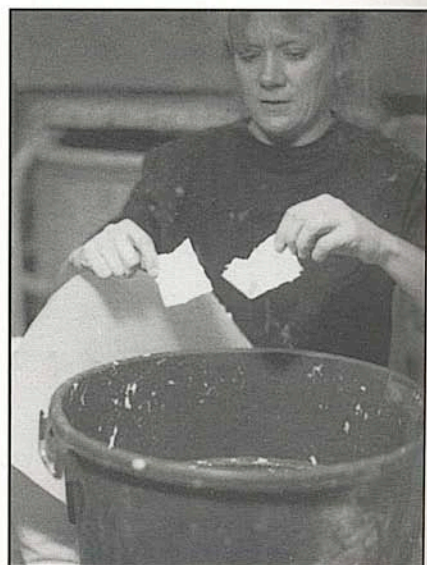
## PAPER PREPARATION



**1** Turning paper into pulp is simple. For already shredded paper, use a large, watertight barrel. Fill it halfway with the dry, spaghetti-like shreds.

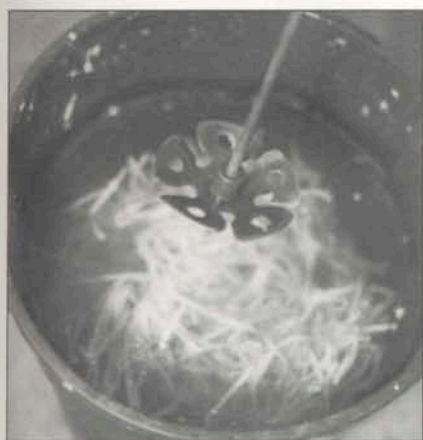


**2** Pour in clear water, enough to fully saturate each piece of paper. Hot water seems to speed this. Soak as desired.

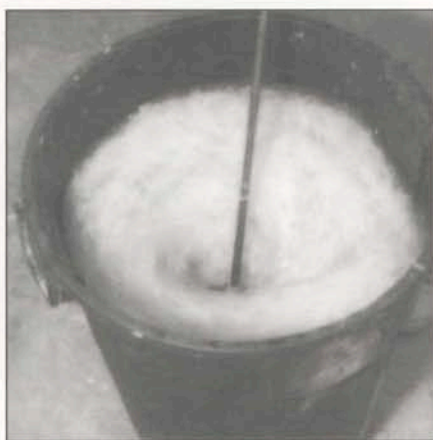


**3** For papers/brochures that have not been shredded, fill the watertight barrel a third of the way with clean water, hot if possible. Tear the paper into 3×4-inch scraps. Drop each scrap into the water. The wet paper will start to disintegrate and expand. Some papers are so absorbent they grow like sponges to five or six times their original volume.

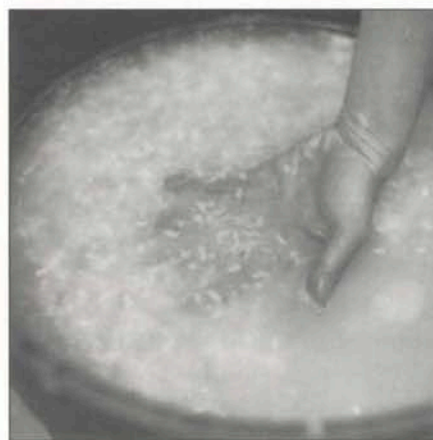




4 Once the paper scraps are thoroughly saturated, use a glaze-mixing blunger to homogenize.



5 Be generous with the water in pulping and add water if the mixture is too thick; it should be very soupy so as not to overtax your mixer. Add a few drops of bleach to retard mildew and bacteria growth, especially if you don't plan to use the pulp within a day or two.



6 Mix the slurry until the printing is illegible and the pulp appears to be homogenous.



7 To drain, pour the slurry over a large-mesh screen, and press the water out by hand. Strain the pulp gently.



8 Squeeze out as much excess water as possible. Store the mostly de-watered pulp in an airtight plastic bag until you are ready to mix it into clay slip. However, do not let this wet pulp sit for more than two weeks or it will smell worse than a garbage dump. To store the pulp so it won't rot, you can freeze it in convenient packages. A better way, however, is to allow unused pulp to dry out, then reconstitute what you need in water.

## HEALTH AND SAFETY

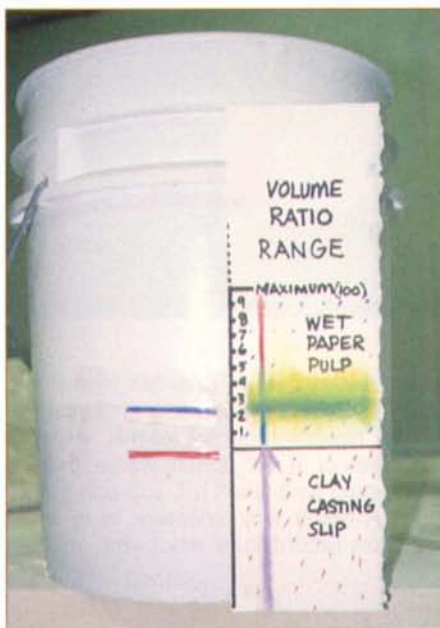
- If you have any skin sensitivities or skin allergies, wear rubber gloves when handling paper clay.
- If you batch any dry powder materials, be sure to wear an approved respirator.
- When blunging the clay, wear goggles.
- Due to the wide variety of potential ingredients found in clays, papers and waters in various regions of the world that are beyond the control of the authors and the publishers, use caution and care in trying these methods.

## Mixing Paper Clay

Select an appropriate clay body, basing your decision on desired color and texture. If you want a fine surface, use a refined clay, casting slip or porcelain, as well as the highest rag-content paper you can find.

Prepare a bucket of well-blended slip from your selected clay. I start with about 100 pounds of dry clay per large barrel. This makes about half a barrel full of slip. Consistency should be like thick honey, with or without a deflocculant, such as Darvan.

Before mixing paper fibers into the slip, decide how much pulp you want to add. Judge by eye. Anywhere from 20% to 50% (by volume) paper pulp added to the slip will work. If just starting out, try about 30% to 35%. If your paper clay is cracking too much when drying, add more pulp to your batch. The more pulp, the less the cracking in general. I add more pulp for the larger works.



Add pulp to clay slip by volume. Anywhere from 20% to 50% paper pulp added to the slip will work. If just starting out, try about 30% to 35%.

Measure the pulp to be added from the main batch; otherwise, it is too easy to lose track of how much you already put in. Then you wouldn't know quantities involved in some wonderful clay and would have to guess again the next time you try to mix it.

Remember that the higher the ratio of paper pulp to clay, the lighter and more porous the fired result; a large amount of paper also will raise the body's maturation temperature. Consider the properties of the pulp grade you are using.

Start mixing the clay slip with a strong glaze blunger if you have one. If not, stir the slip with a stick and add handfuls of moist paper pulp, mixing well after each addition. Let stand, sponge out excess water from the top, if desired. As the mix dries to desired consistency, stir occasionally with the stick or by hand.

**Note:** Some potters have successfully mixed paper clay in commercial clay mixers. If you decide to try this, beware of clumps of unsaturated paper; they could cause unwanted pits on the fired surface.



Paper clay can be prepared by spreading the slurry over a plaster drying bat. If you do not have a plaster bat, try spreading the wet mix over butcher paper on the floor. Because there is no absorption in the floor and there is evaporation only from the top, floor-dried slabs do tend to warp, which could be to your advantage. However, to avoid warping, turn slabs over from time to time as they dry. Floor-dried slabs take about five times longer to set up than plaster-dried slabs.



If you want flat slabs, the best approach is to pour a layer of paper clay slurry over a plaster slab; lift the "leather" just once off the plaster surface as soon as you can without tearing it, then put it back down. Additional layers may then be poured over top to achieve the desired thickness. Let the slab dry out completely on the plaster.



## Using Paper Clay

Paper clay can be handbuilt, cast in molds or poured out onto large plaster bats to make slabs of any thickness. I start with a thin layer, let it set up a bit, compress with a rubber rib, then add successive layers of fresh paper clay, successfully building slabs up to 2½ inches thick. The plaster will absorb the excess water much more quickly than you might expect. Most slabs produced on plaster do not warp, unless you encourage them to, or if the slab is too thin or the paper-to-clay ratio is wrong.

Paper clay does not wedge like normal clay and, in certain ways, its “window of opportunity” or plastic stage is generally shorter. I usually avoid wedging altogether—which is easy to do because the paper clay is already homogenous—and work with it as a thick slip.

There's no need to cover your work with plastic to keep it moist. You can if you want to, but you can also let the piece dry out completely in the open air, then add wet clay over dry indefinitely. You can fix cracks, attach parts and so forth until it's time to fire. You can even mix and match different paper clay bodies (e.g., low-fire red and white paper clay) with each other, too.

You can also use plaster or latex molds with paper clay, and you'll find it releases sooner and is stronger to handle. For latex, simply peel the mold off the totally dry paper clay. No need to worry about minor undercuts. Paper clay greenware is usually strong enough to survive intact as you peel the latex off.

Do not try to use paper clay slip in bisqued molds, however; it will not release. Use this property to your advantage to repair bisqueware. You should be able to repair minor bisque cracks (the larger the crack, the greater the risk) with fresh paper clay slip, or even build anew onto wet bisqueware. Re-bisque repaired/altered pieces, then glaze and fire as usual.

Paper clay is an excellent choice for large-scale projects, including wall

pieces, because the finished weight is noticeably less than a conventional clay body. You can also mix/attach different concentrations of paper clay to itself. Try a super-lightweight (high ratio of paper pulp) interior armature with a more dense (lower paper concentration) mixture for the outer shell surface.

Green strength is noticeably improved with paper clay bodies, and so most unfired dry pieces can take some bumping and shocks; even a car ride to a kiln for firing is usually no problem. And if a break does occur, it can easily be repaired. If your paper clay slab inadvertently cracks, try repairing it with a fresh layer of the same mix or with a compatible slip. In most cases you will be happy with the result. Reinforce weak or super-thin areas as desired by adding fresh layers of wet and/or dry slabs of paper clay.

Conventional clay items at the bisqued, glazed or even greenware stage may be placed immediately into the wet and/or drying paper clay. There will rarely be shrinkage cracks around them, as would be expected if you were working with a conventional clay body.

It's also possible to combine thick and thin paper clay slabs. I have built forms that have 2½ inch next to ¼-inch-thick elements. While it may be tempting to make super-thin or ultra-outrageous shapes, remember, as soon as the piece is bisqued, it behaves just like the regular clay body. Be careful not to fire it beyond its maturation temperature, or the form may slump. You may have to reinforce thin or unsupported areas with interior structures of paper clay.

Even bone-dry sections can be assembled, using wet paper clay as an adhesive. For best results, quick dip the ends of dry pieces in water or sponge joints with water and/or slip before scoring and assembling with paper clay. When these joints dry, you can build up or fill in areas by adding more wet paper clay as desired.

As with ordinary clay, all kinds of

surfaces (from burnished smooth to scored rough) are possible. If you want to carve detail on dry surfaces, but find it too difficult, try firing to 1000°F. The slab will carve beautifully after that because the paper fibers will be gone, but the clay will still be immature. This burning-out process works particularly well for low-fire talc bodies and porcelains.

Paper clay bodies are also suitable for raku/pit-fire work; most (even some porcelains or low-fire talc bodies) exhibit improved thermal-shock capability if they have been bisque fired. Before the bisque, surfaces can be burnished smooth (at the soft-leather-hard stage) with a flexible rubber rib or textured with tools.

Remember, once the fiber is burned out after the first firing, what is left is plain fired clay, so all rules dealing with clay in this state apply.



To cut a slab after it is totally dry, simply score and gently snap apart like glass or drywall.



Some people prefer to use a saw or jigsaw to cut totally dry paper clay slabs.



Mending cracked or broken greenware can be a challenge with standard clay. But with paper clay, the fix is just a matter of knowing the steps to follow for great results every time.



Oops! Leg is broken . . . what to do now? (No sweat)



Re-wet the leg.



Dip leg in paper clay slip.



Attach some fresh paper clay over paper clay slip on the wet part.



Model a key to fit inside the boot.



Let dry out completely overnight.



Re-moisten dry post with paper clay slip (generously).



Insert post into the boot.



Trim and fettle detail as you desire.



Let dry out and fire as normal.



Add ears or change other parts if desired.

## FOR MORE



## For More Information

### Books

Gault, Rosette. *Paper Clay*. Philadelphia: University of Pennsylvania Press, 1998. Comprehensive reference for the studio artist.

Gault, Rosette. *Paper Clay for Ceramic Sculptors*. Seattle: Clear Light Books, 1993. Original handbook, spiral bound.

### Articles

Gault, Rosette. "Amazing Paper Clay." *Ceramics Monthly* (J/J/A 1992): 96-99.

Gault, Rosette. "Rules, Rules, What Rules?" *Ceramics Monthly* (J/J/A 1996): 77-80.

Mau, Linda. "Paper Clay and Steel." *Ceramics Monthly* (May 1997): 46-47.

### Internet

[www.paperclayart.com/](http://www.paperclayart.com/) Rosette Gault's site. Well-developed web site and a good starting point for research on the web.

[www.ceramicart.com.au/paperclay.htm](http://www.ceramicart.com.au/paperclay.htm) Comprehensive article on paper clay that first appeared in *Ceramics Technical*, by Graham Hay, an Australian clay artist using paper clay.

[www.escribe.com/art/clay/search.html?qsubject=paper+clay](http://www.escribe.com/art/clay/search.html?qsubject=paper+clay) Web site containing the search results for CLAYART messages containing the word "paper clay."

[www.escribe.com/art/clay/search.html?qsubject=paper+clay](http://www.escribe.com/art/clay/search.html?qsubject=paper+clay) Same as above but a search on the other spelling "paper clay."