

PAPER MARBLING BASICS

from Pamela S. Smith, MarbleSmith Papers

History

Marbling is a paper decorating technique in which floating colors are transferred from the surface of a liquid to a sheet of paper. Though the origin of the craft is somewhat uncertain, earliest examples of the work can be traced to the East. Perhaps as early as the 8th century the Japanese were practicing a delicate form of marbling known as "Suminagashi." The craft was popular in Persia and Turkey, as well, appearing on 16th century miniatures. In these countries the process was known as "Ebru" or "Cloud Art." By the 17th century, complicated fine-combed marbling was introduced into Europe. "Dutch work," as it was called, was shipped to England wrapped around import items as a means of avoiding the costly duty on imported papers. Once removed the paper was flattened and sold, most often to bookbinders.

For many years the marbling process remained a closely guarded secret. Apprentices were schooled in individual techniques, but only the master marbler understood the full scope of the craft and its application.

By the 18th century marbling began to appear in this country and was even used as a means of distinguishing continental currency. Before the process of book making became highly mechanized, publishing firms did their own production which almost always included marbled papers. In recent years the craft has enjoyed a renaissance and continues to survive in the context of the book as art.

All About the Materials

Size: A gelatinous solution upon which the colors are floated. I will be using carrageen moss, properly known as *chondrus crispus* and popularly known as Irish seaweed. This is a lichen that grows on cliffs along the Atlantic Ocean, the North Sea, and rocky coastal areas of Ireland. It contains a great quantity of mucilage proven excellent for the marbling process. Also used to thicken foodstuffs today and fortunately available in a powdered concentrated form which requires no cooking.

Colors: Various paints and inks can be used, both water based and oil. I will be using a combination acrylic/gouache paint called Acryla, made by the Holbein Company, as well as Winsor & Newton Gouache.

Dispersing Agent: Liquid additives required to facilitate the flow and balance of the colors on the surface of the size. Ox gall, the treated bile of the ox, is most often used

with traditional marbling and water based colors. I will be using a Golden Acrylic Flow Release with the Holbein Acryla.

Alum: A mordant or fixative sponged onto the surface of paper to be marbled. Prevents bleeding or running of colors in the rinsing process.

All About the Equipment

Two 5 gallon plastic buckets to hold mixed size and to catch rinse water.

Electric blender to mix carrageen and water.

Tablespoon for measuring powdered carrageen.

Marbling tank and rinse board to hold size during sheet printing and to hold sheets during the rinsing process.

Skim board for cleaning the surface of the size.

Newspaper strips for skimming and absorbing color left floating on the surface of the size.

Rubber gloves to protect hands from irritants in color and alum.

Equipment for applying alum:

Gallon glass jar for storing alum solution.

One quart bowl from which to dispense alum solution

Sponge for applying alum.

Binders board slightly larger than the alum dampened papers to flatten the sheets prior to marbling.

Color equipment:

Pint or half pint canning jars with lid to hold mixed colors.

Color dispensing tools, such as whisks, eyedroppers, brushes, atomizers.

Pattern making tools, such as combs, rakes, stylus and anything else you can come up with.

Drying equipment: Racks and clotheslines are often use to support finished sheets. In my own studio I have horizontally suspended 2-inch pvc pipe.

How It All Works

The Size: Having boiled and strained my own Irish moss for too many years, I can assure you that the no-cook blender type of carrageen powder is the route to go. Costly though it is, this type of size will save you hours of labor.

Mix two tablespoons of the powder with each gallon of water you use. Be aware that waters vary. Tap or well water may contain minerals that interfere with the flow of color. Best to experiment with distilled water, as well as with water that is readily

available. The blending process goes as follows: Pour one quart of water into the size bucket. Then blend an additional quart of water with one tablespoon of the carrageen powder, by adding

the powder to already churning water and mixing it for several seconds. Pour this mixture into the size bucket and proceed to blend another tablespoon of the powder with a quart of water, using the previously stated process. Add this mixture to the size bucket. Then blend one quart of water without adding carrageen. This will clean the container. Add this mixture to the size bucket. Repeat mixing process steps for each additional gallon of water you intend to use. Most vats are built to accommodate three gallons of size. If you are producing more than 20 sheets, you will need additional size to add as the level in the tank drops.

The Alum: Prepare alum water by adding 3/4 cup of alum (aluminum potassium sulfate or aluminum ammonium sulfate) to one gallon of heated water. Store in glass jar. Apply to sheet with semi-saturated sponge. Make sure you don't miss a spot as the color may run in these overlooked areas. Sheets should be damp only, not puddly. Depending on the humidity in your area, stack 5-8 sheets atop one another and sandwich between binders board. Essential for preventing curling, promotes even drying and facilitates the printing process.

The Color: Although oil paints and ink can be used, water based materials are the easiest to control. (See Suppliers Listing for firms that offer marbling colors.) The Acryla I will be using dries much like an acrylic but has the color saturation of a gouache. To use it, dilute about 1/3 a small tube with approximately one inch of water in a pint glass canning jar. Use distilled or filtered water for the process to avoid any mineral interference. Add small amounts of paint or water to adjust color intensity.

The Dispersing Agent: Ox gall is most often used as a dispersing agent with traditional marbling and watercolors. Acrylic marblers generally use a photo wetting solution. The

Golden Acrylic Flow Release works particularly well with the Acryla paint. All dispersing agents are added to colors to help them overcome the surface tension of the carrageen size and facilitate their spreading rather than sinking. They should be added cautiously, one drop at a time, and the colors tested after each additional drop.

Applying Color: Whisks, brushes, eye droppers, mouth atomizers, all can be used to apply color to the surface of the size. Remember, not only the tool but each motion you make in dispensing paints affects the outcome of the pattern--amount of color applied, distance between size and applicator, vigor used in dropping colors.

Printing the Sheet: Pre-alumed papers are kept flat between boards until the last minute. They are removed only after the pattern has been created and carried to the vat by holding the sheet in a soft U shape from two diagonal corners. The Zen of

marbling is in the placement of the sheet on the floating pattern. Some sheets are finicky. Most are touched down onto the size at one corner and without hesitation are rolled diagonally towards the opposite corner. This should be done in a smooth even motion while holding onto the corners. Don't let go of either corner until the paper is entirely flat on the surface of the size. Pull the sheet up from two corners on one end of the now marbled paper and lay it print side up on the rinse board. Use a pint sized plastic container to pour a small amount of rinse water over the sheet. Keep in mind that until the color dries the pattern is fairly vulnerable on the paper. Hang up to dry.

**If you have questions,
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A Few Suppliers for the Marbler

Colophon Book Arts Supply, Nancy Morains, 3611 Ryan Street SE, Lacey, WA 98503. 360-459-2940. www.colophonbookarts.com

Diane Maurer Hand Marbled Papers, PO Box 78, Spring Mills, PA 16875. 814-422-8651. dkmaurer1@aol.com

New York Central Art Supply, 62 Third Avenue, New York, New York 10003. 800 950-6111. www.nycentralart.com

Skycraft Designs, 263955 Morgan Road, Estacada, OR 97023. 800-578-5608. info@skycraft.com

TALAS, 20 West 20th Street, New York, N Y 1001. 212-219-0770. www.talasonline.com

For More on the Art of Marbling

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- Maurer-Mathison, Diane. *Decorative Paper*. New York: Mallard Books, 1993.
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MarbleSmith Notes & Recipes

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French Shell A pattern created in France around the late 18th century and particularly popular in the early 1800s. Characterized by a light halo surrounding a darker spot of color. Typically made with the use of three colors, brown being one of the most popular. It was used so often that the pattern became known as “Large Brown French.” Blue and orange also appear in many early shell patterns. The first two colors applied to the size are veining colors, the third is the base color or French. It is mixed with the addition of more ox gall than the previous two and a few small drops of oil, which cause the first two colors to be driven into veins and accounts for the lighter outer ring on the base color.

Historic Recipes

“Having ground finely some of the colour formerly mentioned, (*Orange Brown*) or equal quantities of red ochre and Venetian red, put to it some gall and water; then stir it about for some time with the brush, and add some turpentine to it, but not so great a quantity as for blue. Next put into it from two to six drops of boiled linseed oil, and stir and mix all well together again, that the oil may be properly dispersed through the color. If this is not attended to the colour will break out into large holes or white spots. Other substances may be used instead of linseed oil, with even more success; for instance, by toasting salmon, or salmon kipper cut in slices, before the fire, and preserving what runs from it, a very fine oil may be obtained, which I have used much more frequently than the linseed oil, and think it preferable: the oil of red herrings will likewise do tolerably well.

*Hugh Sinclair “The Whole Process of Marbling Paper,” 1815.
First British book on paper marbling.*

“Now the best oil for general use in French or Shell marbles is the Florence or olive oil. It may be had in flasks at most druggists’ or Italian warehouses. Other oils may be used, such as linseed oil or boiled oil; but for general purposes the olive is best, and least trouble to work.

“...the vein colours may be a little thinner, and the top principal colour not quite so strong in gall, but in addition to the gall a few drops of oil may be mixed and well stirred up in it: put in but a few drops at a time, stirring it well with the brush every time you add to it.”

*C.W. Woolnough, “The Whole Art of Marbling,” 1853
Second marbling manual printed in the English language.*

MarbleSmith Recipe

Add three drops of Bertolli Extra Light olive oil to the base color,

made up of 1 cup water, approximately $\frac{1}{4}$ of a 14 ml tube of Winsor & Newton Designers Gouache, and three to five drops ox gall. Let cure over night. Use whisks to apply first two colors and a somewhat larger whisk to throw down the base color. Layer the base color in two to three applications. This enhances the haloing and creates a great deal of depth to the finished pattern.

Gold Vein French Shell Gold vein patterns have been somewhat rare throughout history. They are either formed with the rest of the pattern or printed over a marbled sheet. The first style dates from the 17th century when binders to the French court, a father and son team named Le Bretons, became famous for their beautifully rendered gold and silver veined papers.

In the 19th century gold veins were often added to a previously marbled paper, using lithographic techniques.

Despite their infrequent appearance, gold vein patterns remained popular into the early 20th century. I have found no references related to the chemistry of this early pattern making.

MarbleSmith Recipe

Mix two veining colors, each with a few drops of ox gall and approx $\frac{1}{4}$ of a 14ml tube Winsor & Newton Gouache diluted in to about 1 cup of water. The gold vein color is made up of about $\frac{1}{2}$ of a 15ml tube of Holbein Artists Gouache Pearl Gold diluted in $\frac{1}{2}$ cup of water, a few drops of ox gall and two heaping tablespoons of Aardvark brilliant gold mica powder. The gold vein is the third color thrown onto the size and should be applied very lightly. The base color or French is applied atop the gold and should drive all three veining colors into narrow channels.

Be sure that your paper is slightly damp. A dry stock may not hold the metallic paint.

Reverse Comb This drawn pattern is alternatively referred to as GetGel or Forward-Backward Marble. It appeared in the early 17th century and became increasingly popular throughout the 19th and 20th centuries. Historically, three to five colors were applied to a gum tragacanth size to create the design. Pigments were ground by hand with a preparation of beeswax to prevent the color from rubbing off.

MarbleSmith Recipe

Mix three to five colors in the following fashion: Add approximately $\frac{1}{4}$ of a 20ml tube of Holbein Acryla Gouache to 1 cup of water along with 3 drops of Acrylic Flo Release.

Mix a solution of $\frac{1}{2}$ cup water and 12 or 15 drops Flo Release. This Will act as a retarding agent. Use a mouth atomizer to blow a fine mist of this mixture evenly over the surface of the size.

Then, using pipettes, proceed to systematically drop colors onto the

Surface.

Use a rake to draw through the colors in the long dimension of the tank. Then reverse the motion, pulling the rake back between the previous created lines. Repeat these moves across the short dimension of the tank.

Oak Leaf Marble Popular for a short period of time in the late 19th and early 20th centuries, oak leaf can be done with three colors or more. A base color is first thrown onto the size, followed by regularly applied drops of the remaining colors. Fine white droplets are the last application. These are applied with the use of a whisk and are traditionally created from soap spirit. A fine-toothed comb is drawn across the tank in one direction, followed by a rake, drawn in a wave-like motion in the opposite direction and back again with the same movement.

MarbleSmith Recipe

Mix colors using the steps described in the MarbleSmith Reverse Comb. And reduce the amount of Flo Release.

Apply base color with the use of a mouth atomizer, spraying a fine mist evenly over the surface of the size. Use pipettes to systematically apply the remaining colors.

Draw a fine-toothed comb (teeth set at approximately ½” intervals) down the long dimension of tank and quickly reverse the motion, directing the comb’s teeth between previously created lines. Then switch to a rake and wave across the short dimension of the tank. Finish the pattern by using the mouth atomizer to spray a fine mist of Flo Release solution.

Contemporary Applications

MarbleSmith Oak Leaf The black Hahnemuhle Ingres paper on which this pattern is created sets it aside as a contemporary rather than a traditional rendering of the oak leaf. In addition, five of the six colors used on this pattern have been infused with mica powders. This gives the pattern its reflective quality and strengthens tone on the dark background. Rather than use a rake to create movement, each of the leaf shapes are treated as individual elements.

Recipe Mix desired colors in the following fashion: one cup of water, ¼ of a 20ml tube of Holbein Gouache, 2 heaping tablespoons of Aardvark mica powder, New York Central Super HiLite colors, or Sepple Leaf mica products. The micas are stirred into the gouache, which is mixed to match the powder and acts as a binder. Add Flo Release only after the colors have been tested on the surface of the carragheenan.

In creating this pattern, the first step is to use a mouth atomizer to produce a fine spray of silver droplets over the entire tank surface. This will slow the movement of subsequent colors and prevent them from spreading beyond the desired diameter. Then use pipettes to

distribute drops of the five colors. Adjust colors with Flo Release. Using the fine toothed comb, move down the long dimension of the tank and back again, positioning the comb's teeth precisely between lines already created. Next, use a stylus to pull through the center of each leaf to complete the shape. Now use a small comb (7 or 8 teeth), dipping it into a sixth color (usually a light tone, such as white or Naples) and just lightly touching the color soaked teeth to the surface of the gel. This will leave small droplets through which a stylus is then pulled to produce an additional leaf shape. Complete the pattern by using a whisk to tap on another fine dotting of one of the five colors.

MarbleSmith Twice Marbled Oak Leaf Done on Hahnemuhle Ingres Deep Green paper, this pattern features negative spaces created in the colored stock.

Technique Mix the desired palette, using Holbein Acryla Gouache and following directions listed above. In addition, mix a solution of Acrylic Flo Release, as previously instructed.

Begin by using a mouth atomizer to spray a ground color over the surface of the gel. Then dip a stylus into the Flo Release solution and touch it onto the floating ground color. This will open a hole. Repeat this step, strategically creating openings in the entire surface. Then use the fine toothed comb to draw down the long dimension of the tank and back again between lines. Next use a stylus to pull through the center of each leaf shape.

Let marbled papers dry completely. Meanwhile mix palette of complimentary colors.

Use mouth atomizer to spray mist of Flo Release over size surface. Follow instructions given in MarbleSmith Oak Leaf for distributing color and executing leaf patterns.