

# COLOR BY ACCIDENT

## Exploring Low-Water Immersion Dyeing with Ann Johnston

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I have prepared these pages to supplement the ideas I presented in my video, *Color by Accident: Exploring Low-Water Immersion Dyeing*.

*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—Using Procion MX dyes on cellulose fibers —*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  $\frac{1}{4}$  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.

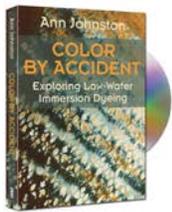
### ESSENTIALS

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.



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## 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 for 1 yard of average weight/width-----

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.

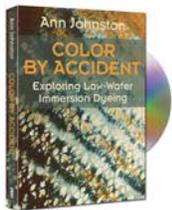
## ABOUT THE INGREDIENTS-----

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.



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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 the soda is added. The dye will keep its strength a very limited time if it comes in contact with soda.

Temperature: Procion® MX dye powders require room temperatures to be properly fixed in the fabric, that is, above 70°F (21°C). If they are dissolved above 95°F (35°C), 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°, 60°C), 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).

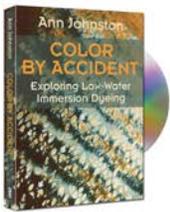
### TIPS FOR WASHING OUT UN-FIXED DYE -----

#### General approach:

1. Remove some dye, soda and other auxiliaries in cool/lukewarm 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-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 cool water and high spin. If it is really dark colors and lots of white mixed, do another cool 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 see a lot of color in the water, cancel and drain. If your water is not 140° F (60°C) add boiling water. (On demand hot water heaters can have a higher thermostat.)



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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](http://www.dharmatrading.com), 800-542-5227

Direct sales to artists

Dye, other chemicals, fabric, containers, tools, books and clothing

Exotic Silks [www.exoticsilks.com](http://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](http://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](http://www.prochemical.com), 800-228-9393

Direct sales to artists

Dye, other chemicals, fabric, containers, tools, books

Robert Kaufman [www.robertkaufman.com](http://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

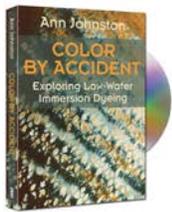
Testfabrics, Inc. [www.testfabrics.com](http://www.testfabrics.com), 570-603-0432

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



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## 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.

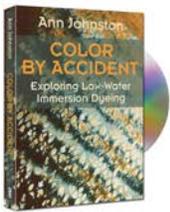
If you don't have favorites yet, mix a few colors that you think you will like!

### Dye 5 pieces the same color but different textures.

See the chapter in the video 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.



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## 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

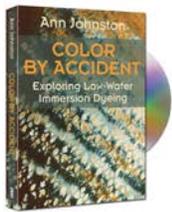
BLUE MX-4GD

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 then leaves the water fairly cool. 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 the solubility of a color you buy will change, as it is changed by the manufacturer. For those that are hard to dissolve, 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.



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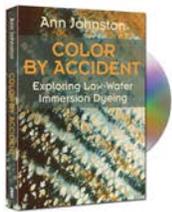
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A descriptive list: represents the fourteen single-chemical colors (not mixes) that are available in the US at this time. There are a few other colors available in other countries, and the manufacturer will add or discontinue colors from time to time.

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

Manufacturer's #	Ann's Description	PRO Chem	Dharma
<b>YELLOW MX-8G</b>	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.	104 golden yellow	4 deep yellow
ORANGE MX-2R	Bright orange. Can flow outside of other colors.	202 strong orange	6 deep orange
<b>RED MX-5B</b>	Lighter than Red 8B, bluish red. Best red for making neutral colors. Hard to dissolve.	305 mixing red	12 light red
RED MX-8B	Darker than Red 5B, bluer red. Fixes before other colors. Hard to dissolve. Harder to wash out than Red 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	Dark 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
<b>BLUE MX-G</b>	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. Mixes without much flowing outside of other colors. Good for making neutral colors.	402c mixing blue	22 cobalt blue
BLUE MX-4GD	Dark navy. Use it to make black. Good for making very dark colors.	414 deep navy	----



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## COLOR BLENDS ACROSS THE FABRIC

DEMOS 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 the video chapter called THE DYES, each of the five small orange samples was dyed as ¼ yard pieces. They each 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 tsp (27.5 ml) yellow and ½ tsp (2.5 ml) red, the single-chemical orange has 2 TBS (30 ml).

GOLD COLOR GRADATION, Demo 2-----

In the chapter called MIX COLORS BEFORE POURING.

A six-piece color gradation on separate 1-yard pieces in separate containers

Approximate amounts of dye concentrates plus water to make a total of 1 cup.

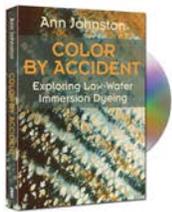
- Color 1 1 TBS (15 ml) Yellow 3RA  
1/2 tsp (2.5 ml) Orange 2R  
1/8 tsp (.6 ml) Blue 2G
- Color 2 SAME + 1/8 tsp (.6 ml) Blue 2G
- Color 3 SAME + 2/8 tsp (1.3 ml) Blue 2G
- Color 4 SAME + 3/8 tsp (1.9 ml) Blue 2G
- Color 5 SAME + 4/8 tsp (2.5 ml) Blue 2G
- Color 6 SAME + 5/8 tsp 3.1 ml) Blue 2G

A NEUTRAL COLOR-----

In the chapter called COLOR MIXING/MORE IDEAS.

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



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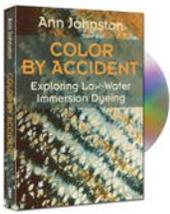
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## Part 2: Color Mixing —*PROJECTS*—

Make your own color triangle, dark and light

See the CHART on the wall in the chapter called INFINITY OF COLORS. Use the Basic Method for  $\frac{1}{4}$  yard (meter) pieces. Dye 2 pieces of each color, one dark as in recipes below. Before pouring dye over fabric, **remove  $\frac{1}{2}$  tsp (2.5ml)** of that color and add plain water to make  $\frac{1}{4}$  cup to dye a light color on another  $\frac{1}{4}$  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



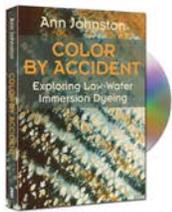
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For example:





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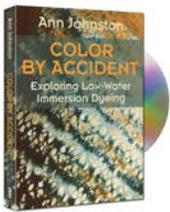
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Make a chart of drops of 2-color mixes as in the chapter called THE DYES. Use the same colors I did, or use this table as a model and find out about the colors you have. Use equal parts of each color and dilute that mix with the same total amount of water. So if you use 1/8 tsp (.6 ml) red and 1/8 tsp (.6 ml) yellow, add 1/4 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 4G									
Yellow GR									
Yellow 3RA									

For example:





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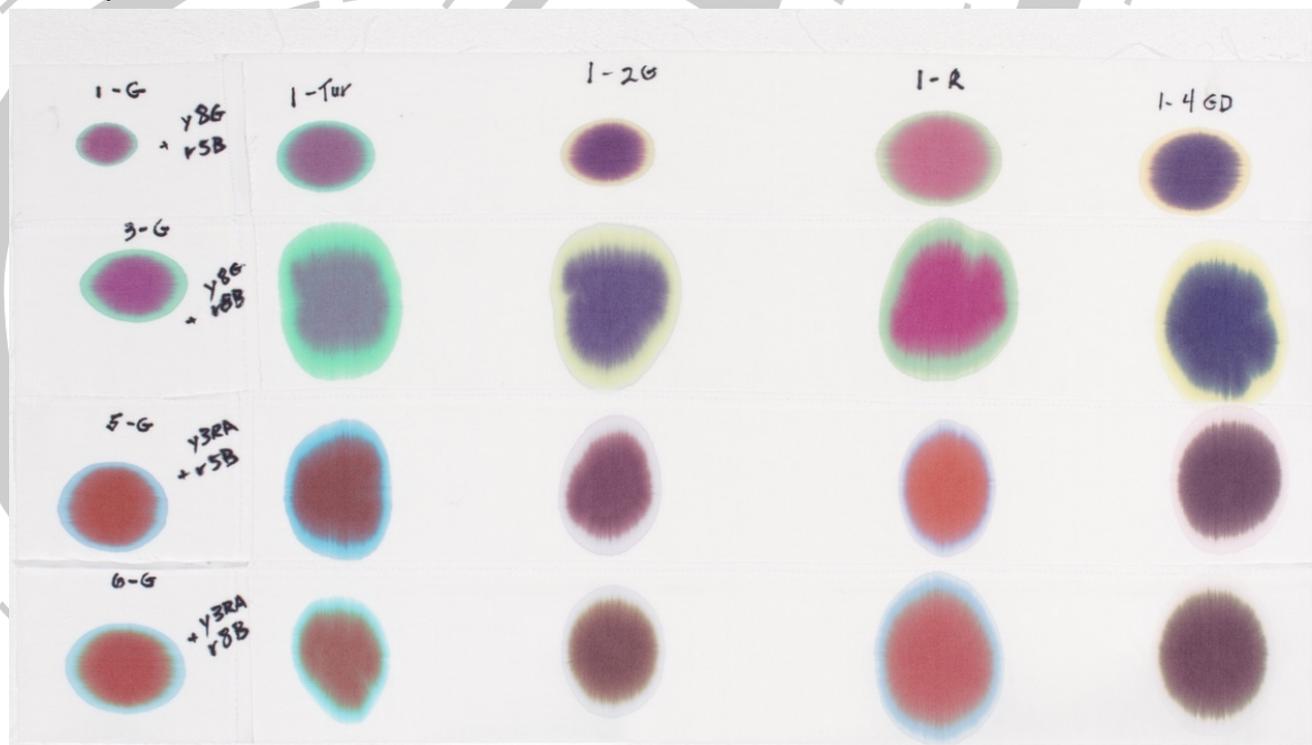
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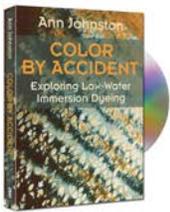
Make a chart of drops of 3-color mixes as in the chapter called INFINITY OF COLORS.

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					

For example:





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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 nearby 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.

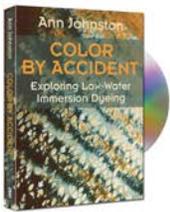
- Use four ¼ yard (meter) pieces in separate containers
- Line up four containers and wet each piece (option to bind with rubber band)
- Pour a different mix of red (some yellow added, some gold added, etc) on each piece
- Pour on soda ash, mix
- Wait ½ hour or longer, (unbind if it had rubber band on 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.

- 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.

- 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.



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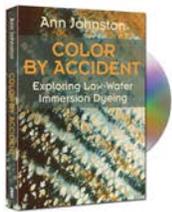
## Part 3: Dyeing Values—*NOTES*—

### OVERVIEW

All recipes in the video are mixed with dye concentrates mixed with plain water. After I make the dye concentrates, I am never measuring with the dye powders.

In this part of the video, I am introducing different ways to change the value of the colors. Some ways will require changes in the Basic Low-Water Method.

- Amount of dye: more dye, darker colors up to about half dye concentrate and half water.
- Time:
  - if you leave the fabric with the dye a long time before the soda is added the colors may flow and separate more.
  - If you leave the fabric in the dye and soda for less than an hour, it will be lighter, but not the same color because some colors will fix faster than others.
  - If you are clamping or resisting the dye in some way, leaving the fabric in the dye and soda mix longer than the required hour, may allow more color to flow into the tight places.
- Manipulation: If you create areas that will remain white, by clamping, for example, there is more dye in the water to fix on the open areas of the fabric, so they will be darker.
- Amount of water:
  - My Basic Method with the dye added before the soda uses about 3 cups of liquid for every 1 yard. With the dye added after the soda, it is only 2 cups/yard, resulting in darker colors.
  - When I want to stir the fabric a lot for even colors, I often add another cup of water to make stirring easier. This may result in lighter colors unless more dye is used.



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CHART FOR AMOUNTS FOR 1 YARD OR 1 METER, average weight and width

VALUE	PLAIN WATER	DYE CONCENTRATE + water to =1 cup (240 ml)	SODA SOLUTION
Dark	1 cup (240 ml)	6–8 TBS (90–120 ml)	1 cup (240 ml)
Medium	1 cup (240 ml)	2–4 TBS (30–60 ml)	1 cup (240 ml)
Light	1 cup (240 ml)	½ – 1 tsp (2–5 ml)	1 cup (240 ml)

CHART FOR AMOUNTS FOR ¼ YARD OR ¼ METER, average weight and width

VALUE	PLAIN WATER	DYE CONCENTRATE + water to =¼ cup (60 ml)	SODA SOLUTION
Dark	¼ cup (60 ml)	5–6 tsp (25–30 ml)	¼ cup (60 ml)
Medium	¼ cup (60 ml)	1–3 tsp (5–15 m;)	¼ cup (60 ml)
Light	¼ cup (60 ml)	5–15 drops	¼ cup (60 ml)

When I said that I had used a lot of dye concentrate to make BLACK, I used the following recipe. This is about double what I would normally use to make a dark value of another color. It may not be necessary to use so much!

- One cup of water to wet the fabric
- 13 TBS dye concentrate (no water mixed in) Premade black mix or your own.
- 1 cup soda solution

## Part 3: Dyeing Values—*RECIPES*—

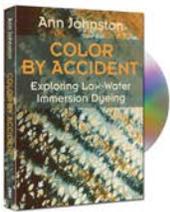
### OVERVIEW

Black Some of the combinations you saw in this part of the video

All resulting colors will be influenced by small variations in exactly how much you use of one or another color. For example, ¼ tsp more or less will show on a yard of black.

For one-yard pieces

- 7 tsp (35 ml) Yellow 3RA, 7 tsp (35 ml) Red 5B, 10 tsp (50 ml) Blue 4GD
- 1 TBS (15 ml) Yellow 8G, 4 TBS (60 ml) Yellow GR, 3 TBS (45 ml) Red 5B, 5 TBS (75 ml) Blue 4GD
- 8 tsp (40 ml) Yellow 3RA, 8 tsp (40 ml) Red 5B, 12 tsp (60 ml) Blue 4GD



# COLOR BY ACCIDENT

## Exploring Low-Water Immersion Dyeing with Ann Johnston

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Gray Some of the combinations you saw in this chapter of the video. Reproducing very light colors on small pieces of fabric using a dropper requires that your drops be very close to the same size each time.

For  $\frac{1}{4}$  yard pieces

- 4 drops Yellow 3RA, 3 drops Red 5B, 6 drops Blue 2G
- 4 drops Yellow 3RA, 3 drops Red 5B, 5 drops Blue 2G
- 3 drops Yellow 3RA, 2 drops Red 5B, 5 drops Blue 2G
- 3 drops Yellow 3RA, 1 drops Red 5B, 5 drops Blue 2G
- 4 drops Yellow 3RA, 4 drops Red 5B, 5 drops Blue 4GD

### VALUE PARFAIT

Red The two red value parfaits in this chapter demonstrate the difference in Red 5B and Red 8B. Each layer of fabric was stirred the same and a new layer was added after the same length of time throughout.

Parfait # 1

- 2 tsp (10 ml) Yellow 3RA
- 3 tsp (15 ml) Red 5B
- $\frac{1}{4}$  tsp (1.25 ml) Blue 2G

Parfait #2

- 2 tsp (10 ml) Yellow 3RA
- 3 tsp (15 ml) Red 8B
- $\frac{1}{4}$  tsp (1.25 ml) Blue 2G

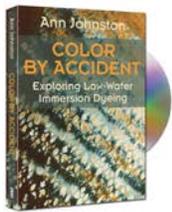
### DYEING VALUES/ MORE IDEAS

Green How long you wait to put in the next layer of fabric in a value parfait changes the results considerably, as shown by the two green parfaits in this chapter. By the way, there is no single-chemical dye for green.

BOTH used same color for  $\frac{1}{4}$  yard pieces:

- 4 tsp (20 ml) Yellow 4G
- 2 tsp (10 ml) Blue G

TIME AFTER SODA: The pieces in one set were 5 minutes, and in the other set they were 15 minutes.



# COLOR BY ACCIDENT

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## Part 3: Dyeing Values —*PROJECTS*—

Create a gradation of values on 8 separate ¼ yard (meter) pieces of fabric. See Demo 8 Mix a dark value of a favorite color, enough for two pieces of fabric. (for one piece you would use 2 TBS (30 ml) dye concentrate + 2 TBS water, so for two you would use double that. For a gradation (4 TBS color + 4 TBS water).

1. Line up the containers and wet them all with plain water.
2. Divide the dye/water mix in half and use one half on the first container of fabric.
3. Add ¼ cup (60 ml) water to the remaining, divide it in half and use half
4. Add ¼ cup (60 ml) water to the remaining, divide it in half and use half
5. Add ¼ cup (60 ml) water to the remaining, divide it in half and use half
6. Add ¼ cup (60 ml) water to the remaining, divide it in half and use half
7. Add ¼ cup (60 ml) water to the remaining, divide it in half and use half
8. Add ¼ cup (60 ml) water to the remaining, divide it in half and use half
9. Add ¼ cup (60 ml) water to the remaining, divide it in half and use half
10. Discard the remaining (very light) color
11. Go back and add soda to each container, stir as you wish
12. Wait an hour and wash

Compare how the value parfaits will stack up depending on colors used.

Use these color mixes or ones of your own devising to compare which colors fix the fastest in a value parfait.

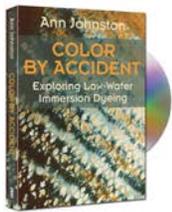
1. Put a ¼ yard (meter) piece in the bottom of two containers
2. Wet them
3. Add a color mix to each (see suggestions below)
4. Stir and add soda solution
5. Wait 20–30 minutes (same for both containers)
6. Add another piece of fabric and soda solution.
7. Stir and wait an hour
8. Wash and compare results

Color # 1

- 2 tsp (10 ml) Yellow 8G
- 1 tsp (5 ml) Red 5B
- 3 tsp (15 ml) Blue G

Color # 2

- 2 tsp (10 ml) Yellow 3RA
- 1 tsp (5 ml) Red 5B
- 3 tsp (15 ml) Blue 4GDG



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## Exploring Low-Water Immersion Dyeing with Ann Johnston

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4-piece value parfaits on ¼ yard (meter) pieces to see how the different single-chemical colors decrease in value when they are left in the soda

1. Put a ¼ yard (meter) piece in the bottom of a container
2. Wet and add a color mix (see suggestions below) Stir
3. Add soda solution and stir. Wait 5–10 minutes (same at each level)
4. Add another piece of wet fabric
5. Add soda solution and stir. Wait 5–10 minutes (same at each level)
6. Add another piece of wet fabric
7. Add soda solution and stir. Wait 5–10 minutes (same at each level)
8. Add another piece of wet fabric
9. Add soda solution and stir. Wait an hour
10. Wash

Color mix suggestions for value parfaits

Color # 1

- 5 tsp (25 ml) Yellow 8G
- 1/4 tsp (1.25 ml) Red 5B
- 1/2 tsp (2.5 ml) Blue G

Color # 2

- 3 tsp (15ml) Yellow 3RA
- 1/2 tsp (2.5 ml) Red 5B
- 2 tsp (10 ml) Blue 4GDG

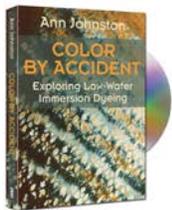
Value gradation on one piece of fabric, Demo 11 and 12

Placement and manipulation are the keys to your results.

For two 1-yard pieces

- Mix 2 cups (280 ml) of a dark value (about half dye concentrate and half water) of one color for both pieces. Mix Orange 2R and Navy 4GD and test drops on clean fabric until you have the color you want.
- Divide in half.
- Use one portion for the first piece in a long tray, keeping most of the color at one end and adding the soda after you blend the values across.

Use the second portion of dye and water for the other piece of fabric that has been put in the soda solution and spread on the table. Manipulate the values by pouring and spreading the dye as in DEMOS 11 and 12.



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## Part 4: Fold-Clamp-Twist—*NOTES*—

### FABRIC MANIPULATION

The size of container, size of fabric, the type of resist, weave and weight of fabric, and the results you want will affect how you adapt the basic low-water immersion method. You may pour on the dye after the soda, use additional liquid, stir or press more or less. You may also pay attention to which single-chemical colors you use. As we have seen, their different characteristics, how quickly they flow and react, and with more or less stirring you will have very different results, particularly with tightly bound fabrics. For example, if the fabric is heavy or tightly woven, you can extend the time before the soda is added to allow the colors to flow into the folds and separate accordingly. What you do to the fabric as the dye is fixing is the most important factor in determining how your final piece will appear.

## Part 4: Fold-Clamp-Twist—*RECIPES*—

**SIMPLE FOLDS/Demo 13 (SODA FIRST/DYE SECOND)**  
on one-yard piece (meter) for light and dark blue

- Fold the fabric, then pour on the soda solution and press in
- Add color mix, press in thoroughly
- Leave alone for 1 hour
- Wash

Use this for **Dark**

8 tsp (40 ml) Yellow 8G

4 tsp (20 ml) Red 5B

9 tsp (45 ml) Blue 4GD

Use this for **Light**

2 tsp (10ml) Yellow 8G

1 tsp (5 ml) Red 5B

2 ¼ tsp (11.3 ml) Blue 4GDG

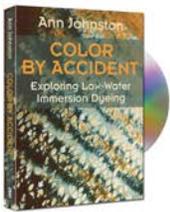
**CLAMPS WITH SHAPES/ DEMO 14 (SODA FIRST/DYE SECOND)**

for ¼ yard (meter) royal blue, samples shown using both the basic method and soda first,  
in a tray and in plastic bags.

3/4 tsp (3.75 ml) Red 5B

3 tsp (15 ml) Turquoise

2 tsp (10 ml) Blue R



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OTHER RESIST TECHNIQUES/DEMO 16 (DYE FIRST/SODA SECOND)

For 1-yard (meter) rust colored on twisted on a plastic chain

Note I used the Basic Method with **extra liquid and extended time.**

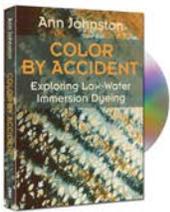
- Mixed the following with water to make 1 ½ cup liquid
  - 4 TBS (60 ml) Yellow 8G
  - 1 TBS (15 ml) Yellow 3RA
  - 1 TBS (15 ml) Orange 2R
  - 1 TBS (15 ml) Red 8B
  - ½ tsp (2.5 ml) Blue G
  - ½ tsp (2.5 ml) Blue 2G
  - ½ tsp (2.5 ml) Blue 4GD
- About a cup (240 ml) more of water added to cover the fabric
- Soda solution added after 4 hours
- Pressed thoroughly and left overnight.

## Part 4: Fold-Clamp-Twist—*PROJECTS*—

Compare Dye First and Soda First

Manipulate two ¼ yard (meter) pieces of fabric the same way

1. Mix these dye concentrates and add water to make ½ cup
  - 2 tsp (10 ml) Yellow 8G
  - ¾ tsp (3.75 ml) Red 5B
  - 3 tsp (15 ml) Blue G
2. Divide the above and use half for each of these
  - Soda First
    - Dunk in soda until thoroughly penetrated
    - Pour on the color and keep spreading back over
  - Dye First
    - Wet thoroughly in plain water
    - Pour on the color and keep spooning over
    - After 10 minutes, add soda solution
    - Keep spreading back over
3. Wait an hour after the soda, wash and compare



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## Work Large

- Use a piece of fabric that is at least one yard (meter)
- Chose a technique and manipulate the fabric with folds or pipe or rope or clamps
- Wet the fabric
- Pour over the dye/water mix
- Squeeze in as desired, wait 4 hours
- Pour over soda solution
- Squeeze in as desired, wait 4 hours or longer
- Squeeze in soda a few times during the time the dye is fixing
- Wash

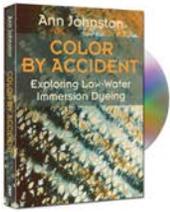
## Part 5: Working with Silk—*NOTES*—

### **WHAT TO EXPECT**

Real silk--made with fibers from silkworms--can be dyed with these Procion MX dyes in the same way as I have been showing you to dye plant fibers, cotton, rayon and so on. Silk is a natural fiber, but it is a protein fiber and its structure allows these dyes to react with it using soda as the fixative (alternative is to use acid as the fixative). The silk naturally reacts even more quickly than cotton, particularly certain colors. But it has fewer dye sites--places where the dye can bond--than cotton, so some of the results can be very different than with cotton. Mixing colors with the fastest reacting colors like the reds, may give you a red instead of a violet, for example, because the red filled the dye sites before the blue could react. Using other single-chemicals will allow you to achieve a greater range of colors than sticking to the basic set of 2 yellow, 2 reds and 2 blues. The less water to float the colors around, the more predictable your results will be, as in direct application of thickened dyes. Colors painted directly on silk with thickener should be comparable to the results you will have after washing, unlike the immersion dyeing of silk.

### Organza

There are many kinds of silk with different density, weave, and in the case of organza, a coating of sericin from the silkworm, which is removed before you buy most woven silks. The sericin on the silk will dye much darker than other silks or even cotton. The sericin can be removed, but this leaves the silk very soft and less transparent. There are a variety of recipes for removing the sericin selectively; however, the process is often damaging to the silk and has to be done with great care. You can experiment with recipes you find from others. My own experiments are not final recipes.



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## Part 5: Working with Silk—*RECIPES*—

I have no recipes for the silks I showed in this chapter. They have been based on my experience and swatches I kept over the years. Or they were dye painted, which is another subject! I give the recipe for dye painting with thickener in the last section of this document.

## Part 5: Working with Silk—*PROJECTS*—

### Keep records

If you wish to dye a lot of silk, in immersion type processes, keep records so you can develop an eye for the differences in how the dyes work on cotton and silk.

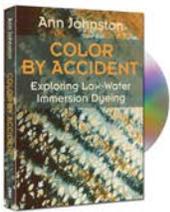
### Dye some scarves

#### 1. One approach

- Wet the scarf in soda solution
- Spread the scarf out on the table
- Drop or paint on mixed colors (dye concentrate and water) on the silk, letting them flow around the folds.
- Add more color and watch what happens
- Wait to let it flow without disturbing
- Add more color as needed
- Wait an hour
- Wash

#### 2. A variation

- Wet the scarf in soda solution
- Spread the scarf out on the table
- Drop or paint on mixed colors (dye concentrate and water) on the silk, spreading and moving the folds
- Add more color blending and moving bubbles continuously
- Wait an hour
- Wash



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Exploring Low-Water Immersion Dyeing  
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## Part 6: Enjoy Exploring—*NOTES*—

REQUIREMENTS for dyeing with Procion MX dyes-----

Procion® MX dyes, not Procion H. Within this group of dyes, each single-chemical color has different properties but is within a good mixing range. Other fiber reactive dyes are not the same and have different requirements for fixing.

Fabric, natural fiber only. There is a wide range of weaves and textures within the group, natural, all plant fibers, if cotton, preferably mercerized or causticized (alkali treated). Not all cottons will dye well, if silk, the real thing.

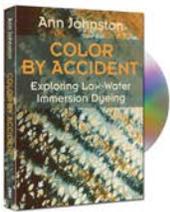
Room temperature 70°–110° F (21°–43° C) is always needed for good dyeing. Some fixing may occur if conditions under room temperature, but much more dye washes out and darks are unlikely. Colors keep their strength about a week at room temperature and longer if stored cool. Adjust cold dye concentrate by using warmer water and/or warmer soda ash.

Moisture to transport the dyes—enough to penetrate the fabric, 3 cups (720 ml) liquid per yard of fabric is a good basic approach. The dyes will work with a very slight amount of moisture as in painting and printing techniques.

Time for the dye to penetrate into the fibers, 5–15 min is a basic approach depends on the cloth. With more time, and no manipulation, the dyes will flow farther through the fibers, separating according to their weight and other properties.

Sodium carbonate, 100% soda ash. I use a solution strong enough to fix the darkest colors, so I pay attention to other variables like the amount of dye concentrate and manipulation.

Time for the dye to react after the soda is added, usually an hour. Most of the dye is fixed on the fabric in the first 15–30 minutes after you put on the soda. Any excess dye after an hour will have bonded with water. It may take more time for the soda to penetrate tightly resisted folding. For Turquoise and Black another hour might help, but in most cases, you won't make darker colors even if you wait till the next day. Note: if the fabric is removed from the table while the dye is fixing, you are leaving dye and the fixative there—the colors will be lighter.



# COLOR BY ACCIDENT

## Exploring Low-Water Immersion Dyeing with Ann Johnston

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Manipulation Only a minimum is required to be sure it penetrates the whole piece of fabric. After the soda, only a minimum is required to get the soda into the fibers. Within first 15 minutes, push or flip so the fabric that is not in the liquid, floating above, will also be dyed. The amount and kind of folding and/or stirring will have more effect on the final results than anything else. Where the soda doesn't meet the dye, the color and detail of textures are greatly reduced.

Wash out excess dye, to remove soda and un-fixed dye, multiple washings are required depending on the amount and color of dye used. It is very easy to stain the lighter colors if you change to hot water too soon. That staining can often be removed by further 140°F (60° C) wash with Synthrapol, a detergent manufactured for removal of excess dyes.

### AND IMPORTANT VARIABLES -----

- Size and shape of container
- Total amount of liquid
- Soda before or after the dye
- Amount and kind of manipulation
- Time in contact with the dye before the soda is added
- Time in contact with the dye after the soda is added as in a Value Parfait

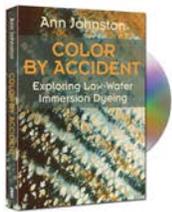
## Part 6: Enjoy Exploring —*RECIPES*—

I have no recipes available for this part of the video.

## Part 6: Enjoy Exploring —*PROJECTS*—

Try testing out some of the variables and compare their results.

- Do the same recipe but change the size and shape of the container
- Try waiting longer without stirring before adding the soda to get more color separation
- Use a little more liquid and mix a lot to get solid colors
- Try a color parfait with different length of time between the layers, 5 minutes and 15 minutes
- Do a comparison of several folded, clamped or twisted fabrics using exactly the same color and the same amount of manipulation, but put the soda on first for one of the pieces. Note: soda first has two parts liquid and the Basic Method had three parts



# COLOR BY ACCIDENT

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Try painting the dye with thickener (print paste). The dye concentrates are already mixed double strength for dye printing and painting. They can be mixed with equal parts dye and thickener and still paint a dark color.

- Use your soda solution to soak into the fabric, then let dry.
- Prepare print paste

Stir continuously while adding dry ingredients in this order

Warm water	3 cups (720 ml)
Granular urea	6-1/2 TBS (98 ml)
Metaphos	1-1/2 tsp (7.5 ml)
Sodium alginate SH	6 tsp (30 ml)
Additional water	Make a total of 1 quart (960 ml)
Optional: extra sodium alginate	Up to 2 tsp (10 ml) more

- Prepare the urea water to use to thin the print paste as needed.

Warm water 1 cup (240 ml)

Granular urea 7 tsp (35 ml)

- Mix colors as desired.
- Paint
- Keep slightly moist and warm at least 4 hours
- Wash
- Test washout by ironing while wet on white cotton

ALOT MORE ABOUT PAINTING WITH DYE IN MY BOOK

*Color by Design: Paint and Print with Dye*

Have fun!