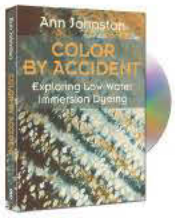


COLOR BY ACCIDENT

Exploring Low-Water Immersion Dyeing with Ann Johnston

I have prepared these pages to supplement the ideas I presented in my video.
NOTES to explain or elaborate on things I have said.
RECIPES of selected fabrics to give you an idea of amounts and colors.
PROJECTS that I think will be good exercises to pursue as you expand your knowledge of color and low-water immersion dye processes.

Part 1: Low-Water Immersion Dyeing —*NOTES*—

BACKGROUND

When I said, "A pint's a pound," I was referring to the fact that a pint of water weighs a pound. So 20 pounds would be 2.5 gallons or 9.5 liters.

Throughout the video, when I say "fat quarter" I mean ¼ yard (meter) of fabric that is rectangular, not long and narrow, about 18" x 24" (45 cm x 60cm).

After I mix the dye with water to make the dye concentrates, all my measurements of "dye" are measurements of dye concentrates, not dye powder.

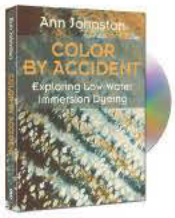
ESSENTIALS

All of the information contained in this video is complete and accurate to the best of the author's knowledge. There is no guarantee connected with this information and no assumption of liability associated with the use of the information.

SAFETY----------

Procion® MX dyes are versatile and simple to use on cotton, linen, rayon and silk. Like all the chemicals we use in our daily lives, the dyes and their auxiliaries should be handled with good work standards. Minimizing your exposure to all chemicals makes good sense.

- Avoid breathing dye powder. When measuring powders use dust mist mask or respirator recommended by dye suppliers. Avoid excessive stirring of powders and always keep a lid on powdered dye.
- Avoid contact with skin and eyes by using gloves and goggles when handling all powdered chemicals.
- Separate dye activities from food preparation. Use separate tools, containers and storage spaces. Keep all containers labeled and away from children.
- Clean as you work.



COLOR BY ACCIDENT

Exploring Low-Water Immersion Dyeing with Ann Johnston

RECIPES ----------

Dye concentrates: This mixture is concentrated, for very dark colors. Use only drops to make very light colors. Mix warm water and urea, then add dye powder. Do not dissolve dyes in water over 95°F (35°C). Colors keep their strength about a week at room temperature and longer if stored COOL.

1 cup (240 ml) water
2–4 TBS (30–60 ml) urea
2 TBS (30 ml) powdered dye

Soda ash solution: this solution is the fixative for the dyes. Dissolve in hot water. Use at room temperature.

1 gallon (3.8 liters) water
9 TBS (135 ml) soda ash.

THE BASIC METHOD ----------

Step 1: Wet fabric in lukewarm water, 70 – 90° F (21–43° C). Wring and wrinkle as desired. Place in container.
Or, wrinkle fabric as desired and then wet with about 1 cup (240 ml) warm water.

Step 2: Mix liquid dye concentrates with plain warm water to color and value desired, about 1 cup (240 ml) of liquid altogether, for each yard (meter) of fabric. Pour over fabric. Squish and agitate as desired. More agitation, more even color.

Step 3: After 5–15 minutes, pour soda solution over fabric. Use about 1 cup (240 ml) per yard (meter) of fabric. Mix to distribute the soda throughout the fabric. More mixing produces more even color.

Step 4: Let the dye work for one hour, minimum.

Step 5: Rinse lukewarm several times, wash **hot**, 140° F (60°C) with detergent and rinse.

Step 6: Test color fastness by ironing wet over white cotton.

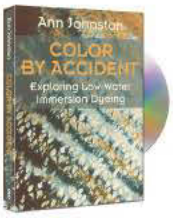
ABOUT THE INGREDIENTS----------

Water: Any clean water will work, but it should be at room temperature for low-water immersion dyeing.

Soda: Soda ash is the fixative for Procion® MX dyes. Sodium carbonate is its chemical name. The solution should be used at room temperature or warmer for immersion dyeing. A dye/water/soda solution older than an hour will only stain the fabric (a light color).

Salt: In low-water immersion dyeing (and dye painting) no salt is required, because so little water is used.

Synthrapol: This is a very concentrated liquid made to scour dye that hasn't fixed. It also can be used to scour fabric before dyeing, if necessary. It is a surfactant that helps keep dye (or other particles) in suspension in the wash water. A non-alkaline detergent can be used as a substitute.



COLOR BY ACCIDENT

Exploring Low-Water Immersion Dyeing with Ann Johnston

Time: Procion® MX dyes need time to spread through the fibers. Low-water immersion dyeing requires about an hour for the dye to react after it contacts the soda. The dye will keep its strength a very limited time if soda is added.

Temperature: Procion® MX dye powders require room temperatures to be properly fixed in the fabric, that is, between 70° and 110°. If they are dissolved above 95° their reactivity is lessened. They can be stored, mixed with water (without soda) for several days and even longer if kept below room temperature. Complete washout of the excess dye that has not fixed in the fabric requires very hot water (140°), detergent and agitation.

Fabric: The type of fabric you use is critical to your results. For cotton, the brightest colors with the most detail are achieved with a mercerized cloth with no sizing or wrinkle-free treatments. Immersion-dyed silk will result in different colors than cotton, depending on which colors you use. The amounts of fabric indicated in *Color by Accident* are for 1 yard (meter) about 44" wide (112 cm), average weight 3-4 yards (meters) per pound (per .5 kilo).

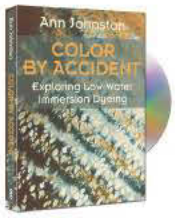
TIPS FOR WASHING OUT UN-FIXED DYE ----------

General approach:

1. Remove some dye, soda and other auxiliaries in cool/warm water before moving to hot water. Several very short cycles with Synthrapol may be required. Final hot wash must be 140°F (60°C).
2. Moving to hot water too soon will stain the whites.
3. To avoid transferring of colors on the fabric, use short cycles and never leave the partly washed fabric in warm or hot bundled up together. Line dry unless final washing at 140° F (60°C) has been done.
4. When working with small amounts it saves energy to wash through the hot cycle and line dry, then wait to have more fabric for a full load to minimize energy and time.

Details:

1. For a messy load of fabric covered with dye and soda, put it all in the washer with a 1/2 tsp tsp 1 TBS (3-15 ml) of Synthrapol depending on the amount of fabric. DO NOT USE TOO MUCH AS IT WILL FOAM ALOT. Start on the rinse/drain cycle, with cold water and high spin. If it is really dark colors and lots of white mixed, do another cold rinse and spin. Untangle threads wrapping around the fabrics each time you start another rinse or wash.
2. Then run a short warm wash and high spin. Do it again if it is a lot of fabric and mixed colors and values. Each time use a small amount of Synthrapol.
3. Then do a short hot wash. Only move to hot if you are not worried about staining whites or transferring reds. If you I see a lot of color in the water, cancel and and drain. If your water is not 140° F (60°C) add boiling water. (On demand hot water heaters can have a higher thermostat.)



COLOR BY ACCIDENT

Exploring Low-Water Immersion Dyeing with Ann Johnston

4. If you have a machine with an extra hot or "sanitary" wash, use it with Synthrapol. The machine heats the water to 150° F (66°C), so it gets the last bit of color out that might not have been released.

Front-loading machines work well for washing out excess dye. These are the attributes of front-loading washing machine MOST USEFUL for washing hand-dyed fabrics:

- It can be started on rinse drain, or just drain/spin.
- It can be cancelled at any point.
- It heats the water above 140° F (60°C) if your hot water heater doesn't.
- Its agitation doesn't tangle fabric as much as top loaders.
- Its high spin cycle removes most of the liquid.

SUPPLIERS----------

Dharma Trading Company www.dharmatrading.com, 800-542-5227
Direct sales to artists
Dye, other chemicals, fabric, containers, tools, books and clothing

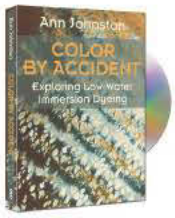
Exotic Silks www.exoticsilks.com, 800-845-7455
Silk at wholesale prices, sold direct to artists with qualifying minimum purchase
Fabrics used in the Ann Johnston's video
Spun broadcloth, natural # 19C
Raw silk noil, natural # 20
Raw silk jacquard, natural -various patterns
Various silk scarves, china silk and charmeuse

Hoffman California-International Fabrics www.hoffmanfabrics.com
Cotton fabric available retail and to customers qualifying as retailers or manufacturers
Fabrics used in the Ann Johnston's video
Bali Handpaints 1377 PFD fabric

Pro Chemical and Dye www.prochemical.com, 800-228-9393
Direct sales to artists
Dye, other chemicals, fabric, containers, tools, books

Robert Kaufman www.robertkaufman.com
Cotton fabric available retail and customers qualifying as retailers or manufacturers
Fabrics used in Ann Johnston's video:
Patina PFD bleach white
Pimatex PFD bleach white
Ultra Sateen white

Testfabrics, Inc. www.testfabrics.com, 570-603-0432
Direct sales to artists, long list of textiles good for dyeing
Fabrics used in Ann Johnston's video:
400M Bleached, de-sized, mercerized cotton print cloth
419 Bleached, mercerized combed broadcloth 45" wide



COLOR BY ACCIDENT

Exploring Low-Water Immersion Dyeing with Ann Johnston

Part 1: Low-Water Immersion Dyeing —*RECIPES*—

Demo 1 The Basic Method for one yard (meter) of fabric

Dark Blue:

1 TBS (15 ml) Yellow 8G
1 TBS (15 ml) Red 8B
2 TBS (30 ml) Turquoise
2 TBS (30 ml) Blue R
2 TBS (30 ml) Blue 4GD

Light Blue:

½ tsp (2.5 ml) Yellow 8G
½ tsp (2.5 ml) Red 8B
1 tsp (5 ml) Turquoise
1 tsp (5 ml) Blue R
1 tsp (5 ml) Blue 4GD

Part 1: Low-Water Immersion Dyeing —*PROJECTS*—

Single-chemical colors

Use the ones you have to dye a dark and light value of each.

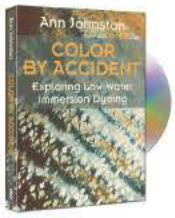
Your own mixed colors

Dye a dark and light value of several of your favorite mixes.
If you don't have favorites yet, mix a few colors that you think you will like!

Dye 5 pieces the same color but different textures. See the chapter called POSSIBILITIES.

Mix one dark color and dye 5 pieces using different folds and amounts of stirring.

Note that you can mix the color once and divide it for five pieces, so for 5 yards (meters), mix 5 cups (1.2 liters) of a color or for 5 quarter-yard (meter) pieces, mix 1 ¼ cup (300 ml) of color.



COLOR BY ACCIDENT
Exploring Low-Water Immersion Dyeing with Ann Johnston

Part 2: Color Mixing —*NOTES*—

THE DYES

SINGLE-CHEMICAL PROCION® MX COLORS----------

Basic Set

Use these colors as a basic set for low-water immersion dyeing

- YELLOW MX-8G
- YELLOW MX-3RA
- ORANGE MX-2R
- RED MX-5B
- BLUE MX-G
- BLUE MX-2G
- BLUE MX-4GD

Use any of the other colors if you have already dyed fabric before, or if you really like a particular color, like turquoise. By the way, there is no black single chemical dye powder—it can of course be mixed—but for convenience, I do sometimes use the black mixes and add other colors to create the black I want.

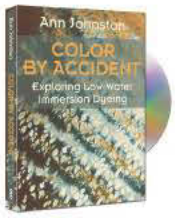
TIPS for dissolving the dye powders:

Use very warm water to dissolve the urea, which leaves the water fairly cool. Then add the dye powder and shake. Never put the powder into water warmer than 95°F (35°C), as their ability to dye the fiber will be lessened.

Some dye powders are more difficult to dissolve—always the two reds and the reddish violet. Sometimes a color that is easy to dissolve will change; this occurred in 2012 with Yellow MX-8G. For these, I double the urea when I am making the dye concentrate, shake more and hold at room temperature overnight before using. If it still has un-dissolved dye, I let it settle and decant the clear liquid off the top if I want to be sure I won't have specks of un-dissolved dye on my fabric.

A descriptive list: represents the fourteen single-chemical (not mixed) colors that are available in the US at this time. There are a few other colors available in other countries, and the manufacturer will add or discontinue colors from time to time.

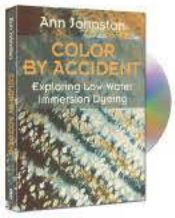
Brightest colors for mixing in **bold**. Print this and add your own observations as you work!



COLOR BY ACCIDENT

Exploring Low-Water Immersion Dyeing with Ann Johnston

Manufacturer's #	Ann's Description	PRO Chem	Dharma
YELLOW MX-8G	Brightest yellow, neon. Can flow out of other colors. Best yellow for mixing all colors.	108 sun yellow	1 lemon yellow
YELLOW MX-4G	Yellow, not as bright. Can flow out of other colors.	114 lemon yellow	-----
YELLOW MX-GR	Bright gold. Mixes without much flowing outside of other colors. Good for making neutral colors.	112 tangerine	3 golden yellow
YELLOW MX-3RA	Dark orange-gold. Mixes without much flowing outside of other colors. Good for making neutral colors.	104 golden yellow	4 deep yellow
ORANGE MX-2R	Bright orange. Can flow outside of other colors.	202 strong orange	6 deep orange
RED MX-5B	Lighter than 8B, bluish red. Good for low-water immersion. Best red for making neutral colors. Hard to dissolve.	305 mixing red	12 light red
RED MX-8B	Darker than 5B, bluer red. Fixes before other colors. Hard to dissolve. Harder to wash out than MX-5B.	308 fuchsia	13 fuchsia red
VIOLET MX-BR	Very warm violet Hard to dissolve. Fixes before all the yellows.	802 boysenberry	---
VIOLET MX-GN	Bluish violet.	801 grape	117 grape
TURQUOISE MX-G	True turquoise, not a dark color. Can flow outside of other colors.	410 turquoise	25 turquoise
BLUE MX-G	Brightest blue on the greenish side. Best blue for mixing all colors. Can flow out of other colors.	406 intense blue	23 cerulean blue
BLUE MX-R	Reddish blue. Can flow out of other colors.	400 basic blue	26 sky blue
BLUE MX-2G	Dark blue, looks like navy. Good for making neutral colors. Mixes without much flowing outside of other colors.	402c mixing blue	22 cobalt blue
BLUE MX-4GD	Dark navy. Good for making very dark colors. Makes a good gray with orange.	414 deep navy	----



COLOR BLENDS ACROSS THE FABRIC

DEMO 5 AND 6----------

Working on the table

Always keep fabric and water at room temperature. If the fabric is on the table, keep the air temp in the room a minimum of 70° F (21°C).

Part 2: Color Mixing —*RECIPES*—

ORANGE SAMPLES----------

In the introduction to chapter called THE DYES, each of the five small orange samples was dyed as ¼ yard pieces. They have 2 TBS (30 ml) of dye concentrate to make a dark value. The four mixed oranges all have 11 parts yellow to 1 part red, about 5 ½ tea (27.5 ml) yellow and ½ tsp (2.5 ml) red, the single-chemical orange has 2 TBS (30 ml).

GOLD COLOR GRADATION----------

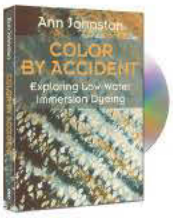
In the chapter called MIX COLORS BEFORE POURING. (Time on disk about 36 minutes.)
A six-piece color gradation on separate 1-yard pieces in separate containers
Approximate amounts of dye concentrates to make 1 cup with water

Color 1	1 TBS (15 ml) Yellow 3RA
	1/2 tsp (2.5 ml) Orange 2R
	1/8 tsp (.6 ml) Blue 2G
Color 2	SAME + 1/8 tsp (.6 ml) Blue 2G
Color 3	SAME + 2/8 tsp (1.3 ml) Blue 2G
Color 4	SAME + 3/8 tsp (1.9 ml) Blue 2G
Color 5	SAME + 4/8 tsp (2.5 ml) Blue 2G
Color 6	SAME + 5/8 tsp 3.1 ml) Blue 2G

A NEUTRAL COLOR----------

In the chapter called COLOR MIXING/MORE IDEAS. (Time on disk about 1 hour and 43 minutes.)
Very Light Tan on one 4-yard (meter) piece

- Wet with 4 cups (960 ml) water. Stir a lot, before and after soda added
- Approximate amounts of dye concentrates in to total 4 cups (960 ml) water:
  5/8 tsp (3.1 ml) Yellow 3RA
  1/8 tsp (.6 ml) Red 5B
  1/8 tsp (.6 ml) Blue 2G
  3/8 tsp (1.9 ml) Violet GN (or use Violet BR for a warmer tan)



COLOR BY ACCIDENT

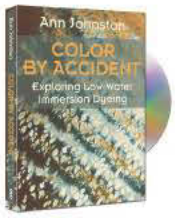
Exploring Low-Water Immersion Dyeing with Ann Johnston

Part 2: Color Mixing —*PROJECTS*—

Make your own color triangle, dark and light

See the CHART on the wall in the chapter called INFINITY OF COLORS. (Time on disk is about 30 minutes.) Use the Basic Method for ¼ yard (meter) pieces. Dye 2 pieces of each color, one dark as in recipes below. Before pouring dye over fabric, **remove ½ tsp** (2.5ml) of that color and add plain water to make ¼ cup to dye a light color on another ¼ yard piece of fabric. Label the pieces so you know the proportions of color on each.

Label the color proportions on fabric	Yellow MX-8G Color **A**	Red MX-5 B Color **B**	Blue MX-G Color **C**
A	6 tsp	0	0
B	0	6 tsp	0
C	0	0	6 tsp
5-1-0	5 tsp	1 tsp	0
4-2-0	4 tsp	2 tsp	0
3-3-0	3 tsp	3 tsp	0
2-4-0	2 tsp	4 tsp	0
1-5-0	1 tsp	5 tsp	0
0-5-1	0	5 tsp	1 tsp
0-4-2	0	4 tsp	2 tsp
0-3-3	0	3 tsp	3 tsp
0-2-4	0	2 tsp	4 tsp
0-1-5	0	1 tsp	5 tsp
5-0-1	5 tsp	0	1 tsp
4-0-2	4 tsp	0	2 tsp
3-0-3	3 tsp	0	3 tsp
2-0-4	2 tsp	0	4 tsp
1-0-5	1 tsp	0	5 tsp
4-1-1	4 tsp	1 tsp	1 tsp
3-2-1	3 tsp	2 tsp	1 tsp
2-3-1	2 tsp	3 tsp	1 tsp
1-4-1	1 tsp	4 tsp	1 tsp
1-3-2	1 tsp	3 tsp	2 tsp
1-2-3	1 tsp	2 tsp	3 tsp
1-1-4	1 tsp	1 tsp	4 tsp
2-1-3	2 tsp	1 tsp	3 tsp
2-2-2	2 tsp	2 tsp	2 tsp
3-1-2	3 tsp	1 tsp	2 tsp



COLOR BY ACCIDENT

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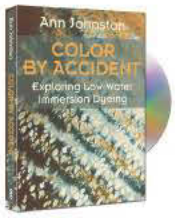
Make a chart of drops of 2-color mixes as in the chapter called THE DYES. (Time on disc is about 27 minutes.) Use the same colors I did, or use this table as a model and find out about the colors you have.
Use equal parts of each color and dilute that mix with the same total amount of water. So if you use 1/8 tsp (.6 ml) red and 1/8 tsp (.6 ml) yellow, add ¼ tsp (1.2 ml) water. Then use a dropper of this to make the dots in a grid like this one.

Colors	Red 5B	Red 8B	Violet BR	Violet GN	Turquoise	Blue G	Blue R	Blue 2G	Blue 4GD
Yellow 8G									
Yellow 4 G									
Yellow GR									
Yellow 3RA									

Make a chart of drops of 3-color mixes as in the chapter called INFINITY OF COLORS. (Time on disc is about 33 minutes.)
Use equal parts of each color and dilute it with that total amount of water. So if you use 1/8 tsp(.6 ml) yellow and 1/8 tsp (.6 ml) red, and 1/8 tsp (.6 ml) blue add 3/8 tsp (1.9 ml) water. Then use a dropper of this to make the dots in a grid like this one.

Mix	Blue G	Turquoise	Blue 2G	Blue R	Blue 4GD
Yellow 8G and Red 5B					
Yellow 8G and Red 8B					
Yellow 3RA and Red 5B					
Yellow 3RA and Red 8B					



COLOR BY ACCIDENT

Exploring Low-Water Immersion Dyeing with Ann Johnston

Mix a neutral color. as in the chapter called INFINITY OF COLORS, Basic Method.
Note: You will use under ½ tsp (2.5 ml) dye concentrate for each ¼ yard (meter)

- Chose a color that you can see and hold near by to look at
- Dye four ¼ yard (meter) pieces.
- First mix drops of your colors and look at them on a swatch of clean fabric.
- Use the same size dropper for all the amounts
- Keep a record for comparisons later

Over-dye before you take the fabric out of the container x 4 as in the chapter called MIX COLORS DIRECTLY ON FABRIC, Demo 2. (Time on disc about 50 minutes.)

- Use four ¼ yard (meter) pieces in separate containers
- Line up four containers and wet each piece (option to bind with rubber band)
- Pour a different mix of red (some yellow added, some gold added, etc) on each piece
- Pour on soda ash, mix
- Wait ½ hour or longer, (unbind if it had rubber band on it)
- Then pour green on or under each piece, (the same green or a different green) Minimum stir
- Add ¼ cup (60 ml) more soda water if it is a very dark green
- Wait an hour
- Wash

Create a color gradation across one piece of fabric as in the chapter called COLOR BLENDS ACROSS THE FABRIC, Demo 4, 5, and 6. (Time on disc is about 1 hour.)

- Use a tray or put the fabric on the table, flat or scrunched—or do both
- Mix all the colors you will use before you start pouring
- Use two, three, four, or more colors—some dark and some light

Make a color parfait: as in the chapter called COLOR PARFAIT, Demo 7. (Time on disc is about 1 hour 26 minutes.)

- Note: for dark: use about 6-8 TBS (90-120 ml) dye concentrate
  for very light: use about 1/2 tsp (1.9 ml) dye concentrate
- Mix three or four colors of about equal strength
- Put drops of each on fabric so you can see what you used later
- Wait about the same length of time after each layer has soda.
- Stir about the same at each level.